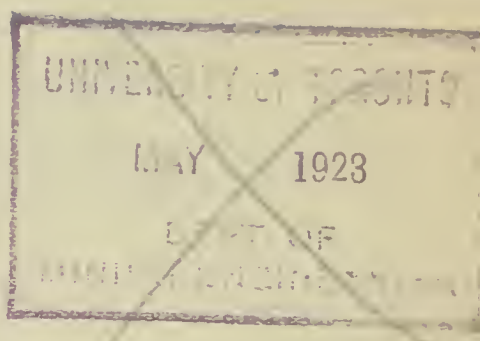
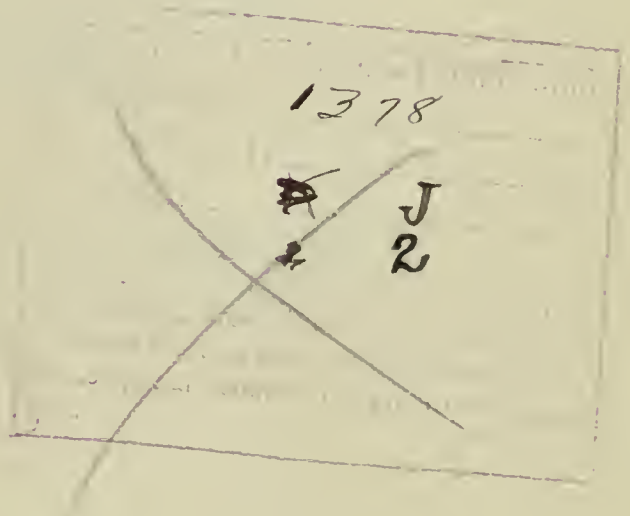
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COAL AGE

With Which is Consolidated The Colliery Engineer

DEVOTED TO COAL MINING AND COAL MERCHANDISING

EXTRACTION METHODS, EQUIPMENT AND MINING NEWS
MARKET REPORTS, PRICES AND STATISTICS
OF THE COAL INDUSTRY

ISSUED WEEKLY

VOLUME XXII

July 1 to December 31, 1922

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COAL AGE

With Which is Consolidated
The Colliery Engineer

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July 1 to December 31, 1922

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COAL AGE

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The Problem at Washington

DIFFICULT as are the problems that will confront the coal miner and the coal operator at the Washington conference they will be far less puzzling than those which the President and his advisers must face. Having adopted a "hands-off" policy so long as seemed advisable, the administration now judges the time ripe for action. To delay would seem likely to entail serious consequences to the country. The point taken by the President seems fully justified and it cannot be gainsaid that his decision is well timed.

The immediate interest of the consuming public is coal—coal enough to meet the demand without exciting to panic prices. Occasionally a word is printed about the need for a better functioning industry, about the reforms that should be accomplished and the "ills" that should be cured, but the general public knows little of what it is all about and, unfortunately, cares less. In what the President has set about the public at large can see nothing except the government getting the miners back in the mines in order that it may have coal.

If Washington sees no further than this its problem is simple. If all that is desired is to get production Washington can soon bring that to pass. The miners are impatient and must work; they have reason to feel that all is not well with their cause. A compromise with them could easily be arranged; a compromise, for instance, that would give them no reduction in wages in the hard-coal mines and a slight reduction in the bituminous fields coupled with their demanded interstate agreement. Such a settlement would be equivalent to victory for them and would be a fitting crown for the efforts of the International officers of the United Mine Workers until, stocks being again replenished, the nonunion bituminous field would once again have all the spot orders for soft coal and all the contracts also. That concession is the utmost they can hope for and probably as much as they expect to receive.

Compromise No Principles

It is not inconceivable that the President could force the operators into such a compromise, for the power of the Chief Executive in molding opinion in such a matter is tremendous. Washington, however, is too well advised on all sides of the controversy wittingly to drive matters in this course. The danger lies rather in an impatient public demanding a hasty action that would not be in the best national interest. The problem has two well-recognized aspects, one of which is to patch up a temporary settlement, the other to provide against repetitions of like kind. The temporary arrangement must be of such character as not to prejudice a proper and permanent solution. It is important that in the haste to get coal before it be too late, no principles be compromised.

The miner's right to collective bargaining and to strike are the fundamental principles on the one side. On the other side the principle of the right of management to manage and to employ whomsoever it will without forcing tribute to the union must be reinstated. Above all, in the interest of the public the principle of obedience to the laws of the land which stamp murder as murder and which guarantee to every individual the right to work where he will must be sustained. The problem at Washington is to evolve a formula under which the production of coal may be resumed without abridging the rights of the contestants or compromising these principles. This will prove to be no easy task.

The operators who are meeting at the request of the President have not called into question the rights of the men to organize or to strike. The United Mine Workers, however, is challenging the right of the owner to manage his property and of the individual worker to live, just as it has and is challenging the laws of the land. It were better that President Harding take over every mine, put an American flag on every tipple and give the country coal, rather than submit to the collective threatening of the union.

Lower Wages the Immediate Issue

Majority opinion has from the beginning held that the positions of the miners and of the operators were so opposite and so strongly held that some form of federal intervention was inevitable. It is now materializing. John Lewis has begun a repetition of the pilgrimages to Washington that preceded the end of the 1919 strike. The government saved him from his friends on that occasion; perhaps it will save him again. In other words, the end is in sight even though the details of the road to be followed are but dimly discernible.

The fundamental strategy of the miners' union, of course, is to prevent wage reductions. This accomplished, the prestige of United Mine Workers is enhanced and the incumbency of the officials made secure. Leaders that win have no fear for their jobs. The insistence on a joint interstate settlement—a national wage agreement—which is the war cry of the union, has no other significance. The miners reason correctly that to accede to state or district settlements is tantamount to lower wages. It is to get wages down that the operators are insisting on that form of negotiations, just as the miners in 1920 were quite willing to resort to state agreements to get their day wage raised from $6 to $7.50.

The miners cannot win in a straight endurance test with the operators, but as against the country they have an advantage. In that all-important sense it is the consuming public against the miner, for the consumer pays the wages of the miner, up or down, and he is the one who needs the coal and must go short and

suffer if sufficient fuel is not produced. The government represents the interests of the public in this matter, and in the last analysis the interest of the public is paramount.

One need ascribe no altruistic motives to the operators in saying that their efforts to reduce the cost of producing coal by lowering wages is in the public interest. The public demand for lower-priced household fuel is an issue which the anthracite operators know cannot be denied. They are but transmitting to mine labor the pressure they already feel. The operators of bituminous-coal mines in the union fields face competition from the non-union areas that will overwhelm them if it is not met. The government, acting for the consumer, is as much concerned as the operator in the lowering of the cost of production by a reduction of wages.

Nor does anyone deny the right of the miners' union to seek as high wages as it can get and hold. Labor may not be a commodity but, like capital, it must in the end take as its recompense that which it brings on the market and that which the ultimate consumer can afford to pay. But when competition is removed and there is no limit to the price save the conscience of the vendor, public policy dictates another course. Last month the country witnessed the self-restraint of those operators who were producing coal in holding to a price level below that which the market afforded. Capital, it is clear, is amenable to such restraint. Similarly last month the country also witnessed labor in the full exercise of its monopoly. Murder and wanton massacre at Herrin measured the self-restraint of the United Mine Workers of America when their monoply was threatened.

There is ample evidence to indicate that the rank and file of the union miners recognize the fairness as well as the inevitableness of wage reductions, but because of the leaven of radicalism in the union their leaders dare not make such an admission. Quite recently a majority of the representatives of the union miners in Nova Scotia agreed to a wage reduction. They even had the courage to defend their course before a meeting of their constituents. They repudiated the action of their duly appointed agents and wound up the meeting by voting to ask the Canadian Government to lend the Russian Soviet Government fifteen million dollars. The moral is that it is political suicide for John Lewis and his lieutenants to abandon their extreme position even though they and all their members know that in the end it cannot be maintained. That is why the coal operators refuse to put their fortunes in the hands of this particular labor monopoly.

Destruction of the Union Not Sought

Those who hold to the belief that the policy of the operators against a Central Competitive Field agreement is a policy aimed at the destruction of the United Mine Workers are misinformed. In all this land there are no truer friends of the union coal miner, no stauncher advocates of collective bargaining, than among the operators of the southern Ohio field. Yet it was the southern Ohio operators who to a man first took the stand that has prevented a central field conference. With hands tied behind its back by wage scales and working conditions dictated in Central Competitive Field agreements by a national labor union and by operators in larger fields to the north and west with which it is not now and has not for a score of years been competitive, southern Ohio has had to submit to having its throat cut by non-union fields to the south. With this field it is not a question of how its wage scales and costs compare with eastern Ohio or Indiana but how they compare with West Virginia. No one in Washington can induce this field to abandon its decision to seek the right of self-determination. Southern Ohio is significant in that it represents a type.

The problem of Washington, then, is to find a formula that will save the face of the union and at the same time preserve to the operators in the several fields the right to negotiate with their men wage scales that will be truly competitive one with another and with those without the fold. That is, we may witness a conference of the United Mine Workers and all union coal operators dealing with general principles but not setting district wages.

Let It Be a Non-Partisan Board

Whatever the process by which the miners are returned to work to meet the immediate requirements for coal it must from the very nature of the circumstances be of temporary character. Matters of policy and matters of fact interwoven in the issues of this controversy cannot be disposed of lightly. The present outlook therefore contemplates some form of commission that will, after the men are back at work, make an intensive and extensive study of the problems and report on the merits of each. It is further contemplated that this shall be an arbitration commission and that each side will be expected to agree in advance to abide by its findings.

We have evidence at the outset that the miners do not favor arbitration. It has been offered to them in the anthracite region after nearly three months of fruitless negotiations and they have refused to accept it. They are not disposed to abide by the findings of arbitrators ever after they have so agreed, as witness the fruits of the two Presidential commission awards in 1920. There is hope, however, that henceforth the labor unions may be induced to have greater respect for their contracts and that arbitration awards, unfortunately at best but compromises, may become more effective.

Transcending in importance the possible terms of settlement with respect to wages and working conditions that may be laid down by the commission now generally expected to be offered and appointed by the President are the principles governing future conduct for the coal industry that we have a right to expect, nay, even demand, from such a body. Twenty years of comparative tranquillity in the anthracite region followed the adoption of procedure laid down by the Roosevelt commission. That record would not have been broken in this year of 1922 were it not for the overpowering ambition of the United Mine Workers to exert its "full economic strength" against the country to win in the soft-coal strike.

Pressure will be exerted to have representatives of the miners and of the operators on this commission. Already there is local talk among the hard-coal miners as to who should be chosen to represent them and there is some evidence of a feeling that a willingness to submit to the findings of a board should be predicated on the pledge that the personnel will be acceptable to them. The supreme problem of Washington is to take a stand for a commission overwhelmingly non-partisan and to insist on time for adequate investigation.

Fading Soft-Coal Stocks as Well as Lack of Anthracite Attest Timeliness of Efforts for Resumption

Unprecedented Stores of 67,000,000 Tons on April 1 Take Record Drop of 47,000,000 Tons in Three Months—Consumption Estimate of 34,500,000 Per Month Indicates Seriousness of Situation

ADMINISTRATION efforts to start the coal mines are being taken none too soon if a serious coal shortage during the coming winter is to be averted. There are practically no available above-ground supplies of anthracite except those held by retail dealers and that already in the cellars of householders. Pea is the only size that can be had from producers in quantity, small lots only of both larger and smaller sizes being available to replenish yard supplies. The total is equivalent to less than one month's production. The hard-coal mines have no overcapacity with which to make up deficiencies and there is no non-union production to supplement that now on strike. If the anthracite mines were now at work, producers would be obliged to allocate shipments, and every day's output lost from now on will add to their troubles next winter and sharpen the demand to a point where runaway prices for some of the independent coal will give to the trade the "color of profiteering" it had in 1920.

On top of this potential shortage of anthracite the country faces a situation with respect to bituminous coal that under similar circumstances in the past has resulted in panic prices and exhibited all the symptoms of a shortage. Production measured against demand, not consumption, sets the price. If the definition be that there is a coal shortage when every buyer cannot get coal when he wants it, then the stage is all set for a soft-coal shortage. Demand from now on will equal consumption plus what the buyer would like to store against next winter.

It will be recalled that the Geological Survey, in its estimates of stocks on April 1, reported *at least* 63,000,000 net tons of bituminous coal in the hands of consumers. The study of official data on the three interrelated factors, production, stocks and consumption, summarized in the accompanying diagram shows that stocks were in fact around 67,000,000 net tons, exclusive of coal on upper Lake docks but including coal in cars not yet delivered to consumers. A new high record was thus set.

Never before has so much coal been delivered and held by consumers in this country. Preparations against the strike were as complete as consumers could make them. In the months of April, May and June another record was set, for the stocks of coal took the biggest drop on record. From the peak of 67,000,000 net tons on April 1 to 20,000,000 tons on July 1 represents a draft of 47,000,000 tons. That the country had this reserve supply on which to draw while the union mines are closed explains the equanimity with which the strike has been viewed so far. Compared with the decrease of 47,000,000 tons in the past three months is the record of 40,000,000 tons in the seven months from the Armistice in 1918 to July 1, 1919.

In the first six months of 1921 the production of bituminous coal was 196,292,000 tons and exports less imports were 12,555,000 tons, leaving 183,737,000 tons available for consumption. Stocks were reduced 3,000,000 tons, which, added to available production, indicates a consumption of 186,737,000 tons in that 6-month period. Production of bituminous coal in the corresponding period of 1922 was 186,415,000 tons, and exports less imports were around 3,358,000 net tons, giving a total net available for consumption of 183,057,000 tons. Stocks were reduced from Jan. 1 to July 1 an estimated 24,200,000 tons, which indicates a consumption of 207,257,000 tons. That is, the consumption of bituminous coal in the United States from January to the end of June this year was 20,500,000 tons greater than in the corresponding six months of last year.

Although production in the half year of 1922 was 9,877,000 tons less than the same period of 1921, exports also were less by 9,197,000 tons, leaving the country with some 680,000 tons less production for home use. Offsetting this small loss has been the draft on stocks exceeding last year by 21,200,000 tons.

The draft on stocks by months is estimated as 19,500,000 tons in April, 14,700,000 tons in May and 13,000,000 tons in June. Assuming no resumption of mining in July, making allowance for the holiday which affects both production and consumption, and anticipating a sharp increase in demand sufficient to call forth every possible ton of production, we would expect a further reduction in stocks in July of at least 10,000,000 tons, leaving on Aug. 1 but 10,000,000 tons on hand. These figures are, of course, but estimates, for in the very nature of the case no other data can be had. But if as estimates they are within 20 per cent of correct, and we feel that the limit of error is not much more than half of that, it is apparent why the President has begun to act.

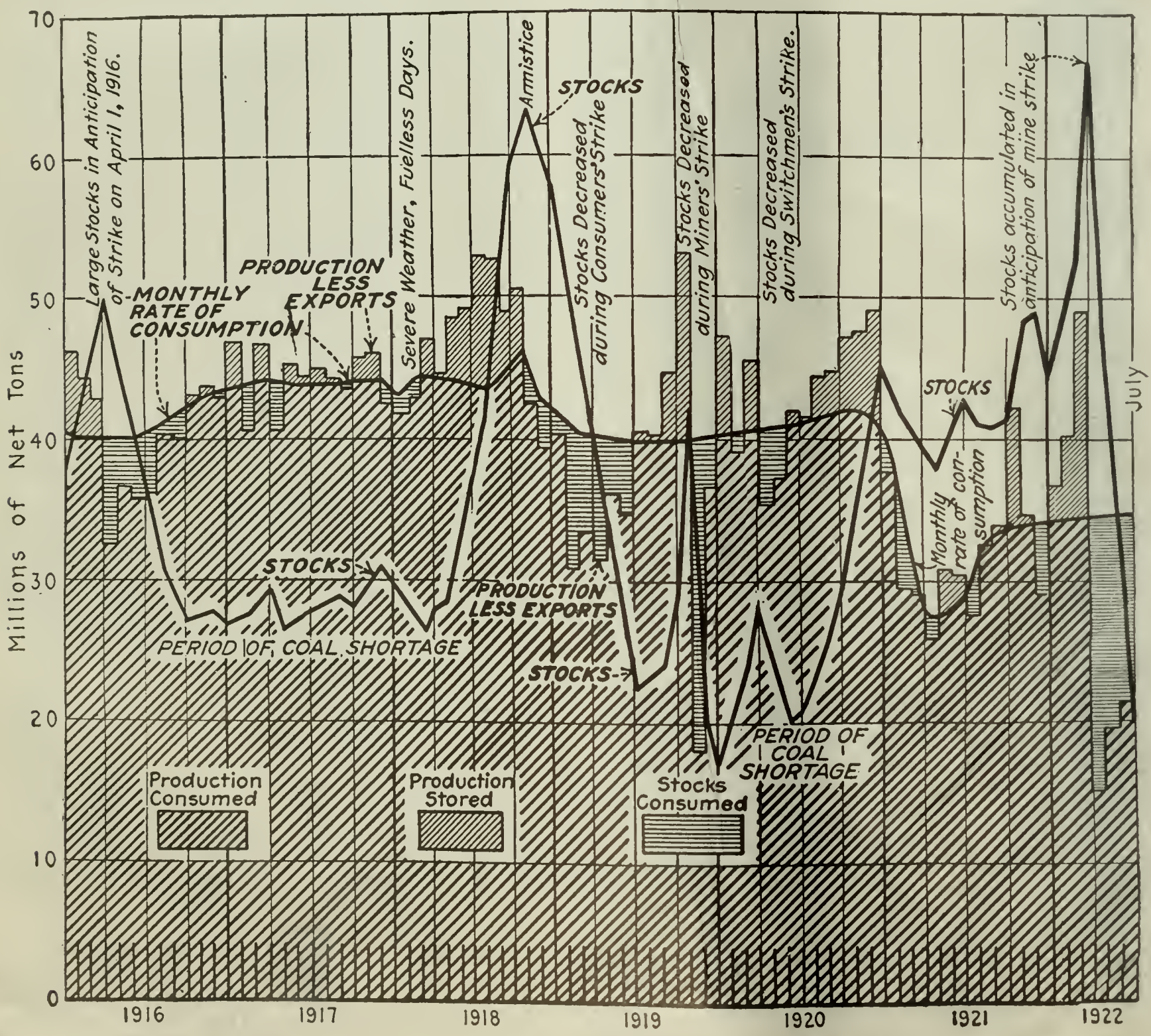
Judging from the history of the past seven years, an above-ground stock of bituminous coal of only ten million tons represents an impossible situation in this country. During 1917 and 1918, when consumption was at the rate of about 40,000,000 tons per month, there was a serious coal shortage when stocks were as low as 20,000,000 tons—that is, when the average for the country was equal to two weeks' requirements. Consumption is now estimated to be at the rate of 34,500,000 tons per month and two weeks' supply is therefore some 17,000,000 tons. Although skating close to the danger mark, the country had not by July 1 reached a crisis. Some time before Aug. 1 that point will have been reached if production is not resumed. In other words, by that time, but for successful intervention by Washington, the United Mine Workers will have the country where it wants to be—helpless and begging for coal.

From April 1 to Aug. 1, 1921, the estimated rate of consumption of bituminous coal was 28,200,000 tons per month. From Aug. 1 to Nov. 1 the rate was 33,890,000 tons per month and from Nov. 1 to March 1, 1922, the rate was increased to 34,200,000 tons. Since that date the rate of consumption is estimated at an average of 34,500,000 tons per month, with the figure

at the end of June somewhat above that figure. In the thirteen weeks ended with July 1 the requirement for consumption and exports (less imports) has been 8,085,000 tons, or in round numbers eight million tons per week.

Railroads are the largest single consumers of coal and likewise the largest holders of stocks. Figures recently assembled by the American Railway Association of coal on hand for railroad use furnish an interesting check on our estimates. All roads had on April 1 19,843,833 tons of coal. By May 1 this had been diminished by 4,800,000 tons to 15,052,268 tons and by June 1 still further reduced by 4,200,000 tons to 10,846,567 tons. Business on the railroads was greater in June than in May and it is safe to estimate that on July 1 their stocks were not in excess of 6,500,000 tons, equivalent to 23 days' requirements, if no new production be used. Our estimate of total reserve on May 1 is 71 per cent of the supply on April 1. Compared to this the railroads held 79 per cent of their maximum. On June 1 the figures are 79 per cent for the country and 72 per cent for the roads, and on July 1 it is estimated that both the country as a whole and the railroads had 60 per cent as much coal as 30 days previously.

Looking ahead it is apparent that were the production of bituminous coal to be increased barely sufficiently to meet the weekly requirements of around 8,000,000 tons that would not suffice. Stocks must again be built up against the winter's need. If production is not resumed in time and at a sufficient rate to meet all current requirements and to put at least 30 days' supply on the average into consumers' storage piles by Nov. 1, at the latest, we will have a perpetual coal shortage throughout the coming winter. On top of the output indicated is the need for some 20,000,000 tons of shipments for the upper Lake docks, all of which must be produced and shipped before the close of navigation—that is, by the middle of December. There is, furthermore, the very evident possibility that the certain shortage of anthracite will add still further demands on the bituminous-coal industry.



STOCKS OF BITUMINOUS COAL COMPARED WITH PRODUCTION AND CONSUMPTION

From a peak of 67,000,000 tons on April 1, stocks declined to 20,000,000 tons on July 1, a shrinkage of 47,000,000 tons in three months

Razing of Seneca Hoist Tower By Dynamite And Rebuilding of Breaker

By Dever C. Ashmead*
Kingston, Pa.



Dynamite Sticks Placed in Its Ten Legs Are Exploded While Locomotive and Stump Puller Pull Structure Out of Perpendicular—Good Example of Modern Breaker of Moderate Dimensions

SEVERAL years ago an estimate was made of the quantity of coal available at the Seneca Colliery of the Lehigh Valley Coal Co., and the calculation showed that approximately 2,000,000 tons of coal could be drawn from the mine, which, according to the present rate of mining, would have lasted until about 1920. This period is past and the mine is still operating. About one year after the date set for the possible abandonment of the mine another estimate was made showing 2,500,000 tons more available than when the first estimate was made.

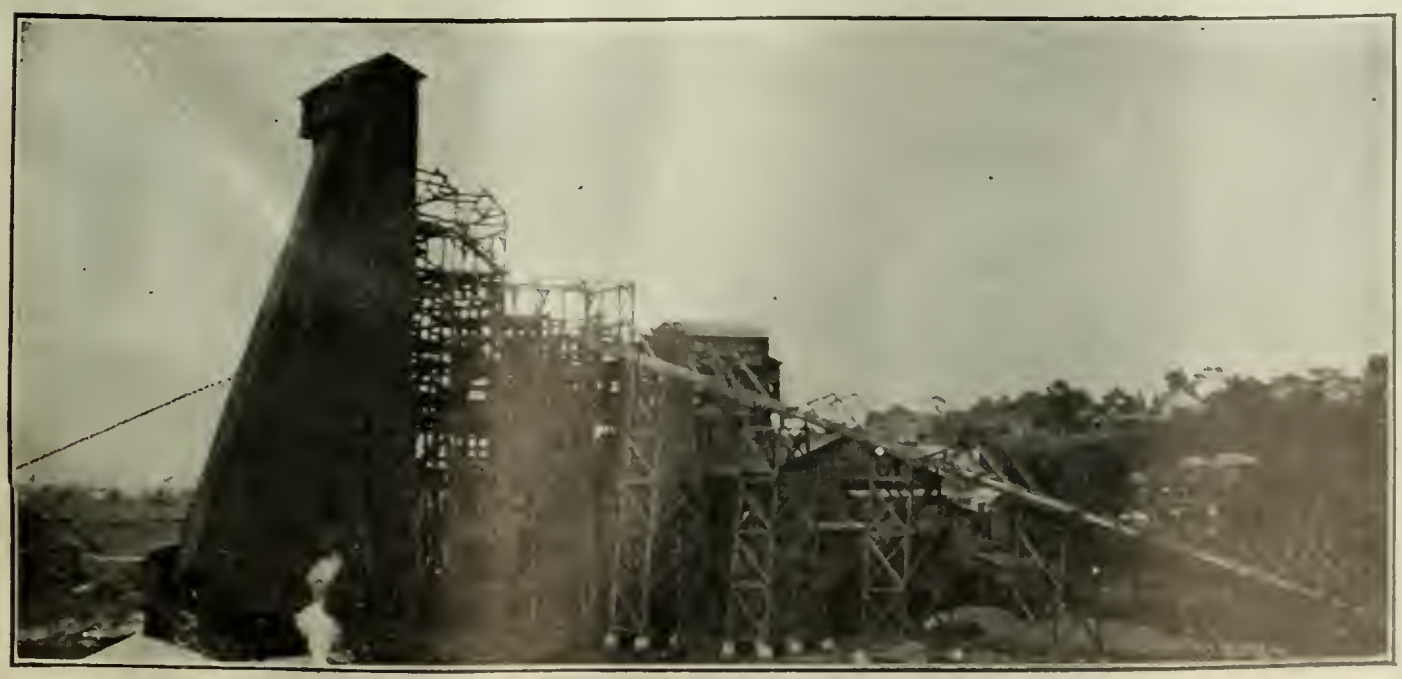
The original breaker at this colliery was built in 1888 and the first coal was run through it on June 18 of that year. The building was of wood and in 1919 it became necessary to remodel it. The work was done a little at a time, but in July, 1921, the company decided to cease operating the breaker until the remodeling was completed. This reconstruction work began at a time when the mine, according to estimates, was supposed to have been exhausted. Advances in the art of mining and not errors in the estimate enabled the company to extend the life of the mine, and it is possible that other new methods of operation will be found that will further extend the duration of the plant beyond the limit now set.

*Anthracite editor, *Coal Age*.

For this reason the Lehigh Valley Coal Co. is well justified in expending the money needed for the complete remodeling of the breaker, not only on account of the increased life of the propery, which in itself would justify such an expenditure, but also because of the probable life of the mine, which while it cannot be calculated can be surmised as being of considerable length. Many thin beds and seams which are not now considered commercially valuable are to be found in the area tributary to the colliery, and they probably will be mined by the time the coal covered by the estimate has been removed, for improved methods of mining and preparation make coal available that in earlier days could not have been operated.

In order to permit operation to continue the old tipple had been braced. The lower timbers of the old tower had become so rotten that it had settled about 2 ft. and was a little out of plumb. The company decided to remove the tower hoist which lifted the coal to the top of the breaker and to install a dragline scraper in its place. This called for the erection of a 10x42-in. flight conveyor.

Perhaps the most difficult problem encountered in the remodeling of the breaker was the removal of the old tower hoist. The following description of the manner of its razing is by J. H. Rockefeller, Jr., of the mechani-



Breaker Being Remodeled

Part of siding has been removed and the framework of the new building is practically finished. Note the ropes from the tower to the stump puller, which sprung the tower well out of plumb.



TOWER BEGINNING ITS FALL

The dynamite had to be placed in the legs of the tower with due judgment, or damage might have been done to the breaker posts that were adjacent. For this reason one-quarter stick only was used in each leg.

cal engineering department of the Lehigh Valley Coal Co. This description appeared in the *Employees' Magazine* for November, 1921. Mr. Rockefeller had charge of the wrecking of the tower for the mechanical engineering department.

"The tower was first cut loose from the main part of the breaker throughout its entire height, so that it rested on ten 12x12-in. posts, arranged in two rows of five. Holes were bored in the five posts of the outer row at points 3 ft. above the ground and in those of the inner row at an elevation 3 ft. higher. Each hole was charged with about one-fourth of a stick of dynamite, the charges in the front row of posts being connected in series and those in the back row being similarly connected but in another series.

"In the meantime a hand-operated stump puller was anchored to the ground about 200 ft. from the center of the tower in the direction in which it was desired to have the building fall. A rope from the winch was connected with two pulling ropes, the ends of which were fastened to the outside posts of the tower at a height of 140 ft. above the ground. Power was applied to the winch so that the pull on the building was 250 tons. In consequence the tower at its top was pulled away from the old structure about 6 in.

"To take up any slack that might be in the ropes and to compel the tower to fall in the desired direction, a steam locomotive was attached to them. The explosive charges in the outside row of posts were now fired. The tower started to fall. The locomotive then began to take up the slack in the rope. An instant later the charges in the inside posts were fired, causing the tower to stretch itself over the ground in the direction planned. The operation was entirely successful."

Although the locomotive which was used to pull the ropes was straining on them when the charges were fired and its wheels were spinning when the tower began to fall, the locomotive was not able to move fast enough to keep the ropes tight.

The old tower was 170 ft. high and by the use of the dragline conveyor to take the coal to the top of the breaker this height has been reduced to about 105 ft. The accompanying illustrations show the breaker before any remodeling commenced, the early stages of the remodeling, the tower in the act of falling, the cloud of dust that arose just as the tower hit the ground, and then the finished breaker. A minute or two after the tower had come to rest on the ground the cloud of dust had risen to a great height, and the air was black with the fine coal dust.

There is comparatively little difference in the methods of preparation in the old and the new breakers, but all the machinery has been made more accessible and fewer men are needed to operate the new breaker than were needed at the old. At present thirty-two men are required, whereas with the old arrangement forty-eight men were employed, a saving of sixteen men. This in one year's time will mean a large saving in the bill for the preparation of coal for the market.

The new breaker is of wood, as was the old, but the machinery is of the latest type, and the new structure with its equipment gives better results than its predecessor. This new breaker was constructed at a cost of about $225,000. Its capacity is approximately the same as that of the one it replaced, or about 1,800 tons in an eight-hour day.

The accompanying flow sheet not only shows the method of treatment of the coal but it also gives the number of tons of coal that pass through each process. In the description of the method of coal preparation that follows, the figures in the text refer to those shown in the flow sheet.

By means of a rotary dump the mine cars from the Seneca and William A. collieries of the Lehigh Valley Coal Co. are discharged into a hopper at the foot of the dragline conveyor. The coal is taken from the dump by means of this conveyor to the top of the breaker

Tower Has Just Fallen

Coal dust is beginning to rise from fallen structure. In a few minutes the dust covered everything in the vicinity. The tower was pulled over by a locomotive and a stump puller. Dynamite did the rest.





Structure After Tower Fell

Shows remodeled breaker and also the dragline conveyor and trestle which replaces the tower hoist.

and is delivered onto a set of shakers (3 and 4). From the top deck (3) of these shakers the lump coal passes to a picking table (5) and from the bottom deck (4) the steamboat coal passes to the same picking table (5), while through deck 4 the coal passes to another shaker (6 and 7).

On picking table 5 the large rock is removed from the coal and goes to the rock dump. The cleaned coal goes to the crusher rolls (8), and from these rolls it passes to a set of shakers (9, 10, 11 and 12). The coal from the top deck (9) passes to No. 3 rolls (13). The coal from the second deck (10) and from the top deck of shaker 6 and 7 can go either to the rolls (13) or can be bypassed around them to the broken picking table (14). From this picking table the coal goes directly to the broken pocket (33), and the rock goes to the rock dump.

Coal Above Pea Goes to Jigs for Cleaning

Coal that is crushed in the No. 3 rolls (13) joins with the coal from decks 11 and 12 and passes to a double set of shakers (15, 16, 17, 18 and 19). The egg coal which is taken from the top deck (15) goes to the egg hoppers (30, 31 and 32) and from these hoppers it is fed directly to the egg jigs, which are of the Lehigh Valley type, after which the clean egg coal goes to the egg pocket (39). The stove coal from the second deck (16) goes to the stove-coal hoppers (27, 28 and 29), and from these hoppers it is fed to the jigs and from the jigs to pocket 38. The nut coal from the third deck (18) goes to the nut hoppers (24, 25, and 26) and from these hoppers to the chestnut jigs and thence to the chestnut pocket (37). Pea coal, which is sized on the fourth deck (18), passes to the pea hopper (23) and then to the pea jig and the pea pocket.

The buckwheat coal, which is prepared on the fifth deck (19), passes directly to the buckwheat pocket and is ready for shipment to the market. The smaller sizes of coal go to another set of shakers (20 and 21) and the rice and barley coals are separated and go to their respective pockets or to the boiler plant to be used as fuel. The slush, which passes through the barley shaker, goes to the slush shaker (22) and then to the silt bank, and the coarser material goes to a car and is redumped and sent through the pocket. Practically all the rice and barley coal produced at this colliery, together with part of the buckwheat coal, is used for boiler fuel and is sent to the boiler house. The rock that is separated from the coal by the jigs is taken to the rock dump.

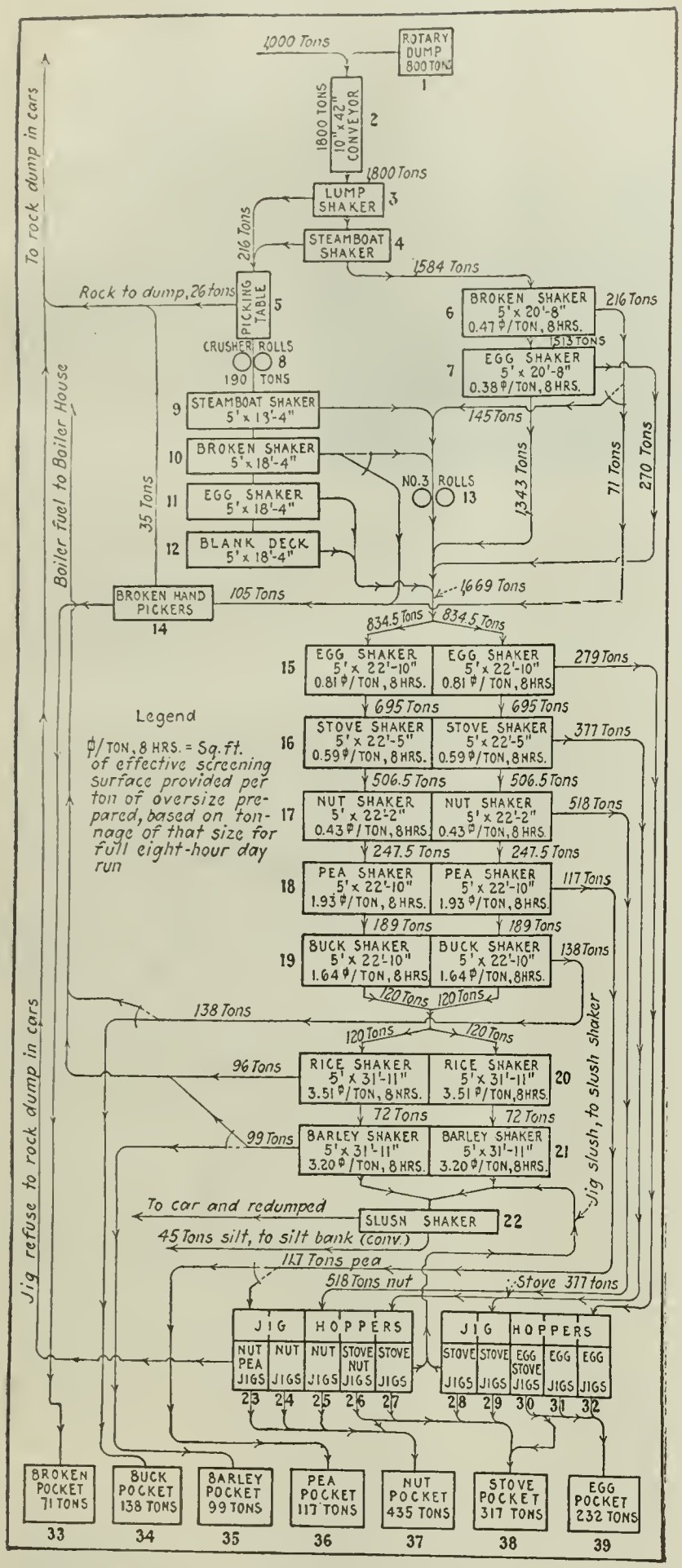
Interesting features in connection with the flow sheet of this breaker are the figures giving the distribution of the tonnage. They show the quantity of coal prepared in each jig and shaker and the waste material that has to be handled in the form of rock and also the areas of the several screens.

Before leaving the description of this breaker I want to quote once more from Mr. Rockefeller's article: "With the razing and remodeling of the Seneca breaker comes to the surface a most remarkable fact concerning its hoisting engineer. Thomas Langan was placed in charge of the tower hoisting engine when the breaker was started. He had charge of this engine continuously until it hoisted its last trip on July 19, 1921, a total of 33 years. The efficient care given by

New Breaker

By reason of the introduction of the dragline conveyor the new structure is about 65 ft. lower than the old building.





FLOW SHEET OF SENECA BREAKER AS REBUILT

Where forty-eight men were formerly employed, thirty-two men will now do the work, a reduction of one-third in the operating force, yet the tonnage will be in no way reduced

the engineer is shown by the maintenance record of this engine. During the 33 years the following parts were replaced: Two sets of piston rings and three pinion wheels.

"The fact that the original brass of the crankpin, wristpin and crosshead shoe were in use when the breaker shut down shows how efficiently the engine was cared for. It was lubricated properly every day, the wedges drawn up, and the engine at all times kept in proper condition. The cylinders never had been rebored. They showed only $\frac{1}{32}$ in. wear.

"The engine during the 33 years handled approximately all the 8,500,000 tons of coal which has been shipped from this colliery. This means that this engine has hoisted about 12,000,000 tons of material, including boiler fuel and refuse, making in so doing approximately 6,000,000 hoists. Figuring 225 ft. of travel of cage per hoist, these cages have traveled approximately 256,000 miles, or about ten times around the earth."

The engineer who took such good care of his engine is entitled to much honor for his painstaking zeal, and the Lehigh Valley Coal Co. has not failed to show its appreciation of his services. In every company there are men who show a devotion to their work which the mine officials should not fail to recognize by due commendation and acknowledgment.

Zeigler Mine Copied Wehrum's Methods

By Clarence R. Claghorn
Baltimore, Md.

IN E. W. DAVIDSON'S article on "Zeigler No. 1 Mine," in the May 25 issue of *Coal Age*, p. 873, E. L. Berger, superintendent of that mine, is quoted as believing the rotary dump in use at this mine "is the first underground rotary dump ever operated."

He may be interested in knowing that two-car (tandem) power-driven rotary dumps were used underground at the shaft mines of the Lackawanna Coal & Coke Co. at Wehrum, Pa., in 1903, in connection with underground bins, pneumatic gates and self-dumping skips. In fact, at Zeigler not only the dumps but other equipment was, in many respects, patterned after the Wehrum installation and built by the same firm.

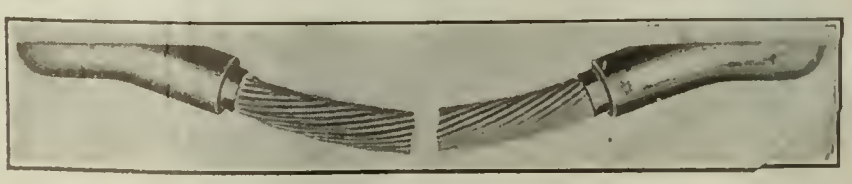
This installation, including the rotary dumps, the bins, the bin gates and irons and the skips were covered by patent No. 811,129, applied for May, 1903, and issued August, 1906, so the Zeigler installation was anticipated by some fourteen years.

Copper Bond with Steel Terminals Suited For Electric Welding at Track Joints

IT IS now well known that the joining of steel to steel is the easiest form of electric welding. Recognizing and utilizing this fact the rail bonds shown in the accompanying illustration have been devised. These consist of copper bonds fitted with steel terminals slightly rounded so as to make it easy to join them to the rails.



As may be seen, these bonds are of two types—that known as the A.W. 7, which has one strand of any desired length and the terminals of which are welded to the base of the rail, and the A.W. 8, which is short, U-shaped and double stranded and is intended for attachment to the ball of the rail.



In both cases the ends of the strands are protected by a copper sleeve. These bonds are manufactured by the Ohio Brass Co., of Mansfield, Ohio.



COAL TRAIN READY TO LEAVE BUTONG FOR MALANGAS, ZAMBOANGA PROVINCE, MINDANAO, PHILIPPINE ISLANDS

Public Ownership of Coal Mines Causes Much Loss to Philippine Government and Affords Little Coal

National Coal Co. Stock Nearly All Held by Government—Coal After Five Years' Work Costs, Without Interest but Including Development, $17.50 Per Ton—First Coal So Dirty It Wouldn't Burn

By Roy C. Bennett
Manila, P. I.

INDICATIONS are that the Philippine Government, with approximately four and a half million pesos* invested in coal-mining enterprises, is about ready to retire from this business and let someone who "knows the game" dig the insular fuel supply. Recent actions of the National Coal Co., a government concern whose head offices are in Manila, strongly suggest this outcome. C. Russell, manager of the coal company, said that the business in its present condition cannot well be turned over to anyone else, but that within six months the mine will be so far developed that it will be possible, he anticipates, for the government to lease the mines to an operating company on a royalty basis.

By this time the company will have invested another half million pesos and will have brought prospecting and development to such a stage that, according to the manager, the company can tell exactly what coal it has in sight. It is the opinion of Mr. Russell, and apparently of the board of directors as a whole, that the government couldn't "get out from under" just now without a heavy loss, but that the time is not far distant when it can.

No One Wants to Be Partner with Government

The National Coal Co., which has brought much criticism on the Philippine Government, was authorized and established by an act of the Philippine Legislature in 1917. The organic act specified that at least 51 per cent of the stock should be government-owned, and provided for the holding of the other 49 per cent privately or by provincial or municipal governments. The company has a capital stock of P3,000,000, all subscribed and paid in. At the present time the government owns all the stock, except P18,000 which is in private hands. The investments to date represent the sum total of the capital stock plus P2,000,000 which was borrowed from the National Development Co., another government organization. The company still has left about a half million of the loan it obtained from the development company.

Warren D. Smith, chief of the division of mines, Philippine Bureau of Science, who knows more than any other person about Philippine mineral resources and Philippine mine development, is a strong advocate of the government's getting out of the coal-mining business. In fact, after he had investigated the National Coal Co. properties he submitted a report in which he painted a very discouraging picture of the future prospects of the company, but he now gives the company full credit for the progress made since his report was written.

All Government Ownership Is Undesirable

In a report on mineral resources, just off the press, Mr. Smith says in part: "My investigation of the National Coal Co. has led me seriously to question if national mining projects, whether controlled by Filipinos, Americans or any other people, are wise. The reasons for the difficulties which this company has experienced are many, and not all of them should be laid at the doors of the Philippine Government or the Filipinos. Inexperienced Americans on the board of directors are equally responsible, but the gravest objection of all to these national projects is that they are likely to become hopelessly mixed in politics. A much safer plan and one that doubtless would bring results would be to subsidize worthy private companies, the government exacting some security for the money so lent. If the government received no more than the interest on the loan it would be amply repaid."

Mr. Smith says that coal is to be found in some quantity on practically every one of the larger islands of the Philippine archipelago. "There is no question," he says, "about the potential mineral wealth of the Philippine Islands. All those qualified to pass judg-

*A peso is 50c. in United States currency.



Power and Receiving House

Looking west at Licos. This is, be it remembered, a government mine. An aerial tram brings the coal over the hills to this point. The functions of these various sheds and their relation it would be difficult to discover. One evidently contains two boilers and the other receives the buckets on the aerial tramway.

ment are convinced that deposits of merit are here, even though not all are extensive. Americans and other foreigners have attempted to do what they could to develop the resources. Their efforts have not always been encouraged. There is a definite responsibility in this direction which the Filipinos for some reason or other have evaded. It must be realized sooner or later that the business of mining is carried on successfully by only a few nations and that an agricultural people like the Filipinos cannot hope to master alone the complicated technology of this, the most difficult and exacting of all industries."

Company Averaged 80 Tons a Day in 1921!

The report of Mr. Russell, general manager of the company, says the National Coal Co. produced about 23,400 tons of coal in 1921. It has mines on two islands, two on Mindanao and one on Cebu. The Mindanao properties, which, according to the general manager, are the more promising, are in the southern part of that island, one being referred to usually as the Malangas property and the other as the Butong field. Much of the money spent by the company at these places has gone for diamond drilling and the driving of prospect openings to determine the quantity of coal available. Yet much of the criticism directed against the company came as result of the fact that money was spent for surface development before underground investigation had proved the presence of coal in paying quantities.

The last annual report of the board of directors to the stockholders, written by the general manager and signed by Jose Paez, as acting president of the company, showed a total expenditure of P4,400,000 to the close of the 1920-1921 fiscal year. The report explained expenditures as follows: "They have built 7 km. (4⅓ miles) of railway and 4 km. (2½ miles) of cableway in Cebu, connecting the Compostela mine with the Philippine Ry., at a cost of P587,220. In Mindanao, on the east coast of Sibuguey Peninsula, they have a wharf and 12 km. (7½ miles) of railroad connecting the port of Malangas with the Butong coal-field system. This system, including all construction camps, coal bunkers under construction, railroad equipment, etc., cost P1,622,510.

"The Cotas field, 3 km. (1¾ miles) from Butong, is connected to the railroad by a narrow-gage tramway that cost P36,220. An attempt was made during 1917 and 1918 to reach the Cotas field by the Sibuguey River. For the construction of the Payao camp at the river mouth, for the purchase of launches and cascos, now condemned; and for certain development work on coal fields near Payao that were later abandoned P466,760 was expended.

"The sum of P215,640 has been expended on exploration work; P60,000 on diamond drilling, not including drilling equipment; P70,000 on topographical surveys; P116,000 on miscellaneous equipment, and P120,000 on floating equipment. We have spent a total of P533,000 on mine development and equipment—P165,000 in Compostela, P259,000 in Butong and P109,000 in Cotas."

Last year saw the first real progress toward the exploration of known seams of coal and the development of mines, most of the time prior to that having been devoted to the construction of the transportation systems mentioned, the construction of camps and development of surface exploration work.

As to progress during the last year the annual report says: "The most important result obtained during the year consisted in the development by diamond drilling of the semi-anthracite coal seam at Butong in Mindanao. This work has proved up a block of coal that positively contains more than two million tons and indicates beyond any reasonable probability of doubt that the bed extends for a considerable distance beyond the limits of the area drilled. At present any estimate of the extent of the bed is nothing more than a guess but it is reasonably safe to assume that at least ten million tons of coal exist at Butong."

Coal Bed at Butong Is Over 8 Ft. Thick

Mr. Russell, speaking some months after this report was written, stated that there is a bed 8 ft. 6 in. thick here and that after using the diamond drill a year and a half he was able to say 5,000,000 tons of coal had been proved and that this was only a small fraction of the whole coal field.

In Cebu the government operated on leases held by old Spanish companies. These leases cover about 5,000 acres, under 10 per cent of which area coal is found. Four beds are being worked, the total thickness being about 12 ft. and the distance from the shallowest to the deepest being about 300 ft.

The following is a Bureau of Science analysis of the different coals mined by this company:

	Butong Semi-Anthracite	Cotas Bituminous	Cebu Sub-bituminous
Moisture	1.63	1 54	9.93
Volatile matter	15.05	26.83	40.25
Fixed carbon	80.20	65.90	46.55
Ash	3.12	5.73	3.47
Sulphur	0.70	0.90	0.77
Coking quality	Non-coking	Coking	Non-coking
Total B.t.u.	15,309	14,816	12,466

The Cebu coal air slacks, but the Cotas and Butong coals, which are practically smokeless, do not. None of the three grades is subject to spontaneous combustion. Little trouble with water is experienced in any of the mines. In Cebu the coal beds dip and strike irregularly, but drillings have indicated that the Mindanao seams are more regular. The Cebu deposits have suffered much through the work of native miners who dug holes a short distance into the beds and then took out large quantities of coal, letting the earth fall in behind them. Large bodies of coal between these little mines have been made practically unminable.

Dirty Coal Would Neither Burn Nor Sell

As to marketing the coal the general manager wrote in the annual report the following statement:

"Placing the coal in the market has been our principal difficulty. The first experiments with run-of-mine coal were failures, it being necessary in every case to mix our product with some bituminous coal before it would burn. We discovered that the poor results were caused by an excess of ash, a large quantity of shale being mixed with the coal during the process of mining. After this shale was removed by screening and washing we were able to obtain satisfactory results. There is no question as to our ability to sell at least 200,000 tons of semi-anthracite coal annually, provided we can produce it at a price that will allow us to compete with foreign coals."

The company formerly experienced much trouble from sickness among the employees in the Mindanao camps, where malaria was prevalent until steps were taken to remove the cause and to improve health conditions. Mr. Smith considers the mining laws in the Philippines adverse in several respects to mine development. In this connection he mentions high taxes for mines, adverse leasing regulations and other things needing reform. He particularly considers "political instability" a deterring factor.

As to labor conditions the following is quoted from the general manager's report:

"It is difficult to give exact data on production cost at our present stage of development. It may be said, however, that it is possible in both Cebu and Mindanao to mine coal from the rooms and place it on the tipple at a cost of less than P4 per ton. It might be said with equal accuracy that every ton of coal produced during the year has cost, not including interest charges, but counting overhead, development expenses, railroad maintenance and operation, operation of our launches, etc., more than P35 per ton. Either statement is true but neither will give an accurate idea of the real cost of coal production. We estimate that the cost on board ships alongside the wharf in Malangas will average P8 per ton when the mine is fully developed. This allows for the depreciation of equipment as well as the proper return of the funds invested with interest, but is dependent upon the property's being developed up to full capacity. It is impossible to estimate on Cebu without more accurate information regarding the quantity of coal available. At present we have less than 200,000 tons assured. Assuming that we have 1,000,000 tons available, a not improbable amount, the cost of coal delivered in Cebu, when the mine is fully developed, should not exceed P10 per ton including all charges.

"There are two conditions which make it difficult to market coal cheaply in the Philippines, transportation and labor. It costs us more than P11 per ton to ship coal from Malangas to Manila, whereas Japan often ships coal to Manila at as little cost as 6 yen ($3) per ton. While local production costs at the mine will compare favorably with those in the United States or Europe, the cheap labor of China and Japan, especially the former, will render competition difficult.

Hard to Pay Dollar and Compete with Nickel

"Chinese laborers in Borneo are contracted for at 30 centavos (15c.) per day, without subsistence. They are experienced miners, and such prices enable certain Borneo mining companies to produce coal at a low cost in spite of otherwise unfavorable conditions. In the interior of China, in the region where the Peking syndicate is operating, miners get less than 10 centavos (5c.) per day. Contrast this with Philippine conditions, where inexperienced miners are demanding, and obtaining, P2 ($1) per day."

In order to provide efficient supervision in the mines and to guarantee a supply of skilled labor the company recommends that a technical night school be conducted for the laborers.

The directors' report, which is in line with numerous

Cableway at Licos

As seen from above terminal of aerial tramway looking east toward Basak. After four years of operation and the expenditure of two and a quarter million dollars, the National Coal Co., a government operation, produced in 1921 only 23,400 tons. It must be remembered, however, that much prospecting and diamond drilling and surveying has had to be done, and wharfs, railroads and camps have been constructed.





BUTONG SHAFT, TIPPLE, SURFACE TRACK, ROCK DUMP AND VILLAGE

statements made by the general manager, urges that "the Mindanao coal field be developed to a production of at least 1,000 tons daily or until the maximum commercial output is attained; also that the Cebu field be fully developed if the diamond drilling indicates a quantity of coal that will justify the necessary additional investment."

Coal imports to the islands in 1921 were as follows:

Year	Dollars
1917	1,538,235
1918	2,331,174
1919	3,890,653
1920	5,396,538
1921 (first half year only)	2,090,248

The bulk of the imported coal is from Japan, with substantial quantities from Australia and China.

The latest reports compiled show thirty odd coal-mining companies operating in the Philippines, but most of them work on a very small scale, operating on revocable permits from the government.

The National Coal Co. is not the first governmental body to try the mining of coal in the Philippines. The United States Army attempted it about 1911 and 1912. The scene of action then was the west side of the island of Batan, where a little coal of a fair bituminous grade was mined. The seams were found to be very irregular and things didn't go well at all, so the mining business, as far as the U. S. military was concerned, was declared closed, and the books showed a loss of some hundred thousand dollars. Thus did the U. S. Army learn that coal mining was not a proper government enterprise.

Plastic Fuel from Low-Grade Coal and Oil

IN THE issue of *Coal Age* of June 8, p. 953, an article appeared entitled "Plastic Fuel Can Be Made of Low-Grade Coal and Oil and Can Be Coked Even If Non-Coking Coal Is Used." This article had a subtitle in which appeared the words, "With fine grinding almost all but inherent ash is removed by Trent Process." Exception having been taken to this wording, Walter E. Trent replies to a letter to one of the editors of *Coal Age* in the following words:

"This discussion as to the removing of inherent ash has been presented to me regularly for the past three years, first by the U. S. Bureau of Standards, then by members of the U. S. Bureau of Mines and others, all taking the stand, exactly as you do, that the inherent ash is the silica or aluminum silicate, being the insoluble part of the original soil and mineral matter that found its way into the original wood.

"About that side of the question we need have no discussion, but as to the grinding of the material sufficiently fine to detach it from the carbon, I must state that we do separate a large percentage of that impurity. We take a perfectly black piece of coal, showing no impurities whatever; grind it to approximately 200-mesh, forming of course, a large percentage of 300-, 400-, 500-, and even 1,000-mesh material. This actually separates a large part of the inherent ash, and thus its removal by the Trent Process is effected.

"I do not understand that you believe the inherent ash to be other than physically mixed in very small sizes, which is correct; but a great many people have claimed that the silica and aluminum silicate were chemically incorporated and could not be separated. This is absolutely incorrect. You will find that the U. S. Bureau of Mines, the U. S. Patent Office and everybody who has investigated our process willingly admit that we do remove inherent ash, in so far as it is physically detached from the carbon, and in some cases it amounts to from 60 to 90 per cent.

"My French company, for instance, has seven different kinds of French coals, the ash in which it is reducing to 1 per cent. I have only two coals that give this great reduction, but every single coal shows that inherent ash is removed. This question has arisen in all the principal patent examining offices in the world and has been conceded by them, and my patents are allowed in the United States, France, England, Holland, Germany and other countries.

"I am sending you copies of three patents that relate to our coal cleaning; one deals with the detachment and separation of inherent ash without any oil reaction (No. 1,420,163); another deals with the oil reaction alone (No. 1,420,164), and the third case deals with the physical detachment by pulverizing, the separation of the ash from the carbon by the oil reaction, and the distillation of the amalgam (No. 1,420,165). Will you kindly give your special attention to the parts of these patents that are marked with pencil, as they relate to the particular subject on which we are corresponding?"

Coal Age is informed that the coal, oil and water in amalgamation are agitated by paddle blades rotating at a speed of 150 r.p.m. and that where the coal is pulverized to a fineness such that it will pass readily through a 200-mesh screen a mixture of 62 gallons of light fuel oil to 2,000 lb. of coal will produce an amalgam in granules about ⅛ in. in diameter. The article stated 1,000 r.p.m. in the one case and 150 lb. of coal in the other.

J. J. RUTLEDGE, superintendent of the central district experiment station of the Bureau of Mines at Urbana, Ill., calls our attention to the fact that the bottom layout at the Glen Rogers Mine, West Virginia, described by him before the Illinois Mining Institute and reported in *Coal Age* of June 22, 1922, page 1013, as designed by Carl Scholz was in fact designed by Oscar Cartlidge, assistant to Mr. Scholz.

The Case Against Use of Purchased Power at Coal Mines*

Steam Hoist with Mixed Pressure Turbine Advocated—Cost of Stations and of Attendance Thereat Omitted in Mr. Clayton's Figures—At Nason Plant Power Cost Is 10c. Per Ton

By C. W. Smith†
Chicago, Ill.

IN A PAPER relative to power stations at mines a brief review of the development of mine power stations should be made in order to understand the conditions that exist at many mines even at this time.

The earlier mines used steam power only for hoisting, for ventilating and for pumping water from the shaft bottom. Mine power plants at this time were very crude. The hoist engines were small, as the cars hoisted seldom held more than a ton of coal and the shafts usually were shallow. Fans were of the old paddle-wheel type and were operated by simple slide-valve engines. The pumps at the shaft bottom were operated by steam lines running down the shaft. The boilers operating these plants were either of the long cylindrical type or its later development, the long boiler with two large flues. The coal was mined by hand and hauled to the shaft by mules. Any water inside was bailed by hand and hauled to the shaft. The coal was prepared by bar screens. At this time slack coal was either left in the mines or dumped in waste piles on top.

The next development in mining practice was the introduction of rope haulages for handling longer trips and negotiating heavier grades. The engines for operating these were steam-driven and were located either on top or underground near the shaft. This innovation represented a considerable advance in haulage practice and resulted in a remarkable increase in tonnage at most mines where the installations were made.

About the same time compressed-air puncher machines were introduced to enable more coal to be mined.‡ This in part was made necessary by improvements in haulage.

These two developments were the last important changes made before the introduction of electricity into the mining industry. Both greatly increased the use of steam at the mines and resulted in the building of more modern boiler plants. Horizontal return-tubular boilers were installed and the power plant became the real heart of all operations about the mine.

Soon after the World's Columbian Exposition, in Chicago, many experiments were made in the use of electric locomotives for mine haulage and during the next ten years much progress was made along this line until, by 1900, many successful haulage systems were in operation. During this same time experiments were made with electric mining machines, but here progress was not so rapid, for the type of mining machine then in use was not adapted to an electric drive and it was necessary to develop the chain mining machine, a type hitherto unknown. Even after the machines had been fairly well developed the miners' organization in many instances, by opposition, prevented successful operation.

With the introduction of electricity into the mines little change was made in power-plant practice. The steam haulage engines and air compressors were replaced by steam-driven electric generators. The generator engines were of up-to-date design, and as transmission losses were much reduced the steam consumption was greatly lowered. Often after electrifying a mine it was found that even in a plant that had been previously overloaded a considerable reserve boiler capacity was available.

Boiler plants at this time consisted generally of hori-

*Article entitled "Power Station at the Mine," read at Illinois Mining Institute meeting, June 9, on board the "Golden Eagle" on the Mississippi River. A reply to J. P. Clayton's article read at the same meeting and appearing in last week's issue of *Coal Age* under the caption "The Case for Purchased Power at Coal Mines."

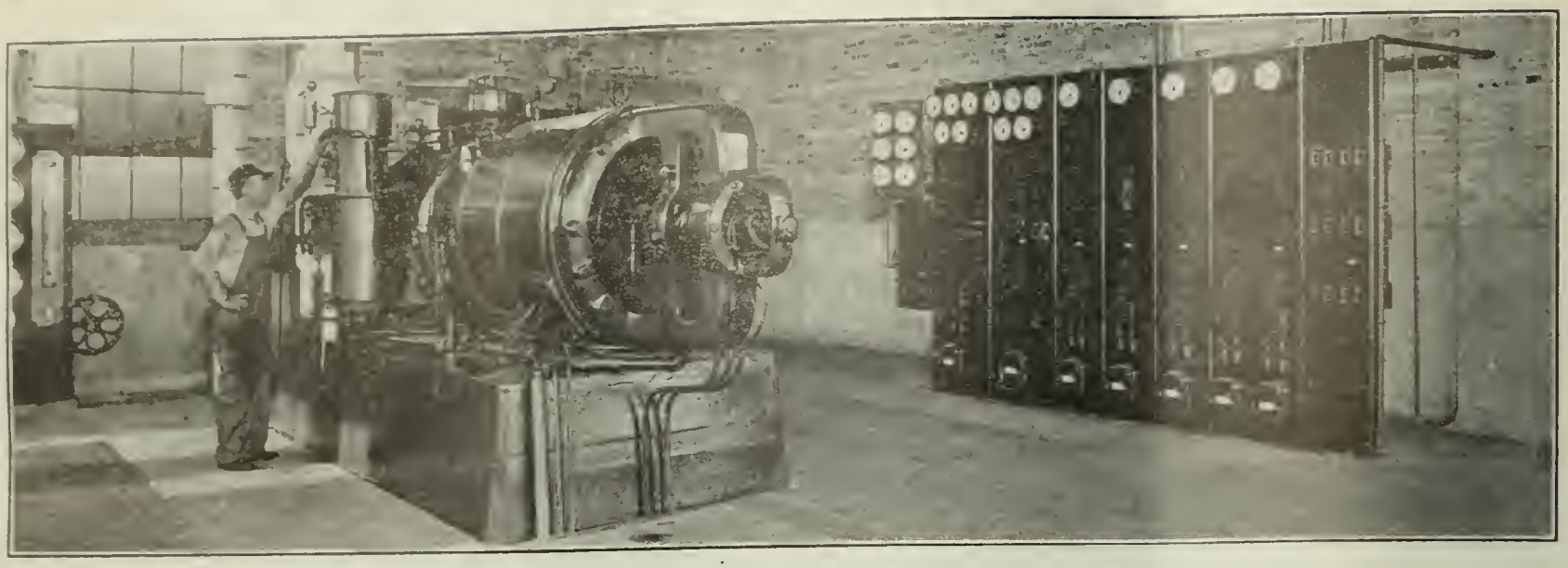
†Chief engineer, Nason Coal Co.

‡This probably was true in Illinois, which at that time was quite backward, being a new field. In Pennsylvania rope haulage much antedated compressed-air punchers.—Editor.

Mixed-Pressure Turbine

A 1,000-kw. machine at the Nokomis mine of the Nason Coal Co. Power at this plant costs 5.79c. per kw.-hr. generated, but all the power is not used for generating electricity, the hoist being run by steam. Furthermore, the mine was working at that time at only 70 per cent of capacity. The cost per ton was 9.86c.





HIGH-PRESSURE TURBINE OF 300-KW. CAPACITY AT NOKOMIS MINE

One of the machines that purchased-power makes unnecessary. Mr. Smith makes it plain that although with central-station power less machinery is needed, the cost of maintenance, interest and depreciation of converting machinery and the wages of its attendants must be added to the cost of the purchased power if the cost of operating under central-station power is to be compared with the costs of the isolated station.

zontal return-tubular boilers, often as many as ten or twelve in number. Stacks were small and not over 40 or 50 ft. high. The boiler settings were of brick and they usually were in poor condition. They were fired by hand, and waste coal was used, for it must be remembered that at this time slack had little or no commercial value. The plants usually were built piecemeal, that is, boilers were added whenever the steam supply became short, and as a result piping and header lines often were improperly installed. No thought was given to efficiency of operation, because labor was cheap and coal was had for practically nothing.

From 1900 to 1910 the coal industry of Illinois marvellously developed. Many large mines were sunk and the maximum daily tonnage grew from about 2,000 in 1900 to about 4,000 in 1910. Coal production increased greatly, and most of the newer mines were well laid out and designed from an engineering standpoint. Power-plant design lagged, however, for two reasons. First, direct-current power was used entirely about the mines, and consequently no important advances could be made in its distribution. Second, boiler plants were designed as simply and as near fool-proof as possible, because it was then thought that the coal-mining organization was too busy producing coal properly to look after complicated boiler plants. The result was that simple rules of thumb and prevailing mining practice were followed in the building of this portion of the mining plant.

Mines Outgrew Their Direct-Current Plants

As a result of this system by 1910, or a little later, many of these large mines had been extended to hitherto unthought-of distances and were beginning to have great difficulty in supplying adequate power to the working face. With the direct-current power used the only way to overcome this condition was to put in more copper feeders, and in many cases the cost was almost prohibitive.

In 1912 sinking of the Nokomis mine of the Nason Coal Co. began. In 1913 coal was reached, and the first mining machines were installed. At this time the Central Illinois Public Service Co. entered this field, and after conference with their representatives and with representatives of the Sullivan Machinery Co. the Nason company decided to install the first alternating-current mining machines used in the State of Illinois. After these had proved successful in operation it was decided to install an underground motor-generator set to supply current for the trolley locomotives.

Negotiations with the State Mining Board were necessary before it would permit the transmission of high-voltage current underground, even in armored cables, but all objections eventually were overcome and the installation was completed. Power was purchased from the Central Illinois Public Service Co. at 2,300 volts and stepped down to 275 volts underground for use in the mining machines. The motor-generator sets for driving the trolley locomotives and for charging the storage motors were driven directly by 2,300-volt alternating current. Subsequently this installation was expanded and the mine now has thirty mining machines and seventeen storage-battery and four trolley locomotives in operation.

Couldn't Mix Isolated and Purchased Power

This system of power generation and distribution proved economical and satisfactory. It solved the problem of power transmission in coal mines. However, as Nokomis was equipped with a boiler plant and a steam hoist, the system of purchasing a portion of the power and producing the rest proved to be too expensive. In periods of slack work it was necessary both to maintain a boiler plant and to pay the primary charges to the power company.

During certain seasons of the year power interruptions were numerous, occasioning serious delay and many losses. The combined power costs averaged nearly 15c. per ton. Finally in 1919 and 1920 two or three successive increases in purchased-power rates raised costs so that it became necessary to seek relief. As no reduction of power rates could be expected, the only alternative was to discontinue the purchase of power.

With this in mind, the power conditions at the mine were carefully studied. The plant then installed consisted of six horizontal return-tubular boilers 84 in. in diameter and 20 ft. long, each of 175 b.hp. These furnished steam to a pair of 28x48-in. Danville hoist engines, to an 18x18-in. fan engine and to some miscellaneous car-puller engines, shop engines and pumps.

At first the installation of a high-pressure turbine was recommended, but this would have made necessary a great increase in the size of the boiler plant. Finally

it was proposed that all the equipment be electrified except the hoist engine and that a mixed-pressure turbine be installed to be operated by the low-pressure exhaust steam from the hoist. C. M. Garland, of Chicago, who recommended this installation, gave it as his opinion that no additional boiler power would be required to operate this plant. After careful consideration of this project Mr. Garland was commissioned to proceed with the installation. The plant was put into operation in June, 1920, and no additional boilers were required.

The new plant consists of a 1,000-kw. Ridgway mixed-pressure turbine equipped with a surface condenser and a large Rateau regenerator, and a 300-kw. General Electric turbine equipped with a jet condenser. A complete switchboard was installed and equipped with sufficient meters to measure the power each department consumed.

As the mine did not operate steadily during the latter part of 1920, no reliable figures as to the cost of power were available until the first three months of 1921. The cost of operating the power plant during January, February and March, 1921, is given in Table I.

TABLE I. COST OF OPERATING PLANT OF NASON COAL CO.

Engineer	$777.36	
Firemen	2,715.04	
Handling ashes	551.81	
Cleaning boilers	181.94	
Oilers	488.91	
Electricians	365.33	
Miscellaneous	7.25	
Total operating labor		$5,087.64
Boiler-coal cost		11,102.12
Depreciation and repairs		4,461.56
Interest		2,676.94
Taxes		892.31
Total power cost		$24,220.57

The total production of the mine during this period was 245,622.05 tons. On a per-ton basis this cost was:

	Cents
Operating labor	2.07
Boiler-coal cost	4.52
Depreciation and repairs	1.82
Interest	1.09
Taxes	0.36
Total cost	9.86c.

The total number of kilowatt-hours generated was 418,300 and the cost per kw.-hr. was 5.79c. During this period the mine was operating at only 70 per cent of full capacity. So it is probable that in periods of full-time operation the cost per ton would be reduced to approximately 7c. This figure includes the cost of all power used about the mine, both electric and steam. The cost per kilowatt-hour produced is high because in these figures the cost of the steam for the hoist has been combined with the cost of the current produced.

Table II has been taken from Mr. Clayton's paper:

TABLE II. COST OF PURCHASED POWER AT THREE KINCAID MINES

Mine	Tons of Coal Produced	Days of Operation	Kw.-Hr.	Cost of Purchased Power	Cost of Power per Ton, Cents	Kw.-Hr. per Ton
7	818,400	219	1,901,496	$41,116.26	5.04	2.33
8	767,852	209	1,950,600	47,525.81	6.10	2.55
9	585,286	236	1,350,200	29,222.48	4.98	2.31
Total	2,171,538	664	5,202,296	117,864 55		
Average	723,846	221.3	1,734,099	39,288.18	5.43	2.40

The above figures tell the whole story as far as the power company is concerned, but they are only the beginning as far as the mining company must figure. The costs given above represent the cost of power at the transformation station. In order to get the figures to the same basis as those I have given, the cost of operation of the power plant, exclusive of the hoisting engineers, must be added. In mines hoisting 4,500 tons, with electric hoists, it is customary to have an attendant in the power plant to look after the machinery, circuit breakers, motor-generator sets, etc. This will add one man at $7.25 per day for a total of 664 days to the above figures.

Depreciation, repairs, interest and taxes on the hoisting machinery, hoist and power buildings, foundations, etc., also must be figured as part of the power cost. At each of these three mines the cost of such equipment probably was $100,000.

Then, too, these three mines apparently all operate from one maximum-demand meter because the combined maximum demand is only 2,232 kw. If each were operating independently the maximum demand probably would be about 1,100 kw. per mine.

Taking these factors into account, the revised power figures for these mines would be as in Table III.

TABLE III. COST OF PURCHASED POWER AT KINCAID MINES WITH ALLOWANCES

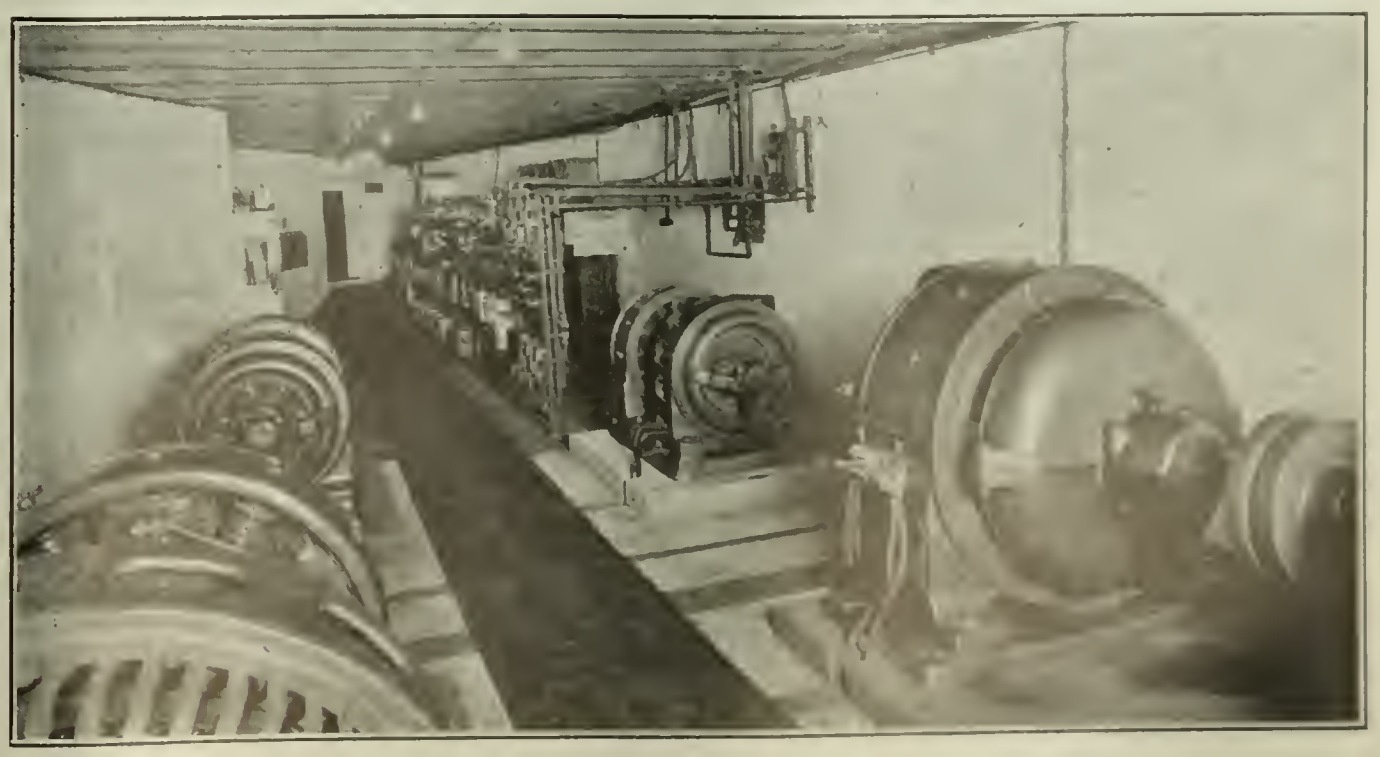
Purchased power	$117,864.55	
Allowance for maximum demand	25,740.00	
Power-house attendants	4,814.00	
Depreciation and repairs	30,000.00	(10 per cent on $300,000)
Interest	18,000.00	(6 per cent on $300,000)
Taxes	6,000.00	(2 per cent on $300,000)
Total cost	$202,418.55	

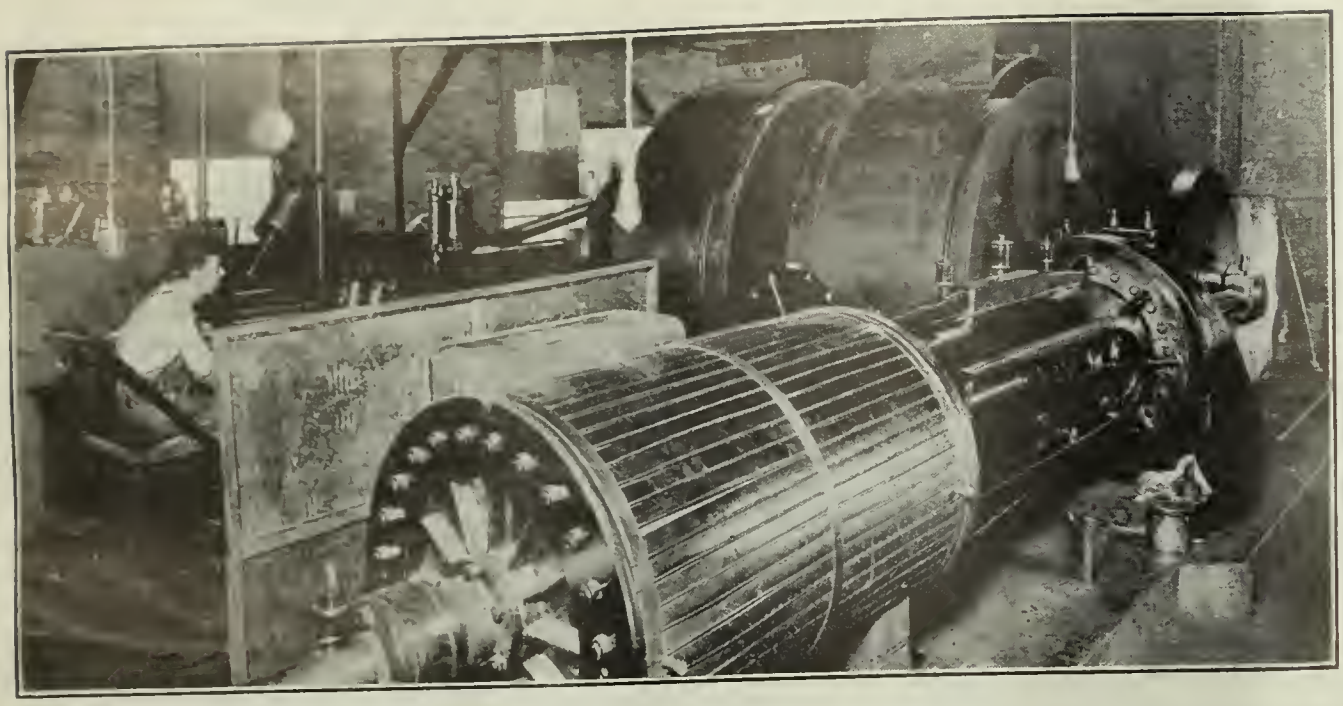
On a cost per ton basis this would figure as follows on the 2,171,538 tons produced:

	Cents
Purchased power with allowance for maximum demand	6.61
Labor	0 22
Depreciation and repairs	1 38
Interest	0.83
Taxes	0 27
Total cost per ton	9.31

Underground Substation

Sub-generating station and switchboard at coal level in the Nokomis mine. This would be considered a plant of neat appearance even if on the surface and in plain view. For an underground substation it is unusually attractive. The Nokomis mine was the first to install alternating-current mining machines in Illinois. This was back in 1913.





Steam Hoist

Driven by a pair of 28 x 48-in. engines. This hoist has not been discarded for an electric unit, but the exhaust steam from the engines is used for generating electricity for the running of the electric plant.

During this period these mines were operating at about 74 per cent of capacity. It is apparent from a comparison of these two tables of figures that with purchased-power rates as they are now a mine equipped with a mixed-pressure turbine plant can operate as cheaply as can a completely electrified mine.

The principal advantages to mine operators in having the power plant located at the mine are as follows: (1) The entire operation is under control of the management. (2) Mechanics and electricians already in the employ of the mining company can operate and maintain the plant with little additional cost. (3) Fewer losses of operating time due to power interruptions will result. (4) Power costs in many cases are less than the cost of purchased power. (5) When the mine is operated irregularly a large primary charge does not have to be paid each month. (6) Alternating current is being more generally used about coal mines, so that an alternating-current plant can be built, and the power that it generates can be transmitted as effectively as purchased power. (7) Smaller initial investment is necessary in opening up a large mine, where a future mixed-pressure plant is contemplated, than where a completely electrified mine is planned.

Would Have Mine Plants Self-Contained

It is becoming the practice of all large corporations to make their plants as self-contained as possible. Large utility companies are purchasing their own coal mines and operating them, even though their business is that of generating power. Railroads long ago purchased mines to assure their own full supply. The larger oil companies and steel companies are doing the same. A large coal company or corporation with millions invested in its mining plants cannot afford to have the very operation of those plants entirely dependent upon something beyond its control.

Within recent years the mines have become so large and their organization so complex that the operation of a power plant is a mere additional detail. Large mines must have skilled engineers, mechanics and electricians to maintain the mining equipment, and these men are capable of properly caring for a large power plant.

The chances of interruptions and the consequent loss of tonnage are much less with the power plant at the mine than where the current is brought in over 50 to 100 miles of transmission lines. At Nokomis only 15 minutes have been lost on account of interruptions since the power plant was put into operation. When power was purchased such interruptions averaged about 15 minutes for each operating day.

Power costs in many cases are less with the power plant at the mine than with purchased power. This, of course, depends upon the wage scale at the mines and upon the purchased-power rates. Large completely electrified mines have a large maximum demand and therefore a large primary charge. An article in *Coal Age* on May 18, 1922, by Eugene McAuliffe, who operates such a mine, shows that when the operating time is halved, the power cost is doubled. This is not true with a power plant at the mine, because operation of the plant and operating forces can be reduced at such times.

Why Not Generate Alternating Current?

Most large mines now being sunk contemplate the use of alternating current, for it is now recognized that this is the solution of transmission problems. It is as easy to generate alternating-current power in a mine plant as it is to produce direct current. In addition to this, the alternating-current machinery and equipment is less expensive than that for generating or using direct current, so that an alternating-current power plant is the cheaper and more convenient to install.

For large mines of from 5,000 tons daily capacity upward, an electrical hoist is an expensive piece of machinery. The electrical and mechanical equipment alone for such a hoist will cost from $100,000 to $125,000. When it becomes necessary to hoist coal at the main shaft, this entire sum must be expended at one time and the entire investment must be carried until the mine is brought up to full production. The capacity of an electric hoist, once it has been built, is definitely fixed and cannot be increased by deftness of operation.

On the other hand, for the same mine a steam hoist, costing perhaps $30,000, and a boiler or two could be installed and would be sufficient to operate the mine for a considerable period. If a comprehensive and complete plan is worked out for the installation of generators and boilers an efficient plant can be built and none of the units added until actually needed. In this way the total investment can be spread over a long time. A steam hoist has the additional advantage that its speed can be greatly increased by expert operation. No better example of this can be found than the performance of the Orient mine in March. Such a remarkable show-

ing would have been out of the question with an electric hoist.

It is true that the load factor of the average mine plant is much more irregular than that of a central-station plant. But by carefully planning the equipment used in a mine a fairly uniform load for at least sixteen hours can be provided. At present the consumer apparently does not reap much of the benefit from the better load factors of central-station plants because the rates seem to be based more upon the ability of the consumer to pay than upon the cost of producing power.

The time may come when the load and load conditions at each individual plant will receive more consideration than at present and when long-term contracts will be made in Illinois as they are made in other districts. Investigation has shown that in other mining fields where the central-station loads are not as well balanced as in Illinois, prevailing coal-mine power rates are in some cases only about one-half as high as in this state. It is possible that rates eventually will be reduced here and such rates guaranteed in long-term bona-fide contracts, but if this is done it probably will be only because of competition with large efficient power plants at the mines.

Mining Coal by Eighty-Foot Block System

By J. A. Graft*
Beckley, W. Va.

IN a method that I have used successfully for two years and which is known as the 80-ft. block system the rooms are driven 20 ft. wide and in pairs, the pillars between the rooms in each pair being 30 ft. wide and between pairs 80 ft. It will be noted that crosscuts are driven more frequently between the rooms in each pair—that is, through the narrow pillar—than through the pillars betwen the pairs, which are wide.

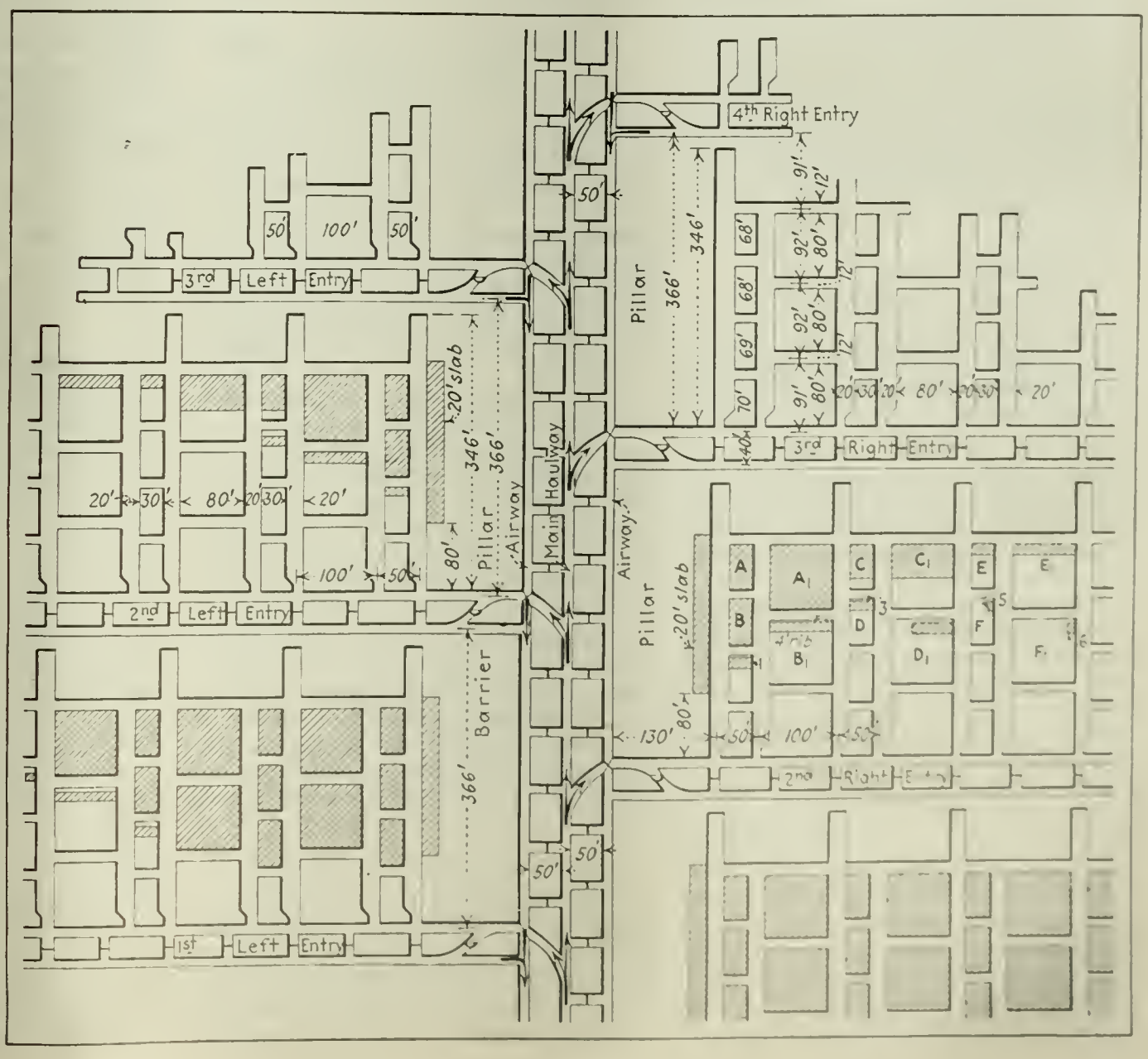
In starting the pillar in the first room a 20-ft. slab is taken toward the main entries, thus reducing the barrier pillar which, being, before slabbing, 130 ft. wide, is made by that action only 110 ft. in width. As is shown in the second right entry, a slab is then taken of pillars A_1 and A in rooms 1 and 2. At the same time a cut 1 is made across the pillar to the left of room 2 and also 4 ft. from the upper edge of the pillar B_1 to the left of room 3. In the 4-ft. web left in the wide pillar B_1 frequent cuts should be made, leaving in, however, most of the coal.

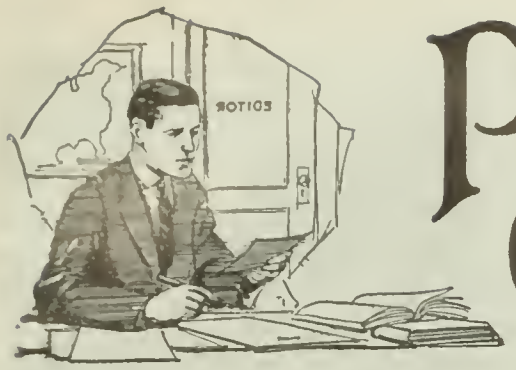
When pillars A_1 and A are slabbed off to half their thickness, start slabbing C_1 and C and at the same time start crosscuts in pillar D of room 4 and another in pillar D_1 of room 5. When the pillars A_1 and A are entirely removed and C_1 and C are partly mined out, pillars E_1 and E should be slabbed and crosscuts 5 and 6 in pillars F and F_1 of rooms 6 and 7 should be started. The props that are found in the area formerly occupied by pillars A and A_1 should be taken out and the top allowed to fall, first setting sufficient props or cribs to prevent falls across the face of C_1 and C. When the entry has reached its limit all chain pillars and room stumps are to be drawn in retreat.

*Consulting engineer, Consolidated Engineering and Construction Co.

New River Mining Method

Arrangements are made so that the roof will fall in large blocks, the coal face to be mined being protected by web or curtain ribs 4 ft. wide. The plan also provides for driving rooms in pairs with small pillars between members of the pair and large pillars between pairs. The crosscuts between pairs are roughly 70 ft. apart whereas those in the larger pillars are 92 ft. between centers. It will be noted that each cross entry has a good flanking pillar of 91 ft. and the pillar between the members of the same entry is only 40 ft. wide. This also is good practice, as crosscuts have to be made in the entry whereas none has to be driven through the flanking pillar. The pillar on the side opposite from the workings would avail but little, however, if the workings themselves were not judiciously laid out.





Problems of Operating Men

Edited by James T. Beard



Safety in Timbering at the Working Face

Need of Strict Rules and Close Supervision—Impossible to Establish a Uniform System to Meet All Conditions—Safest Practice Is to Stand Timbers When and Where They Are Needed

STATISTICS show that a large number of accidents occurring in coal mines are due to careless or insufficient timbering by miners. Strange as it may seem, old and experienced miners suffer from these accidents as frequently as do inexperienced men.

This fact alone shows the need of making and strictly enforcing rules for the safe and practical timbering of all working places. There is an element in the make-up of the average coal miner that renders him careless and prone to take risks. A very large proportion of miners pay little attention to the timbering of their places, unless they are compelled to do so under penalty.

These remarks have been suggested by the reading of two excellent letters that have appeared in *Coal Age*, one by George Edwards, Vol. 20, p. 968, and the other by Ostel Bullock, Mar. 16, p. 453. In the main, I agree with what these writers have said in regard to safe timbering in mines. However, I am inclined to the opinion that it is impracticable, if not impossible, to establish any fixed rules that will apply to all the conditions that often exist in the same mine.

Different Conditions Require Different Methods

According to Mr. Bullock, his practice is to establish rules that will make safe the worst places in the mine. He says that he is then sure there will be no trouble anywhere. Apparently he means that the same amount of timber and the same method of timbering must be used throughout the mine, as is required in places where conditions are the worst.

It is needless to say that this ruling is wholly unnecessary and would be expensive. It reminds me of an experience I had several years ago when leading a shift of company miners and working two rooms having a smooth, hard and strong sandstone top.

Other sections of the mine had a drawslate roof, the slate ranging in thickness from 12 to 20 in. While the coal was being taken out, this slate would appear sound; but a little later it would slack and shell off around the timbers, leaving only what was above the cap. It was the custom in this section to use cap-pieces 2 in. thick, 8 and 10 in. wide, and from 2½ to 3 ft. long.

Elsewhere, in the same mine, the coal was overlaid with a very treacherous top, having pots, horsebacks and rolls. These irregularities were often hard to detect and required careful timbering. Again, in other portions of the mine, the roof was a hard blue slate that required little timbering and, here, the cap-pieces were 4 and 5 in. wide and 18 in. long.

Readers will recognize that this was a mine where it would be impossible to establish any fixed rule of timbering that would be safe. On making his visit to our place one morning, the boss announced that he had established a new rule for timbering. From now on, timbers must be stood in all parts of the mine by a regular system, the posts were to be set 4 ft. apart every way, or in 4-ft. squares.

No Fixed Rule Will Apply to All Conditions in Mines

In reply to this announcement, I invited the boss to examine the corner of my eye and see if he could find anything green there. He seemed not to comprehend my meaning and I explained that such a fixed rule would not be adequate in some parts of the mine, while in other parts it would mean a waste of timber. The boss departed and we heard no more regarding his established rule.

In my opinion, the only practicable, sensible and safe thing to do is to use good judgment and stand timbers when and where they are needed. A mine foreman must be a miner of wide and varied experience and a close observer of conditions existing in each working place. From these observations, his experience will dictate the method of timbering that must be employed and the amount of timber to be used in a place. Safety lies in properly training and instructing miners in the care of their own places, since dangerous conditions often develop unexpectedly and the boss cannot be in all places at all times.

Always Best to Play Safe

While it is true, as George Edwards remarks, "When a miner makes up his mind to trust no roof, however sound it may appear, he is playing safe," it is likewise true that some kinds of roof are less dangerous than others and do not require the same amount of timbering, which in the interest of economy should not be used. We must take conditions as we find them and study to make the mine safe.

Before closing, let me say a word regarding miners timbering their own places. Observation convinces me that where miners keep a good axe and saw in their place there is always found a much better job of timbering. I believe in having timbers of all the lengths required in the mine kept on hand in the timber yard, each length being piled or stacked by itself.

Unsafe and Careless Timbering

But, at the best, conditions in the working places are irregular and it is seldom possible to find a first-class job of timbering where the miner has no axe or saw. When the top and bottom are hard and cannot be cut with a pick, if a timber is a half-inch too long it cannot be stood plumb and might as well not be stood at all, since it is worthless as a protection.

While acting as foreman on one occasion, I went to a miner's place and found six or seven timbers near the face considerably out of plumb. Picking up another timber, I knocked out each of the posts and departed, leaving instructions for the miner to reset each post plumb. I then gave the driver orders not to set any more empties in the place until my instructions had been obeyed.

John Rose.

Dayton, Tenn.

Certified Mine Superintendents

Many superintendents now hold mine foremen's certificates — Successful mine management requires knowledge and experience in every branch of the work—Need for broadmined mine officials.

IN AN excellent letter by S. D. Hainley, *Coal Age*, June 8, p. 967, mention is made of some of the requirements needed to make an ideal superintendent. It seems strange to me that the writer did not refer to the need of a superintendent holding a certificate of competency.

In my opinion, the certification of this class of mine officials would be a forward step in attaining the highest efficiency in the management and operation of mines. It is clear that the superintendent's duties and qualifications are of a higher class than those of the mine foreman and, in examination, he would be required to answer a different set of questions than what are given in foremen's examinations.

In the letter to which I have referred, the choice of a suitable superintendent has been left to the judgment of the general manager, who is expected to decide on his fitness for the position by a careful study of his several qualities.

Men's Fitness for Positions

As he has stated, there are superintendents who are qualified to fill that position but who would be a failure in another position. In other words, the particular requirements that go to make up a successful superintendent are of a nature wholly their own.

It is my belief that it would be difficult, for an examining board to frame a set of questions that would show the capability of men to fill this position. Most men will agree, however, that it would not be out of the way for a mine superintendent to hold a first-class mine foreman's certificate.

Observation shows that this is becoming the fact, more and more each year. Several of the larger coal companies, in this country, are now requiring this of men whom they appoint to the position of mine superintendent. In the majority of cases, the superintendent has been promoted from the position of foreman, in which he was required to hold a foreman's certificate.

Experience Needed to Succeed

The greatest degree of success in the management of a mine, from the superintendents' standpoint, can only be attained by the man having a previous experience in every branch of the work that now falls under his supervision. Without this experience, few men could be expected to develop a large mine, in a manner to produce results and compete successfully on the market with other producers.

There is need, today, that both the mine superintendent and the foreman shall be men who are broadminded and able to put into practice the many ideas that can come to them only through observation and experience. Some writers have spoken of the difficulty of working under a superintendent who has not the same practical knowledge of mining. Speaking for myself, this has never been my trouble. A foreman must first gain the confidence of his superior officers, by proving to them that he can get results by the methods he advocates. He will then seldom meet opposition in what he proposes.

Central City, Ky. Ostel Bullock.

WHETHER the mine superintendent should be a certified man or one chosen by the management, for his supposed qualifications for the position, has been a question that has aroused much interest in this and other fields.

In Colorado, the law requires that applicants for the position of mine foreman, assistant foreman and fireboss shall be certified men, but makes no such requirement in respect to the office of mine superintendent. As has been argued the superintendent of a mine is in a position to overrule the foreman on all matters pertaining to the operation of the mine. Experience shows that if a foreman disputes the authority of his superintendent, he must either quit his job or face the alternative of having his life made miserable from that time forward.

It seems to me that comparatively few coal companies give their foreman a chance to rise to a higher position than the one they now fill. Too often it has happened that a mine clerk in the office, or one who has held a similar position outside of the company, has been given charge of operations as superintendent of the mine, and nine times out of ten, the one chosen has never seen the inside workings of a mine.

Discouraging Policy of Many Coal Operators Toward Employees

If operators would give their foremen a chance to rise to the position of superintendent, there would be more incentive for young ambitious miners to study and fit themselves for these positions. Without doubt there are many foremen who would make excellent superintendents and develop, in time, capabilities that would recommend them to the position of manager.

On the other hand, there are foremen who have no capacity to fill any position above the one they hold. Each man, therefore, must be judged by his qualifications. Few men possess the same qualities and the practical test is the only means of determining their fitness.

In my opinion, our laws should be changed in a manner that will require all men in charge of underground operations to be certified. In that case, I believe our foremen would have equal chance with other men who are now their competitors.

In closing, let me express the hope that the day is not far distant when the lawmakers in every state producing coal will pass enactments requiring the certification of all mine officials responsible for the safety of the mine.

———, Colo. Colorado Miner.

Certification in England

Overman, in England, required to hold certificate—Undermanager or overman corresponds to mine foreman in this country—A deputy or fireman is a fireboss here.

SOME time since, I remember, a writer in *Coal Age* stated that, to the best of his knowledge, the mine manager was the only certified mine official in England. This statement being far from the truth, I desire to correct the impression it has left on the minds of foremen and firebosses in this country.

In England, the undermanager, or "overman" as he is more commonly called, corresponds to the mine foreman here. Also, the deputy, or "fireman" as he is called in some parts of England, corresponds to the fireboss in this country.

It was the same writer, I believe, who stated that the overman and the deputy, in the old country, were each given what he termed a "vest-pocket certificate" when appointed to their several positions by the manager. He claimed these certificates were all that was required, in the way of certification, of either of these officials.

Being myself the holder of an overman's certificate, which I obtained at Newcastle-On-Tyne, in January, 1897, I am able to say positively that the statement of the writer to whom I have referred is wrong.

Overmen Must Be Certified

At the present time, the overman, in England, must hold either a first-class or a second-class certificate, before he can be appointed to that position. Moreover, I understand that the deputy or fireman, in England, is now required to hold a certificate of competency making him eligible for that position.

In support of these statements, allow me to quote one or two extracts from the English law, as follows:

"Be it enacted that every mine must be under a manager responsible for the control, management and direction of the mine and holding a first-class certificate. Daily, personal supervision of the mine must be exercised by the manager or by an undermanager holding either a first- or a second-class certificate.

First- and second-class certificates of competency may only be granted to men of at least five years' practical experience, who have satisfied the examiners as to competency, sobriety, experience, ability and general good conduct. A certificate may be suspended or canceled on the ground of incompetency or gross carelessness.

William Dickinson.

Lochgelly, W. Va.

Is the Game Worth the Candle?

Qualities of the successful foreman—Requirements in England—Standard in this country too low—Many facilities for study but little incentive.

READING all that has been said with reference to the required qualifications that make the successful mine manager (foreman) inclines me to ask, "Is the game worth the candle?" Few will fail to understand the meaning I have in mind and realize the importance of its application to the certification problem in this country.

Let us review briefly the difference between a practical mining man and one who is purely theoretical in respect to the qualifications that would fit him for mining. The comparison will assist us to a better understanding of this vexed question.

I say "vexed question," because so many ambitious young men have struggled to equip themselves for successfully filling some higher position in mining and when the fruit of their efforts was almost within their grasp, have been disappointed by seeing the

coverted position given to another less qualified.

Briefly stated, the practical man has learned by experience to do the actual work of sinking a shaft, digging coal, laying track, timbering an air-course, building brattice and a hundred other useful and necessary jobs that are required in the mine.

On the other hand, the man who has studied the principles of mining is able to estimate the proper size of a shaft and determine its equipment; calculate the horsepower of engines and motors; plan the ventilation of the mine; estimate the size and power of the ventilator, and calculate the capacity of pumps, besides ascertaining numerous other necessary data.

It is readily seen that each of these types of men possess qualities that are essential to the successful operation and development of a coal mine. In other words, the ideal foreman will combine, in one person, the qualities of two distinct personalities.

Allow me to give, here a crude illustration of my meaning, in order to press home this point. Compare the attempt to build a wall of brick without mortar, with one where the bricks are laid in mortar, in the usual method. The first symbolizes the practical man having the material experience, but lacking the technical knowledge that would stabilize his work.

The So-Called "Vest-Pocket Certificate" No Longer Used

In this connection, may I comment on the statement of R. W. Lightburn, *Coal Age*, Feb. 16, p. 291, regarding the "vestpocket certificate" he describes as English practice. For his information and others, I want to say that that is a thing of the past. Candidates for the position of overman (foreman) or deputy (fireboss), in England, have long since been required to pass a government examination.

It is worthy of the most earnest thought that the sharp competition here and the growing necessity for a more complete extraction of the coal have called for the use of the most approved types of machinery, in coal cutting, haulage, ventilation and drainage.

In order to adopt and successfully operate this class of improved machines, it has become necessary to employ men who understand principles and have mechanical ability. It is in this respect that the difference between the two types of men I have mentioned is most manifest.

Let me say here that the standard of mine foremanship, in this country, is too low to meet the present needs of the industry. Mine examining boards should be composed of men who are thoroughly up-to-date in their knowledge of present-day mining. There are instances, I regret to say, where some of the board members would be unable, themselves, to answer the questions asked by their board.

In sharp contrast with this condition, I recall my first examination, taken in the old country. Every member of the board was a recognized authority on mining, or a first-class mining engineer. To pass that examination a man had to be well qualified and, if not, he might better have stayed home. Two examinations were held each year and a different board appointed each time, so that it was impossible to tell beforehand who the examiners might be. They all served without compensation.

At the present time, many facilities are open to young men, in this country, to obtain an education, but these are very largely neglected. There appears to be little incentive among the young men to study for self improvement and the reason is not hard to find.

Give Ambitious Workers a Chance

Few coal companies have adopted and held strictly to the rule of giving their young ambitious workers every opportunity for advancement. Vacancies have been filled, in many cases, with those less qualified by experience or technical knowledge of mining. This has virtually thrown a damper on the desire of young men for study, in order to fit themselves for a higher position.

That this is true cannot be disputed; I have seen it occur many times. In one instance, recently, a young man employed as bookkeeper was taken from the office and made superintendent, although he had not worked a day underground and knew nothing of mine gases, ventilation, haulage and drainage.

Another instance was that of a miner who held an official position in the miners' union. At the time, he was reported to be away on official business; but when he came back he informed the men that he had been appointed superintendent of the mine, though it was not known that he had any particular qualifications for that office.

In closing, let me ask: When such occurrences as these take place, is it not enough to make the student ask the question: "Is the game worth the candle?"

X. Y. Z.

West Frankfort, Ill.

Inquiries Of General Interest

Electric Locomotive Operating with Wheels Of Unequal Diameter

Operating a Locomotive with Wheels of Unequal Diameter—Effect on Machine and Power Required to Operate—Advantage of Two-Motor Locomotives

KINDLY permit me to ask, through *Coal Age*, a few questions that I believe will be of general interest to all mine operators using electric locomotives. It will be generally admitted that the necessity frequently arises of having to replace a worn or broken wheel on the locomotive. In that case, it often happens that the new wheel is not of the same diameter as the old wheels on the machine. Or, it may chance that one or more of the wheels have become unequally worn. In any case, trouble is almost sure to be experienced in operating the machine. The questions I want to ask are:

1—How will a mine locomotive behave on the track if one wheel is $\frac{1}{8}$, $\frac{1}{4}$ or $\frac{1}{2}$ in. less in diameter than the other wheels?

2—What will be the effect in respect to the wear of the wheels, owing to a slight difference in their diameter?

3—What will be the effect on the mine track?

W. P. Robert,
Colver, Pa. Mine Foreman.

This is an important practical question and, for the purpose of getting first-hand information that would be of the greatest practical value to users of mine electric locomotives, it was submitted to Graham Bright, general engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., whose reply follows:

1—The axle of a locomotive on which one of the wheels is of different diameter from the other, will tend to assume a position not parallel to the other axle. There will then be a tendency of that axle to bind in the journal boxes. Also, the wheels being fast on the axle, one or the other or both will slip on the rails.

This slipping of the wheels will not only cause a considerable wear in the journal boxes, but more power will be required to operate the machine. Owing to the slipping of the wheels, also, there will be a less tractive effort and the tractive power of the locomotive will be decreased in the same proportion.

2—The wheels will, no doubt, wear considerably faster than under normal conditions. If there is much play in the journal boxes there will also result a considerable wear of the flanges. This condition may become worse instead of better if it happens that the smaller wheel slips more than the larger wheel.

3—It is hardly likely that there will be any serious effect on the mine track, since the locomotive passes over a given point in the track but a few times in the day. In other words, the wear on the rails, in excess of what occurs under normal conditions, will hardly be appreciable.

Allow me to add a few words regarding locomotives equipped with two motors, as compared with those equipped with a single motor and using either a worm drive or a chain drive to connect the two axles on the machine. In the former case, the principal damage done by wheels not being of the same diameter is a useless expenditure of power to operate the machine and an unnecessary wear on the wheels and journal boxes.

In the latter case, however, when the locomotive is equipped with a single motor, it becomes necessary for the worm drive or the chain drive to take care of any difference there may be in the size of wheels on different axles. The two axles being thus connected must revolve at the same rate of speed and it follows that any difference in the size of the wheels on the two axles will cause a slipping of the wheels and a considerable strain is thus thrown on the drive, which will greatly reduce the mechanical efficiency of the machine.

This is one of the principal objections to the use of a single-motor drive, for the reason that few mining companies check up accurately the size of the wheels and make any attempt to correct these troubles when they occur.

I recall a recent case of this kind where the locomotive was equipped with a single motor and a worm drive connecting the axles. One pair of wheels had been changed, owing to wear, while the other pair still remained on the machine. Of course, the new wheels were larger in diameter than the old ones and the attempt to operate the locomotive caused the shaft to break between the axles.

The fact is now fairly well established that a two-motor locomotive is much more economical in the use of power than a locomotive equipped with a single motor. A considerable portion of that loss is due to the control system used. No doubt, however, a large portion arises from the mechanical losses of the single-motor locomotive, because of its inability to keep all the wheels of equal size.

Examination Questions Answered

Miscellaneous Examination Questions

(Answered by Request)

QUESTION—*Explain the method of ventilating and working a panel of coal: (a) On the advancing system; and (b) on the retreating system of mining. Make sketches showing the plan in each case.*

ANSWER—As shown in each of the two figures, cross-entries are driven off the main headings, at distances of, say 250 to 300 ft. apart. Rooms are then turned to the rise of the haulage road, on each pair of cross-entries.

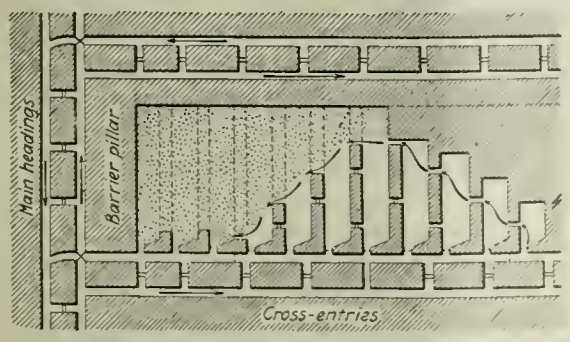


FIG. 1. ADVANCING METHOD

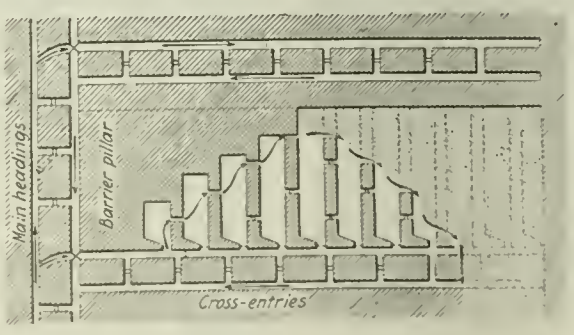


FIG. 2. RETREATING METHOD

(a) In the advancing system, as shown in Fig. 1, the rooms are widened inby, or in a direction away from the main heading. The track in each room is carried up the straight rib and the refuse stored in the vacant space on the other side of the track. This plan affords a good opportunity for loading out the coal when drawing back the pillars. As each room reaches the limit or the barrier pillar protecting the aircourse on the next pair of cross-entries, the pillar adjoining the track is cut through and the work of robbing begins. As shown in the figure, it is important to keep the line of pillar work as straight as possible, in order to equalize the pressure on the ends of the pillars and avoid the crushing of the coal. This will also greatly assist the work of mining. Where machines are used in robbing, a cut three or four yards wide is started, say 2 yd. back from the end of the pillar and on the side next to the track or away from the gob, as that will afford greater protection for the men and the machine while cutting the coal.

(b) In the retreating system shown in Fig. 2, the cross-entries are driven to the limit of the panel, or to the boundary, before any rooms are turned. The first rooms are then turned, starting at the inby end or head of the entry, and driven to the rise, in the same manner as before, except that the rooms are now widened in the direction outby or toward the main heading. As before, the track is carried up the straight rib or on the inby side of the room. With the single exception of widening the rooms outby instead of inby, the work of driving the rooms and drawing back the pillars is the same as in the advancing system just explained.

QUESTION—*Give the rule for determining the size of barrier pillars, in the anthracite region, in Pennsylvania.*

ANSWER—A common practice in the anthracite region, according to agreement of many of the larger companies, is to calculate the thickness of barrier pillar, separating adjoining coal properties, by multiplying the thickness of the seam by 1 per cent of the depth below drainage level, and adding to that product five times the thickness of the seam. In other words: To 1 per cent of the depth below drainage level, add 5 ft. and multiply the sum by the thickness of the coal, in feet. The product will be the required width of barrier pillar, in feet.

QUESTION—*What thickness of barrier pillar does the Pennsylvania Bituminous Law require to be left when approaching old workings containing an accumulation of water?*

ANSWER—The Bituminous Mine Law of Pennsylvania, (Art. 3, Sec. 5,) requires a thickness of barrier pillar 25 per cent greater than the head of water to which the pillar is exposed.

QUESTION—*How would you prepare a burned man, before removing him from the inside to the outside of a mine?*

ANSWER — Every means available should be used to keep the air from the burned portions of the body. The clothing should be cut from those portions of the limbs and body and cautiously removed to prevent unduly injuring the flesh. In order to exclude the air from the burned surface, apply a thin paste of baking soda or dry flour. Vaseline, olive oil or cream, if available, are good and the application should be covered with a light bandage. The sufferer should be handled with great care and not exposed to the raw air outside of the mine longer than necessary.

QUESTION — *Explain the conditions under which coal dust in mines becomes dangerous as a source of explosion.*

ANSWER—Any accumulation of fine dust, on the floor, sides, roof and timbers, in the airways and working places of a mine, is dangerous. When this fine dust is blown into the air by the force of a shot or suspended in an air current and acted on by the flame of a blownout shot, a more or less local explosion is liable to result. Under favorable conditions, this local explosion will be extended throughout the mine.

Selling Coal Ideas: A Study of Associations

Organization Provides Means to Combine Forces Needed to Put Over Message: Mass, Painstaking Preparation and Persistent Reiteration—Why Individual Should Surrender Ideas in Furtherance of Common Welfare

By George Cushing

IF COAL men hear a heap of quarreling in and about their associations they should not be disturbed. Instead they should feel encouraged. Some normal men do not quarrel over worthless things; they simply throw them away. Therefore the very fact that busy coal men are willing to squabble over an association is proof conclusive that its is worth a great deal—really worth dominating, for example. Also, if coal men criticize the policy of their association, it is a sure sign of growth on the part of the critics. They criticize—analyze—to find what is wrong in order to set it right. That is purposeful interest, which is growth.

I take it that much of the current discussion of the many coal-trade associations means that coal men are finally becoming dead in earnest about their associations and propose to make of them what they ought to be. On that premise I want to raise a point for consideration in connection with all of the associations in the coal trade.

The great distinction which we must always keep in mind is: A coal company sells a commodity. Coal associations "sell" ideas. Their subject—coal—is the same. Their methods are, necessarily, as far apart as the poles. For instance, a commodity has bulk, weight and, therefore, substance. A given amount can be sold—if someone needs it—for a given sum of money. In case of dispute over the bill, the owner can prove title and by going into court can collect his money.

How Easily One Loses Title to an Idea

Selling coal is a business which is done according to rules laid down by law. The courts stand behind the producer until his claims are satisfied. In this respect it is a very simple business, relatively speaking. But selling ideas "is something else again, Mawruss." You work for weeks, months, or years to get, develop and perfect an idea. When you have it all thought out and so accurately phrased that anyone must grasp it in a minute, you spill it into the ear of a friend. Instantly your friend says: "Yes, that is true. I have thought of that."

At that point you lose title to that idea. You are as poor as on the day you were born. There is no redress; no recovery. Your friend told the truth. He has thought of it. By your very lucidity you have compelled him to think of it. Of course, your friend is careful to express himself in the past tense. He leaves with you the vague impression that years ago he hatched exactly that idea, and expressed it in its own natural language—that which you just used. You cannot deny it. If you do, you can't prove your case. As far as you know, your friend may have been born with the idea which you feel, in your inner consciousness, was coined out of your bitter experience. Yet you cannot go an inch behind the cold fact that what he says is literally true—"I have thought of that." He has thought of it and you are done.

I once told a friend an idea. He made half a million off it and merely said: "You confirm what was my own idea." He made the money and I was done.

Again, I worked ten years to clear up a thought. A friend heard the conclusion and said: "Just what I have always contended." Again I was done.

Associations, as "sellers" of ideas, have always to face that stubborn fact. They labor and agonize over ideas. They find them, develop them and perfect the expression of them. But the instant they are expressed, they become common property. They belong to everyone. They are not patentable. They cannot be copyrighted. The intangible association may have the consciousness that it has done a good job. It may feel that it has clarified a situation. But it cannot pay dividends with any money obtained for its ideas because no money was ever paid for them. They were given away—or expropriated.

It is possible, however, to cash in even on the sale of ideas. If it were not possible this article would not be written. But it is necessary to change away from the selling methods used in a commodity and adopt those employed in marketing ideas. The great merchant groups who have actually cashed in on ideas are, in order: The statesmen, the newspapers, the lawyers and the doctors. Others who have ideas to sell will do well to study their methods. The statesman retains title to his ideas and gets full benefit of them. He does what seemingly is impossible because he has an organization behind him which realizes that it can win support for itself only by advocating the views of its leading men.

The newspaper certainly retains title to and gets the benefit of its ideas. It succeeds in what seems like a hopeless task because it throws behind its ideas the weight of incessant repetition.

Cites Advantage of Systematized Thinking

The lawyers and doctors "sell" their ideas because, in their ideas and because, in their schools, they are taught a system of thinking on their themes. All lawyers talk about the law in exactly the same way. They say certain things to every client on every occasion. Each lawyer gets the benefit of emphasis of the statements and reiterations of the lawyer thought by all other lawyers. They have made a sort of a cult of the law. Also both lawyers and doctors are bound by a code of ethics which supports and emphasizes their point of view. This code becomes at once the common defense of the whole fraternity.

Thus the cardinal principles of success in selling ideas are: To have the ideas of the leaders supported by the mass, to have those ideas reiterated incessantly and to approach the formality of a code in the way the ideas are put across. It all means painstaking effort at preparation and persistence in propaganda.

The coal associations can, if they will, combine all of the forces upon which all these others depend. They can put this combined force behind their ideas. That is, they can put behind their association ideas the weight of the same kind of an organization which supports the statesmen, the frequent repetition which gives authority to the ideas of the newspaper and the cohesiveness and formalized expression which is the backbone of the success of the lawyers and the doctors. But, before coal men can bring their associations to the full flower of their power, they must first realize the vital distinction between selling coal and selling the coal-association idea. They must realize that the coal business is a matter of selling a measured commodity. The coal association is a matter of selling the common ideas about that business. One is a matter of dealing in things. The other is a matter of dealing in mere thoughts. The selling method must be fitted to the thing to be sold.

The coal men supply the money which supports the association. It is, therefore, an expression of themselves. Its ideas are literally their ideas. They supply that money solely to have their ideas circulated and adopted. That being true, the practical question is: How can they get the greatest value for their money—the widest circulation of their ideas?

Many coal men, unfortunately, take toward the statements of their association officers much the same attitude as did the old farmer whose neighbor had lent him a copy of the writings of Socrates. When he returned the volume he said: "This fellow Socrates is a smart man. I see he is using some of my stuff."

That is, coal men are not willing to surrender wholly an idea to their association—even to the association which they support. They are hardly, as yet, willing to get behind the idea of their president, even though he expresses their own thoughts exactly. They want to keep the association going but they want to keep its ideas as their personal property. Of course, they can't do any such thing because the world can expropriate an individual's thoughts as easily as it can those of an association.

The other—and it would seem, proper—method of procedure is for each member to get wholeheartedly behind the main association idea. In season and out of season, he should say: "On that subject the Blank Association expresses not only my personal opinion but that of the entire coal trade," etc. That method would get the main idea across with one hundred to five thousand times the pulling power which could possibly attach to any individual opinion.

Let's be frank about this thing. The only reason we coal men do not give our association this ungrudging support is because we feel that if we do we will enhance the reputation of the man who put forward the idea in our name. It is true that with much enthusiasm we elected So-and-So as president of the association. It is true that we authorized him to speak for us. And, apparently, he has done a good job because he has expressed an idea which we think is worth appropriating. But we are not quite willing to let him get away with the glory—if there is any—of having so accurately phrased our thought. It is unfortunate but true that human nature works in that way. What we fail to realize is that by holding out on the president, we weaken in proportion the very thing we are spending money to strengthen.

Where is your association going to end if you gentlemen withhold your endorsement from the men who express your ideas? Do you, personally, gain anything? What will be the effect on the association?

In conclusion: You sell a commodity successfully when you work alone. You sell an idea successfully when you work in a gang. Your regular business is selling a commodity. There you have to work alone. But in your association you have to work as a unit with dozens and hundreds of others. Only in making that shift from your daily practice to the other attitude can your association attain the position of power which it ought to occupy.

Fewer Mine Fatalities During May, Though Production Exceeds That of April

DURING May, the second month of the coal miners' strike, 74 men were killed by accidents at the mines, or 3 less than the number killed during April, according to reports received by the U. S. Bureau of Mines from state mine inspectors. All of the fatalities except one were at bituminous mines; one man was killed at an anthracite mine in Pennsylvania by falling down a shaft. None of the anthracite mines in producing coal.

The production of bituminous coal in May, as reported by the U. S. Geological Survey, was 19,813,000 tons, about four million tons more than in April, 1922, but over thirteen million tons less than in May a year ago. The fatality rate for bituminous mines in May, 1922, was 3.68 per million tons of coal produced, as compared with 4.88 for the preceding month of April and 3.87 for May, 1921. The rate for anthracite mines in May, 1921, was 5.74 per million tons; there are no comparable figures for April or May, 1922, because all of the mines are closed.

During the nine-year period 1913-1921 the month of May has averaged 176 fatalities at bituminous and anthracite mines, with an average production of 46,215,000 tons of coal, the fatality rate being 3.80 per million tons. For bituminous mines alone the nine-year fatality rate is 3.33 per million tons mined, and for anthracite mines it is 6.02.

COAL-MINE FATALITIES DURING MAY, 1922, BY CAUSES AND STATES

(Compiled by Bureau of Mines and Published by *Coal Age*)

State	Underground													Shaft					Surface							Total by Stats	
	Falls of roof (coal, rock, etc.).	Falls of face or pillar coal.	Mine cars and locomotives.	Gas explosions and burning gas.	Coal-dust explosions (including gas and dust combined).	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.).	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip, or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Electricity.	Machinery.	Boiler explosions or bursting steam pipes.	Railway cars and locomotives.	Other causes.	Total.	1922	1921
Alabama	2	....	....	....	11	..	....	..	..	..	....	..	13	....	.....	....	....	....	....	..	..	.....	....	..	..	13	5
Alaska	....	....	....	....	.....	..	....	..	..	..	....	..	..	....	.....	....	....	....	....	..	..	.....	....	..	..	0	0
Arkansas	....	....	....	....	.....	..	....	..	..	..	....	..	..	....	.....	....	....	....	....	..	..	.....	....	..	..	0	0
Colorado	3	....	1	....	.....	..	....	..	..	..	....	..	4	....	.....	....	....	....	....	..	..	.....	....	..	..	4	2
Illinois	1	....	..	....	.....	..	....	..	..	..	....	..	1	....	.....	....	....	....	....	..	..	.....	....	..	..	1	17
Indiana	....	....	....	....	.....	..	....	..	..	..	....	..	..	....	.....	....	....	....	....	..	..	.....	....	..	..	0	5
Iowa	1	....	....	....	.....	..	....	..	..	..	....	..	1	....	.....	....	....	....	....	..	..	.....	....	..	..	1	1
Kansas	....	....	....	....	.....	..	....	..	..	..	....	..	..	....	.....	....	....	....	....	..	..	.....	....	..	..	0	2
Kentucky	1	....	3	....	.....	..	....	1	..	..	....	..	5	....	.....	....	....	....	....	..	..	.....	....	..	..	5	14
Maryland	....	....	....	....	.....	..	....	..	..	..	....	..	..	....	.....	....	....	....	....	..	..	.....	....	..	..	0	0
Michigan	....	....	....	....	.....	..	....	..	..	..	....	..	..	....	.....	....	....	....	....	..	..	.....	....	..	..	0	0
Missouri	....	....	....	....	.....	..	....	..	..	..	....	..	..	....	.....	....	....	....	....	..	..	.....	....	..	..	0	1
Montana	....	....	....	....	.....	..	....	..	..	..	....	..	..	....	.....	....	....	....	....	..	..	.....	....	..	..	0	2
New Mexico	1	....	1	....	.....	..	....	..	..	..	....	..	2	....	.....	....	....	....	....	..	..	.....	....	..	..	2	1
North Dakota	....	....	....	....	.....	..	....	..	..	..	....	..	..	....	.....	....	....	....	....	..	..	.....	....	..	..	0	1
Ohio	1	....	1	....	.....	..	....	..	..	..	....	..	2	....	.....	....	....	....	....	..	..	.....	....	..	..	2	6
Oklahoma	....	....	....	....	.....	..	....	..	..	..	....	..	..	....	.....	....	....	....	....	..	..	.....	....	..	..	0	1
Pennsylvania (bituminous)	5	....	2	....	.....	1	....	..	..	1	....	..	9	1	.....	....	1	2	....	..	..	.....	3	..	3	14	28
South Dakota	....	....	....	....	.....	..	....	..	..	..	....	..	..	....	.....	....	....	....	....	..	..	.....	....	..	..	0	0
Tennessee	....	....	....	....	.....	..	....	..	..	..	....	..	..	....	.....	....	....	....	....	..	..	.....	....	..	..	0	0
Texas	....	....	1	....	.....	..	....	..	..	..	....	..	1	....	.....	....	....	....	....	..	..	.....	....	..	..	1	0
Utah	....	....	1	....	.....	..	....	..	..	..	....	..	1	....	.....	....	....	....	....	..	..	.....	....	..	..	1	0
Virginia	1	....	2	....	.....	..	....	..	..	..	....	..	3	....	.....	....	....	....	....	..	..	.....	....	..	..	3	2
Washington	....	....	1	....	.....	..	....	..	..	..	....	..	1	....	.....	....	....	....	....	..	..	.....	....	..	..	1	0
West Virginia	14	2	5	....	.....	1	....	1	..	..	....	..	23	....	.....	....	....	....	....	..	1	.....	1	..	2	25	37
Wyoming	....	....	....	....	.....	..	....	..	..	..	....	..	..	....	.....	....	....	....	....	..	..	.....	....	..	..	0	4
Total (bituminous)	30	2	18	...	11	2	....	2	..	1	....	..	66	1	.....	.	1	2	....	.	1	.....	4	..	5	73	129
Pennsylvania (anthracite)	....	....	....	....	.....	..	....	..	..	..	....	..	..	1	....			1	....			.....				1	44
Total, May, 1922	30	2	18	....	11	2	....	2	..	1	....	..	66	2	.....		1	3	....		1	.....	4	..	5	74	..
Total, May, 1921	76	15	33	4	2	11	1	6	..	3	....	12	163	2	.....			2	3		2	.....	1	2	8	....	173

Destination of Lake Cargo Coal Shipped During Season to May 31*

Destination	1920 Net Tons	1920 Per Cent	1921 Net Tons	1921 Per Cent	1922 Net Tons	1922 Per Cent
American						
Lake Superior Ports	499,000	33.4	2,149,000	46.4	335,000	15.9
Sault Ste. Marie and river points	91,000	6.1	59,000	1.3	46,000	2.2
Lake Huron-Georgian Bay ports	43,000	2.8	37,000	0.8	29,000	1.4
Lake Michigan ports	385,000	25.7	1,358,000	29.3	876,000	41.6
Port Huron and Detroit River	122,000	8.2	84,000	1.8	26,000	1.2
Lake Erie ports	1,000	0.1			562,000	26.7
Total American	1,141,000	76.3	3,687,000	79.6	1,874,000	89.0
Canadian						
Lake Superior ports	35,000	2.3	510,000	11.0	5,000	0.2
Sault Ste. Marie and river points	79,000	5.3	61,000	1.3	9,000	0.5
Lake Huron-Georgian Bay ports	74,000	4.9	161,000	3.5	77,000	3.6
Port Huron and Detroit River	32,000	2.1	67,000	1.5	73,000	3.5
Lake Erie ports			10,000	0.2	20,000	0.9
Lake Ontario and St. Lawrence River	136,000	9.1	133,000	2.9	48,000	2.3
Total Canadian	356,000	23.7	942,000	20.4	232,000	11.0
Grand total	1,497,000	100.0	4,629,000	100.0	2,106,000	100.0

*Compiled by U. S. Geological Survey from statistics furnished by courtesy of Ore & Coal Exchange, Cleveland, Ohio.

Congress Considers Various Phases of Coal Strike and Ways to End It

ESTABLISHMENT by Congress of a permanent fact-finding agency on the coal industry was advocated by Representative Browne, of Wisconsin, in a House speech on the coal strike. "There will be a terrible coal shortage even if the men should go back tomorrow," he stated. He placed the blame for the strike on the coal operators because of their refusal to confer with the union. Referring to court proceedings to restrain the Federal Trade Commission from obtaining cost data as to the coal industry Mr. Browne charged that the coal interests opposed developing the facts because they "fear the facts."

Representative Burke, of Pennsylvania, introduced a resolution authorizing and directing the President to take over and operate coal mines for one year or as long thereafter as in his discretion may be necessary for the public good. It would also direct the President to enter into negotiations with the miners' committee and arrange a mutually satisfactory wage and working agreement.

John L. Lewis, president of the United Mine Workers, conferred with Secretary of Labor Davis on the coal situation again on Wednesday, June 28, and reiterated his opposition to district conferences following the meeting.

The President received an appeal from the Public Committee on Coal, of which Norman Hapgood is chairman and M. C. Johnston, secretary, asking for an investigation of the coal industry by a government fact-finding agency. The petition was received also by Senator Walsh, of Massachusetts, and read by him to the Senate. Senator Walsh also presented to the Senate a petition from the Lowell Coal Merchants' Association urging action to cause a resumption of anthracite coal mining not later than July 15 because of depleted stocks in New England.

The Herrin (Ill.) coal riots were discussed in a House debate. Representative Goodykoontz, of West Virginia, scored the miners for murder, while Representative Denison, of Illinois, in whose district the riots occurred, declared the outrages were caused by the operators, and charged that reports of the affair had been exaggerated.

Mr. Denison's explanation that the reports of the riots were exaggerated was interrupted by Representative White, of Kansas, who asked: "Do you mean to say that not more than half is true in respect to the number assassinated in cold blood for exercising their constitutional right to work?" Mr. Denison insisted that the reports had been exaggerated.

In extenuation for the strike riot Mr. Denison said the district was completely unionized and that the miners became embittered and their reason gave way to passion when the coal company imported 50 miners from Chicago to operate the mines after a contract had been made with the union to prepare the mine and operate it after the strike should have closed.

Representative Fish, of New York, introduced a resolution for the appointment of a joint committee of Congress to investigate the causes of the strike of coal miners. The committee would be composed of five Senators and five members of the House, who would be authorized to investigate the cause or causes of the strike of coal miners in the anthracite and bituminous coal regions, the question of wages, hours, conditions of employment, and the question of profits and losses of mine operators. The committee would be empowered to take testimony in Washington or elsewhere, to send for persons and papers and report its recommendations to Congress at the earliest possible time, indicating a method of settlement of the strike which will protect and conserve the interests of the people.

Says Operators Exact Hoover Maximum, Eliminating Jobbers and Wholesalers

(Special Correspondence)

FROM the first conference held with Secretary Hoover of the Department of Commerce jobbers, wholesalers and middlemen have wondered where they would come in if the maximum price were reached and the demand were such as to turn all of the buyers to the mines. The answer was written in Cincinnati this week. It has meant the virtual elimination of the wholesalers who were sufficiently conscientious to abide by the government's ruling and request. Cincinnati has been the central point of coal movement in the West since the strike began, so the jobbers and middlemen there have watched with considerable wonder the mad scramble to producing fields in Kentucky and West Virginia by buyers who were determined to deal direct with the producer.

J. C. Layne, of the Eaton Rhodes Co. and a member of the fair price committee appointed by Secretary Hoover, on June 26 sent the following telegram to Secretary Hoover:

"There is a very growing tendency on the part of coal operators to demand the maximum price announced by you, making no allowance for jobbers. This condition is forcing jobbers to add a profit, contrary to the understanding and desire of the jobber, and thus forcing the price upward. As one of your committee in eastern Kentucky will appreciate telegraphic advice as to policy to adopt. We desire to aid you in every possible way but are facing complete elimination as selling companies unless the operators are restrained or we are permitted to add a reasonable profit to the purchase prices."

In answer to this Mr. Layne received the following: "Please give specific cases, so we can lay this before the committee."

From the advices that have been received in Cincinnati it would appear that two-thirds of the southeastern Kentucky operators are culpable together with a fair sprinkling along the Norfolk & Western.

Retailers to Educate Newspaper Editors

R. J. WULFF, chairman of the committee on public information of the National Retail Coal Merchants' Association, has had prepared a statement on the coal situation, not for publication but, as stated by Mr. O'Toole, executive secretary of the association, "to educate newspaper editors and impress upon them the absolute necessity for differentiation in newspaper articles relating to coal between conditions applying to bituminous coal and those applying to anthracite."

This document, entitled "Two Fuels, Two Strikes," summarizes conditions in the two industries, reviews the conditions leading up to the strike and sets forth the situation as it now exists. The statement has been forwarded to all metropolitan dailies from Chicago east and may later be given even wider distribution.

Thirteenth Week of the Coal Strike

EDITORIAL REVIEW

PRESIDENT HARDING'S action in calling the union miners and operators into conference at Washington on July 1 is generally conceded to mark the beginning of the end of the strike. What is now and for some time will be going on at Washington will hold the center of public interest in the strike. Strict secrecy has marked the joint sessions of the miners and operators with secretaries Hoover and Davids, and to all outward appearances there has so far been no relenting by either side from previously established positions. The debate so far seems to have centered on the question of district conferences and contracts versus a Central Competitive Field agreement. There is a very persistent undercurrent of feeling favoring the idea that some modification of the previous form of negotiations will be found, giving the districts separate agreements yet providing the semblance of a national character, as demanded by the miners. It yet remains to be seen which party will look back on this as the unlucky thirteenth week.

In Illinois and in Pennsylvania there have been some steps taken to initiate negotiations on a state basis. In both cases they are undoubtedly doomed to failure, if for no other reason than that of veto by the policy committee of the United Mine Workers.

Production continues to increase, though slightly, in the non-union fields of Pennsylvania. The production of West Virginia can be still further increased from mines in the northern part of the state, but apparently the limit has been reached in the southern district, due to the inability of the railroads to handle more tonnage.

Clifford B. Connelley, Commissioner of Labor and Industry of Pennsylvania, who had hopes of settling the anthracite and the bituminous strikes through conferences, fixed July 6 for the bituminous conference at Pittsburgh.

"We have offered the services of the Department of Labor and Industry in a friendly way to the bituminous operators and miners of Pennsylvania in the hope that they will accept this opportunity to avert serious consequences to the industries of the state," said Commissioner Connolley in discussing his plans.

On June 29 P. T. Fagan, vice-president of District No. 5, United Mine Workers, declined the invitation.

In his letter to Mr. Connelley Mr. Fagan said that "we must at this time reject sectional settlments, because of the fact that there was an interstate joint contract exising in the competitive field between the coal operators and the United Mine Workers of America." He added that he had accepted President Harding's invitation to a conference in Washington on July 1 of operators and miners, and said: "We, therefore, cannot see the advisability of, or believe any benefit would be derived for our people or the consuming public from, a meeting such as you suggest at this time."

Baxter Charged with "Selling Out" Union Members in Canadian Fields

J. B. McLACHLAN, secretary-treasurer of the Maritime district of the United Mine Workers Union, declares President Baxter of the U.M.W. for the maritime district (No. 26), "sold out" the members of the union. McLachlan has been supported in the stand by Phalen Local, one of the biggest of the locals of the district. McLachlan asserts that Baxter betrayed the miners of the Canadian coal fields, especially those employed by the British Empire Steel Corporation (Dominion Coal Co.), the start in the alleged betrayal being made at the time of the recent Montreal conference just previous to the appointment of the Scott conciliation board.

According to McLachlan the miners held aloof from the operations of this board. He said President Baxter appointed I. B. McDougall, of Inverness, as the union representative on the board because McDougall was one of his henchmen. The miners, according to Phalen Local and McLachlan, will not support either the majority or the minority report of the Scott conciliation board, which was appointed to adjust the dispute over the cut in wages ordered by the British Empire Steel Corporation at the Cape Breton collieries.

McLachlan characterizes Baxter as a traitor who used his office as president for his own financial ends. On the other hand, Baxter says he is not in sympathy with McLachlan's tactics and describes the latter as a Bolshevik who is trying to advance the cause of the One Big Union and not that of the United Mine Workers and the American Federation of Labor.

The pot is merrily boiling in U. M. W. circles in eastern Canada. Most of the talk has been coming from McLachlan, Baxter being comparatively quiet. McLachlan includes in his condemnation John P. White, who came from Indianapolis to help clear the air among the members of the U. M. W. in the Maritime district but has achieved little success thus far.

Man Shortage and a Few Disturbances Handicap Colorado's "Busting" Output

COLORADO'S labor difficulties at the end of June were not so much those of hard feeling and resultant trouble as they were of man shortage and difficulty in supplying the keen fuel demands of the C. B. & Q. and the Union Pacific railroads. Both roads were buying all the coal they could reach, the "Q" having contracted the output of all the mines it could command, including many of the Colorado Fuel & Iron Co., the Victor-American Fuel Co. and many independents. Much of this coal is being shipped to all parts of the "Q" system, even as far east as Chicago.

No serious labor disturbances occurred in the state during the month, though small evidences of bitterness by strikers were seen here and there. On the early morning of the 29th a bridge was burned out a mile from the Ideal mine, of the Colorado Fuel & Iron Co., in the Trinidad field, thus cutting off a flow of 800 tons of steam coal a day, and here and there shots were fired at company employees, including William McLoughlin, son of the superintendent of the Fox mine, near Boulder. But operators declared the mass of miners in the state were out of sympathy with the strike, which had little effect in Colorado except in the Cañon district, where a few mines are down and where the rest are working at half capacity.

Colorado operators to a man credit Governor Shoup and the State Rangers with the good order that has prevailed. This force of 50 men has inspired such respect for itself that the state is full of stories about how a ranger dashes by motorcycle into a town where trouble is brewing and quells the incipient uprising by a word and a look. These men do not wait for a war to start. Their policy is to be there first. Many a man in Colorado is saying Illinois would not have had the Herrin massacre or anything like it if that state had such a force of law enforcers. Also they say Colorado is so full of trouble breeders that the state might easily have had war before this had it not been for the rangers and the common knowledge that Governor Shoup will instantly lend the full strength of official Colorado to protect property and preserve order.

As evidence of this on June 29 he ordered 500 National Guard troops into the fields to safeguard life and property because of threatened trouble that broke loose on July 1. Adjuntant General Patrick J. Hamrock is in command.

National Guard headquarters obtained information that radicals were planning to attract rangers to Frederick following a union meeting and to hold them at that place

to permit confederates and radicals to damage mine properties in coal fields nearby. Information disclosed plans to fire the Evans, the Puritan, Columbine and Grant mines among others, according to General Hamrock, and the Governor now has about 150 National Guard troops and state rangers patrolling the district around Frederick.

An important development of the strike in Colorado is that the Victor American Fuel Co., long a staunch believer in unionism, has definitely severed diplomatic relations with the unions and is now on an open-shop basis. The company had made wage contracts with the unions for several years, always inserting a clause in the agreement pledging union leaders not to so much as agitate against the company and the contract. However, at the expiration of the last contract, April 1, when the union officials called out the men and declined to renew the contract, the company changed its policy.

"I'm through with unions," said W. H. Huff, president of the company, "until such time as it is possible to hold a union to an agreement. That is impossible now."

Commissary Stations for Strikers In Indiana Post Strict Rules

SOME of the signs hanging about the commissary station established recently in West Terre Haute, Ind., for the miners of that district who are striking are:

"Miners' Commissary."

"Leave Orders One Day in Advance."

"To Get Bread, Line Up and Take Your Turn and Keep Order."

Similar commissaries have been established in Clinton to aid miners in that field. The commissaries are the first to be established in the Indiana field. No woman may appear at the station for food unless her husband is sick, and should such a report be turned in, the case is immediately investigated to prevent miners who are engaged at other work from coming in on benefits so badly needed by those not employed. The store door is kept closed and each miner who registered the day previous is called by name to get his basket. The apportionment is made according to the number of persons in the family, 50c. for adults and half that for children.

The men operating the commissaries come from the ranks of the miners, but are not working under the supervision of the United Mine Workers of America, but as a separate body. The men met and formed a group under the head of the Miners' Relief Association. Two committees are in different parts of the state soliciting aid for the miners and their families. Robert Fife, 88 years old, who has been in the mines since he was nine years old, starting as a trapper boy, waits in line with others for his food. He is the oldest miner in Vigo County and probably the oldest in Indiana. Mose Morgan, 77 years old, usually accompanies him to the commissary.

SMOKELESS MINES OF WEST VIRGINIA are now producing at the rate of 3,000,000 tons per month, which is the largest in the history of the region. In round numbers the Pocahontas field is mining 70,000 tons per day, the Tug River field 20,000 tons per day, the Winding Gulf 30,000 tons per day and the New River 20,000 tons per day.

A number of high-cost mines have resumed operation since May 31, and it is believed that at the present rate of improvement the New River field will be able to increase its production to 25,000 tons per day by July, which is more than the field was producing before the strike.

Every effort is being made by the Chesapeake & Ohio and the Norfolk & Western to keep their equipment rolling and consignment of coal to the scales at Portsmouth, Ohio, on the N. & W., and to Russell, Ky., on the C. & O., is being discontinued on account of possible delay to loaded cars at these points. Unless through billing can be furnished, these loads are not being moved from the tipples and in case any coal is found unconsigned at the scales at these western points the railroads immediately embargo the mines and furnish no more equipment until the unconsigned loads at the scales are furnished with through billing.

Demonstrations Cease at Wagon Mines Of Indiana Pending Injunction Action

NO FURTHER disturbances are beieng reported in the wagon-mine coal fields in Indiana. Striking union miners who recently conducted demonstrations and closed non-union mines in these fields are withholding further activities pending action by the federal court at Indianapolis on an application for an injunction to protect wagon-mine operators filed by operators of Knox County. Crowds of miners continue to congregate in various cities, but no signs of violence have been shown since a number of union men were arrested and arraigned in the Clay circuit court at Brazil on charges of riot and conspiracy to riot.

Kentucky Dumps Vast Volume of Coal Onto the Country During Strike

KENTUCKY is breaking some records in production of coal at the present time. Figures received from the Louisville & Nashville R.R. show that in May the road handled 13,698 more cars of coal than during any previous month in its history. The total number of cars handled was 66,415, as against a previous record of 52,717 cars, a net gain of 13,698 cars during the month.

Officials of the road assert that if the strike lasts much longer the Louisville & Nashville R.R., which to date is out in front as the largest coal carrier of the country for 1922, will prove the premier coal carrier of the year.

During May the L. & N. had movement of Alabama and western Kentucky coal going both to Chicago and Pittsburgh, an unusually interesting movement for Alabama coal. Officials of the road say that it could have handled a far larger tonnage but for congestion at Louisville, Cincinnati and other gateways, other connecting roads not having motive power sufficient to handle the coal tonnage with dispatch. There also was some congestion on some of the branch lines in the fields. In order to relieve congestion as much as possible the L. & N. has been foregoing long hauls in many instances, turning over tonnage to connecting lines at Southern connections rather than block the larger terminals.

Mine capacity on the Cumberland division of the Louisville and Nashville railroad is running one thousand cars a day in excess of the railroad's ability to handle the coal. A representative of the American Railroad Association is on the ground, however, and there is every assurance that coal will move at the absolute maximum capacity of the division.

AFFAIRS HAD REACHED such a pass in connection with the strike in northern West Virginia during the last week of June that miners of Monongah, a mining town in the Fairmont field, were prepared, in utter defiance of the county officials of Marion and the officials of the City of Fairmont, to storm the Marion County jail and liberate 91 men arrested on June 23 in connection with a demonstration of miners. When it was learned that the miners were gathering at Fairmont every available city police officer and county police officer was summoned to duty to prevent the entrance of the miners to the city, city officers being instructed to throw a water barrage on the miners if they attempted to enter the city. C. F. Keeney, president of District 17, who was at the headquarters of subdistrict 4 at Fairmont, was advised of developments and left immediately for Monongah. Upon his return to the city he told Prosecuting Attorney Amos that he was confident that there would be no further disorders.

VERNON W. VAN FLEET, formerly judge for a period of eight years of the Superior Court of South Bend, Ind., was sworn in June 30 for a term of seven years as a member of the Federal Trade Commission, and has entered upon the discharge of his duties. Since March, 1921, Judge Van Fleet has been special assistant to the Attorney General, giving his attention particularly to reorganization work.

Government Plan Calls for More Than Temporary Adjustment of Strike Differences

By Paul Wooton
Washington Correspondent of *Coal Age*

AT THE close of Sunday's conference at Washington between the bituminous operators and mine workers there were indications that an agreement finally would be reached whereby wage scales would be negotiated on a district basis. While the conferences on Saturday and Sunday were behind closed doors, there is reason to believe that the arguments presented for district conferences outweighed those advanced by John L. Lewis and his associates for a national agreement.

The belief among operators that the mine workers ultimately will come to district settlement was not altered by the vote against such procedure at the Sunday afternoon session. The recession is expected to come gradually and probably not until the delegates to this conference have discussed the matter with their constituents.

After the Monday session the conference adjourned until July 10. After the meeting Secretary Hoover expressed the hope that after the representatives of the operators and the miners had had the opportunity to discuss the situation with their associates more progress would be made. No government plan was put forward during the meetings.

It is reported that during Monday the operators in a closed meeting decided that should no result be attained in the later meeting with the miners, they would go home prepared to open important mines in each of the closed union fields. They were induced to give up this plan as far as this week is concerned. It is understood, however, that they have served notice on the miners that they will start mines next week if the union does not reach an agreement with them. They are reported to be determined to bring matters to a conclusion at once.

It is apparent that Secretary Hoover and Secretary Davis are going to insist that there be more than a temporary adjustment of differences. Every effort will be made to provide for the initiation of policies looking to the treatment of such fundamental ills as intermittency. While the remarks of President Harding to the representatives of the operators and of the mine workers are capable of being interpreted as foreshadowing action that will amount to compulsory arbitration, it is known that he is relying largely on the advice of Secretary Hoover. Mr. Hoover is known to be a strong advocate of a more permanent settlement than can come from a compromise of wage differences, which is practically the only possible outcome of arbitration.

In view of the fact that agreement is desired on a program looking to the removal of fundamental difficulties in the industry, an effort is being made to work out a plan whereby work in the union fields can be resumed pending a settlement, as such a program necessarily would extend over a considerable period of time.

At the Saturday morning session Mr. Lewis took vigorous exception to the fact that the so-called doubtful fields were not represented on the operators' side of the conference. He insisted that operators from Kanawha, New River, Colorado and other fields partly affected by the strike should be in attendance. A. M. Ogle, president of the National Coal Association and designated by the President to be chairman of the conference committee, stated that only those districts which are seeking a conference with the United Mine Workers had desired to avail themselves of the opportunity to name delegates. He pointed out that representatives of the operators were, in most instances, the presidents of the local operators' associations. In certain instances, he is understood to have explained, illness and other causes had prevented the attendance of the president of the operators' association. Representatives of most of the non-union fields were in Washington as observers.

Meetings thus far held indicate clearly that the operators believe they are certain to win the strike if it is allowed to run its course. They are practically a unit in their advocacy of district agreements. On the other hand, their is some indication that the position of the mine workers may be altered in that connection.

Publicity to Be Given Through Government

The President, in requesting that the negotiations be conducted in executive sessions, was actuated, it is believed, by desire to prevent criminations and recriminations on the part of the interests concerned. An agreement is understood to have been reached whereby all publicity will be given out through government channels.

While Secretaries Hoover and Davis were participating in the conference with the bituminous operators, Secretary Fall met with the representatives of the anthracite operators and mine workers. Secretary Fall is said to have expressed the personal opinion to the anthracite operators that their business is a public utility and should be subject to the regulations usually imposed on that class of industry. The anthracite operators are understood not to have received a satisfactory answer, when they asked Secretary Fall if the government is prepared to fix the price of coal so as to permit a fair return on the investment and to take the other steps which go with a regulation of public utilities.

When the operators and the officials of the United Mine Workers assembled at the executive offices at the White House at 10 a.m. Saturday they were received by the President. Nothing transpired at that session except the formal address of the President. There were no responses. When the President had finished his remarks he shook hands with each one present and departed almost immediately for Gettysburg. The text of his address follows in full:

Gentlemen of the coal industry. I asked you to meet here this morning, with the thought that in bringing you together I might be serving both the mine workers and the mine operators of the United States, and at the same time serve the great American public to which both you and I are obligated. I hold no specific authority under which to admonish you, but I do have the right to invite your immediate attention to a situation which deeply concerns the

country, the solution of which you collectively owe to the American people.

You who are here today represent a large sponsorship for America's supply of fuel. In that sponsorship you have an indissoluble relationship to the commonwealth of America. Coal is indispensable to our life as a people, and since this country has afforded you the opportunity of development on your part, both as workers and operators, you have created, in turn, an obligation to serve. Conflicting views as to your policies and your obligations to one another in no wise modify your obligations to that public which made possible your industrial existence.

Because of expiring agreements relating to wage scales and working conditions a large percentage of the mining activities of the country have been suspended three months to a day. It is not for me to touch upon the merits of your opposing positions. I have not called you as a partisan of the mine worker or the employer. I do not mean even to discuss a single phase of controverted questions. The main point is to bring you together and in that contact of men to men, mindful of the necessity of righteousness in any useful and abiding relationship, to have you frankly and fairly consider your problems in their relation to the welfare of our common country.

It is pretty generally recognized that there are fundamental difficulties in present-day coal production, the solution of which is not to be found in an hour or a day of most friendly and earnest conference. The excess development of a producing capacity, in both tonnage available and miners to work it, has presented one situation demanding solution, or there will be inevitable loss of property interests and a train of unprofitable employment. The war upheaval and all attending inflations and excess productions have left an inevitable and unavoidable liquidation. The intermittence in employment has made it impossible for mine workers, who are only employed partial time, to pursue their trade at wage rates adjusted to other employments. No industry is soundly based, no American activity can be held secure, where employment is compensated on a base of half-time or two-thirds of the normal, natural, work period of an American wage earner.

There has been instability of production, attended by a failure of delivery capacity, which had reflex in speculative prices and panicky conditions, which encouraged profiteering, and menaced our industries and hampered our varied public services.

Labor has the right, capital has the right, and, above all else, the American people has the right to be freed from these recurring anxieties, no matter what the causes are. That freedom must be established.

The government has no desire to intrude itself into the field of your activities. It does feel an obligation to see that the common American interest shall not be menaced by a protracted lack of fuel. It prefers that the two great and associated interests—mine workers and employers—should settle this matter in a frank recognition of the mutuality of your interests. If you cannot do that, then the larger public interest must be asserted in the name of the people, where the common good is the first and highest concern.

I have said that the fundamental problems probably cannot be solved in a hurried conference. But this conference might well devise the agency for effecting a solution. This is the purpose of calling you together, the beginning of solution. Meanwhile, operations ought to be resumed. With diminishing fuel supplies, with menacing shortages as we turn to winter's approach, with unemployment visiting its hardship upon idle mine workers, and with vast ownership without return on investment, it would seem to be the simplest common sense to find acceptable ground on which to resume activities, with commitment to accept the righteous adjustments which may well be expedited in common consent.

This is no time for the militant note of the radical who would prefer to destroy our social system, no time for the extremist who thinks the period opportune to break down organized labor. The government has no ear for either of them, but would gladly lend its co-operation in curbing the extremes of both. More, the government gladly tenders you its good offices, in striving for righteous solution. It has no desire to participate in a merely temporary makeshift. For the good of all the people the government craves a way to permanent stability, tranquillity, and ample periods of employment at just wages, righteous freedom for workers and righteous freedom for management, and a secure freedom from recurring menaces of suspended activities. It is not a question as to what influences dominate, who wins, who yields most in settlement. There is an indisputable justice in all relationships about which public opinion never fails to be right, and I invite you to prescribe that relationship for your mutual good and the country's common good.

You are admonished to arrive at such understanding with measurable promptness, among yourselves. If the adjustment can not be reached by you alone, government aid will be available at your joint call. We wish you who best know the way to solution to reach it among yourselves, in a manner to command the sanction of American public opinion. Failing in that the servants of the American people will be called to the task in the name of American safety, and for the greatest good of all the people.

Suitable accommodations for your conference await your arrival. By agreement I am able to announce a temporary organization with A. M. Ogle to preside and William Green to be your secretary. I have asked Secretaries Fall, Hoover and Davis to be your escorts, and to be of every assistance possible, as official hosts to such a compay.

Let me remind you that toleration, fairness, the spirit of give and take, and finally a sense of the larger obligations to the public are essential to successful conference.

And I commend to you executive sessions, and assume full responsibility for such a recommendation, even as I assume the safeguarding of the public interest in asking you to come together. Differences are more often magnified than composed in their parading, and the call of the hour is adjusted differences, with due concern for the public welfare.

I thank you all alike for your response to my invitation, and I express the hope that in the realization of your responsibilities, and in an appraisal of your obligations, in the face-to-face, man-to-man, and citizen-to-citizen contact, you will find a way to a just concord which the American public may gladly acclaim.

Those who were appointed to represent the operators at the conference were:

A. M. Ogle.
James Needham, representing the Montana Coal Operators' Association.
P. J. Quealy, president, Southern Wyoming Coal Operators' Association.
H. N. Taylor, president, Southwestern Interstate Coal Operators' Association.
Daniel C. McAlpin, president, Oklahoma Coal Operators' Association.
Ira Clemens, president, Kansas Coal Operators' Association.
Edward C. Smith, president, Iowa Coal Operators' Association.
F. S. Pfahler, representing the Iowa Coal Operators' Association.
Rice Miller, president, Illinois Coal Operators' Association.
W. K. Kavanaugh, president, Fifth & Ninth Districts Coal Operators' Association.
Robt. M. Randall, president, Michigan Coal Operators' Asso-
H. C. Adams, president, Central Illinois Coal Operators' Association.
E. D. Logsden, vice-president, Indiana Bituminous Coal Operators' Association.
J. B. Pauley, representing the Indiana Bituminous Coal Operators' Association.
Hugh Shirkie, representing the Indiana Bituminous Coal Operators' Association.
ciation.
E. M. Posten, representing the Southern Ohio Coal Exchange.
Geo. M. Jones, representing the Southern Ohio Coal Exchange.
Michael Gallagher, president, Pittsburgh Vein Operators' Association of Ohio.
T. W. Guthrie, representing the Pittsburgh Coal Producers' Association.
Don Rose, representing the Pittsburgh Coal Producers' Association.
A. R. Pollock, president, Coal Operators' Association of the Thick Vein Freeport Seam of Pennsylvania.
T. H. Watkins, president, Central Coal Association of Pennsylvania.
B. M. Clark, president, Association of Bituminous Coal Operators of Central Pennsylvania.

In each instance the district association named its representative. Mr. Ogle had no part in designating any of the representatives of the operators, as has been stated in certain quarters.

Reed Resigns as National Coal Secretary to Take Up Accounting Practice

W. B. REED has presented his resignation as secretary of the National Coal Association and has opened an office in Washington, D. C., where he will devote his attention to the handling of matters of federal taxation and accounting, specializing in these matters particularly for bituminous-coal operators.

Mr. Reed has had an accounting experience of upward of twenty-two years with the bituminous-coal industry. Soon after the formation of the Pittsburgh Coal Co. in 1899 he entered the accounting department of that company. In 1911 he became connected with the New River Co., where he had charge of general accounting matters for that company and its operating subsidiaries, including that of its selling company, the White Oak Coal Co.

He left the New River Co. in October, 1918, to join the National Coal Association. In this connection he worked



W. B. REED
Retiring Secretary of National Coal Association

with the accountants of the Federal Trade Commission in an endeavor to produce a cost sheet which would be acceptable alike to the government and to the coal operators.

He is the author of a book on cost accounting in the bituminous industry which will be published by the McGraw-Hill Book Co. Mr. Reed has been in frequent touch with the Internal Revenue Bureau in matters of taxation and while occupying the position of secretary of the National Coal Association acted in an advisory capacity to many of the coal operators in taxation and accounting matters.

National Parley, Say Illinois Operators, Would Be Unwieldy and Unsatisfactory

IN announcing that a committee of Illinois operators would attend the conference at Washington to consider ways and means for breaking the present deadlock in the coal-mine labor situation in the organized fields of the country, F. C. Honnold, secretary-treasurer of the Illinois Coal Operators' Association, said they were going with open minds and sincerely hopeful that some appropriate and effective means would be found by which all of the anticipated benefits of such meeting could be obtained and the coal mines in all parts of the country put to work at an early date. The statement continued:

"In their participation in such conference, however, the representatives from Illinois will continue to insist that, within their judgment, the coal industry as well as the public can expect to secure the best benefits only through state conferences.

"Throughout the past ten or more years the direct result of interstate negotiations has developed discriminatory and burdensome conditions in the working agreement with the miners in this state, due to the fact that the Illinois miners are both more closely organized and greater in number than in any other individual unionized coal-producing district, and on this account consideration has always been denied by the miners to every suggested change in working agreement that would permit of a reduction in the cost of coal, even when such changed conditions did not affect the annual earning capacity of the men.

"War conditions and practices as well as a sharp change in the tendencies and policies of mine-labor leaders and the increase of uncontrolled radicalism among the members have also brought about many new conditions that can be successfully reached only through local negotiations and adjustments. To a greater or less extent similar conditions prevail in the twenty-five or thirty other larger coal-producing districts in the country.

"It is therefore patent that no national consideration and adjustment of the coal-mine labor situation is at this time possible either through joint conferences of operators and miners or by a national arbitration commission.

"A national joint conference body covering all coal fields of the United States would be of such size and diversified opinion that such a method of procedure would accomplish nothing. By the same token consideration by a national arbitration commission of all of the numerous discriminatory conditions that have developed during the past 15 or 20 years would make an unsatisfactory grant and award until after the expiration of several months.

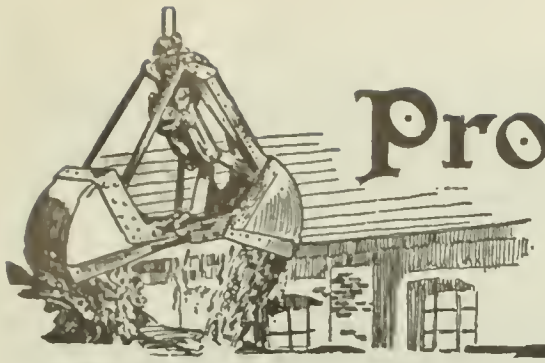
"A wage scale and working agreement calculated to best protect the public in all sections of the country must therefore be negotiated in smaller groups in order that both the miners and the public in such local districts may receive the greatest benefit. A scale of wages amply adequate and satisfactory in one section may not be sufficient in another, provisions for the mining of coal under a set of conditions prevailing in West Virginia, Maryland or Pennsylvania may be and as a matter of fact are unsatisfactory in Illinois mines.

"After 25 years' experience in interstate collective bargaining, Illinois operators are convinced that this method of wage-scale negotiations has not only failed to justify itself either through benefit to the individual workman of the industry or to the public, but that, to the contrary, such method is distinctly prejudicial to the best interests of all parties concerned.

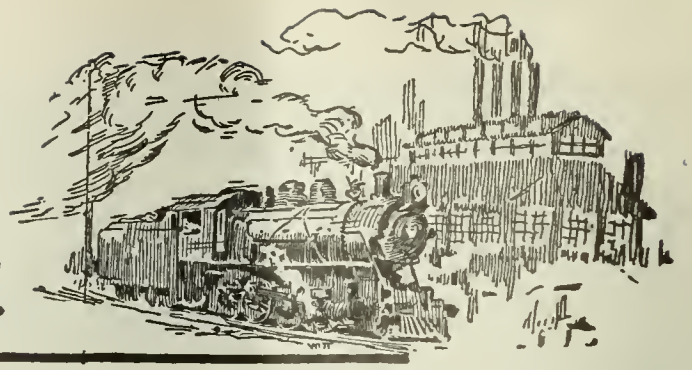
"It is also a discrimination against all those consuming sections of the country who are compelled to rely upon coal produced from unionized districts to pay a price for their coal that is predicated upon a wage scale made arbitrarily higher than that prevailing in non-union districts, where the right of employment is unabridged and management is unembarrassed by compulsory working conditions that are detrimental to public interests and that develop unnecessary coal cost and subsequent coal price."

MOSCOW DISTRICT COAL OUTPUT.—Coal production in the Moscow basin in February amounted to 5,233,000 poods, or 93.7 per cent of the quantity demanded of it by the government. The output is considerably over that for January. The number of shifts working was 45.

NEW GERMAN BRIQUET PROCESS.—A German technical journal reports a new process for making hard-coal briquets without the addition of foreign binding material. By this method the fine coal is heated to the temperature at which the appearance of the slow combustion gases begins.



Production and the Market



Weekly Review

JULY 1 ushered in the expected rush for coal. This week has brought forth more inquiries and actual orders than have reached shippers for several weeks past. The sales offices of coal companies have been expressing wonder lately as to how long the many small consumers could hold out. They are getting their answer this week as orders for stock replenishment come in. Those who held off awaiting the reduction in freights have their answer in mine prices that more than take up the reduction. It is reported, for example, that wholesalers increased the price on Eastern coal in Milwaukee by 50c. following a freight-rate decrease of 35c. The consumer loses 15c.

Demand has by no means reached the peak on all markets, but Cincinnati reports activity exceeding that of war times and along the Atlantic seaboard nothing but the abundance of water-borne coal from the South has held prices within reason. Line points served by all-rail coal from northern West Virginia and Pennsylvania are feeling the effect of high prices.

Spot Price Index Reflects Strength of Market

Coal Age index of spot prices of bituminous coal reflects the strength of the market. From 284 on June 26, representing an average price of $3.44, the index on July 2 stood at 290, corresponding to an average mine price of $3.51 per net ton. Every advice indicates that nothing but the agreement of the operators with Mr. Hoover serves to hold the price in the South from reaching a new high level for this year.

When the country realizes the full import of the statement of the Geological Survey that five and a half million tons per week is the practical maximum for soft-coal production from mines now at work, due to lack of transportation facilities, and when it becomes apparent that the conferences at Washington now in progress show no sign of getting the men back in the mines for some time, the demand for coal will make still further gains. In other words, everything is heading up to produce a panic among buyers. The efforts of Washington are now the only hope for the consumer.

There is some lack of understanding, not yet cleared up by the government, with respect to the margin to be allowed the jobber. With the price at the mine up to the Hoover figure the jobber must either quit or exceed his agreement, or so it appears.

The anthracite deadlock, being discussed at Washington, naturally has aroused the consumer from his long period of indifference. Orders are flowing into the retailers for next winter's needs as the householder realizes that a rush period in the autumn is now sure. Retail stocks are fast going down and the dealer can do little else than file these orders for future attention. Pea is moving better and some of this coal is being used as a substitute for the scarce steam sizes. River barley is in increasing demand and prices are up.

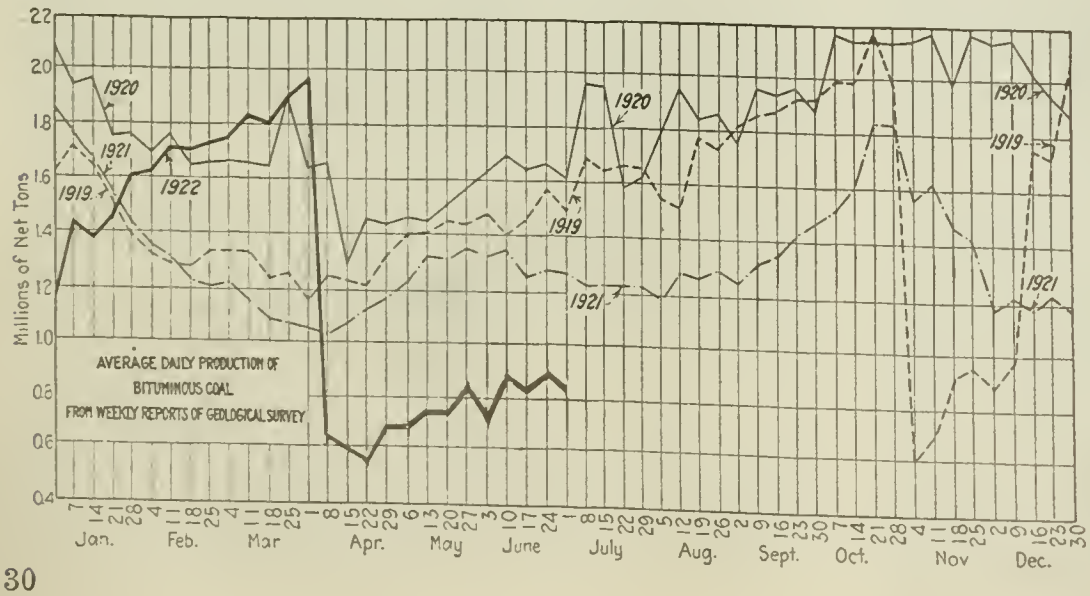
No announcement has been made as yet as to the attitude of the producing companies regarding the levying of the Pennsylvania coal tax, pending the appeal to the high court.

The coke market is strong but not panicky. There is so little tonnage offering that spirited bidding is being done. While the output has been increased it is very little help to the market, as most of it is by furnace interests.

BITUMINOUS

"The thirteenth week of the coal strike has been marked by a recurrence of traffic congestion in certain of the non-union fields, and as there has been no compensating increase in the fields affected by the strike, production of bituminous coal will be slightly less than in the week preceding," says the Geological Survey. "Production of anthracite is still practically zero.

"Complete returns for the twelfth week (June 19-24) show a production of 5,337,000 net tons of bituminous coal and 24,000 net tons of anthracite, a total of all coal of 5,361,000 tons. In the corresponding week a year ago the total raised, including anthracite, was 9,550,000 tons. In 1920, when business was active, it was 11,960,000 tons. In



Estimates of Production

(Net Tons)

BITUMINOUS

Week ended:	1921	1922
June 10 (*b*)	8,010,000	5,136,000
June 17 (*b*)	7,551,000	5,013,000
June 24 (*a*)	7,704,000	5,337,000
Daily average	1,284,000	890,000
Calendar year	188,806,000	182,600,000
Daily av. cal. yr.	1,279,000	1,229,000

ANTHRACITE

June 10	1,963,000	12,000
June 17	1,941,000	22,000
June 24 (*a*)	1,847,000	24,000

COKE

June 17 (*b*)		106,000
June 24	50,000	109,000
Calendar year	3,351,000	3,101,000

(*a*) Subject to revision. (*b*) Revised from last report.

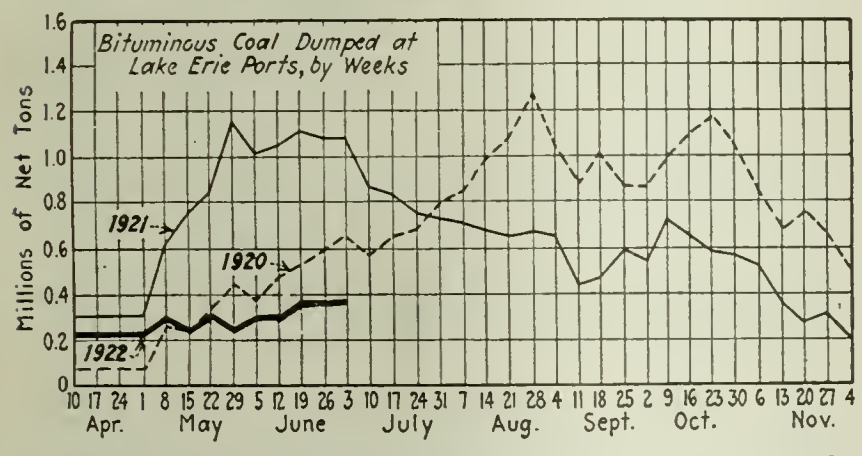
terms of all coal, therefore, the quantity now being mined weekly is 5 or 6 million tons below normal.

"The thirteenth week opened with production at a high rate. Loadings on Monday, June 26, were 16,735 cars, the largest on any Monday since the strike began. But on Tuesday, and again on Wednesday, congestion on the railroads serving southeastern Kentucky and parts of southern West Virginia began to curtail production and loadings fell off 1,000 cars. By Thursday, however, the congestion was lessening and 16,411 wars were loaded. Present indications therefore point to a total output for the week of less than 5,300,000 tons.

DAILY LOADINGS DURING THE STRIKE

	1st week	8th week	9th week	10th week	11th week	12th week	13th week
Monday	11,445	14,772	15,058	14,597	15,474	15,311	16,735
Tuesday	11,019	15,085	11,056	15,269	15,849	16,622	15,726
Wednesday	11,437	14,677	15,222	15,999	14,905	17,032	15,769
Thursday	11,090	14,573	13,790	16,325	14,884	16,432	16,411
Friday	11,296	15,202	14,523	15,864	13,933	16,073	.....
Saturday	8,888	12,662	12,545	13,991	13,465	13,993	.....

"The decrease in loadings is reported to be due not to scarcity of cars but to inability to move them faster than a certain limit set by the existing yard and track facilities, and it is to be noted that the railroads concerned are making new records in volume of traffic handled. Production in the non-union fields of the Middle Appalachians has reached a maximum and further gains in output are not to be expected except as mines hitherto closed by the strike resume operations. During the past week the increase in the non-union fields of Pennsylvania has been slight. In none of the strongly organized districts has work been resumed."



The rising markets on the Eastern seaboard have caused the British trade to look this way for an outlet. A Massachusetts port has received the first cargo of Newcastle coal and a few others are under load or on the way.

All-rail movement to New England was 669 cars during the week ended June 24. This was an increase of 155 cars as compared with the previous week. Prices on central Pennsylvania grades are firmer, but the New England market presents a poor outlook for these coals, due to the severe competition from Hampton Roads.

Dumping at Hampton Roads for all accounts were 494,182 net tons during the week ended June 29, as compared with 450,231 tons in the preceding week. New England and North Atlantic ports are taking the bulk of this tonnage. Shippers are putting so much of this coal into Baltimore, Philadelphia and New York, at attractive prices, that these Southern coals are the main factor in keeping down the Tidewater price on all-rail fuel. Prices Inland

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 Inclusive	April 3 to June 17, 1922 Inclusive	Week Ended June 17
U. S. Total	45.6	55.7	. .	....
Non-Union				
Alabama	63.5	64 6	69.5	88.0
Somerset County	55.5	74.9	44 9	46.7
Panhandle, W. Va.	55.3	51.3	41.6	50.5
Westmoreland	54.9	58.8	81.4	96.1
Virginia	54.8	59.9	79.3	85.1
Harlan	53.3	54.8	. .	. .
Hazard	51.7	58.4	62.1	63.1
Pocahontas	49.8	60.0	76.0	83.9
Tug River	48.1	63.7	82.5	88 5
Logan	47.6	61.1	76.8	80.9
Cumberland-Piedmont	46.6	50.6	15.4	16.1
Winding Gulf	45.7	64.3	71.0	65.7
Kenova-Thacker	38.2	54.3	79.3	81.2
N. E. Kentucky	32.9	47.7	61.9	66.7
New River?‡	24.3	37.9	22.0	44 2
Union				
Oklahoma	63.9	59.6	14.1	13.5
Iowa	57.4	78.4	0.0	0.0
Ohio, eastern	52.6	46.6	0.0	0.0
Missouri	50.7	66.8	1.3	4.1
Illinois	44 8	54.5	0 0	0.0
Kansas	42.0	54 9	12.8	19.3
Indiana	41.4	53 8	0 0	0.0
Pittsburgh†	41.2	39.8	0 0	0.0
Central Pennsylvania	39 1	50.2	11.6	11.7
Fairmont	35.3	44 0	. .	. .
Western Kentucky	32.5	37.7	59 3	75.5
Pittsburgh*	30.4	31.9	0.0	0.0
Kanawha	26.0	13.0	4 3	. .
Ohio, southern	22.9	24.3	0.0	0.0

* Rail and river mines combined.
† Rail mines.
‡ Union in 1921, non-union in 1922.

Car Loadings and Surpluses

Cars Loaded:	All Cars	Coal Cars
Week ended June 17, 1922	860,772	92,136
Previous week	846,002	94,824
Same week a year ago	775,328	155,308
Surplus cars:		
June 15, 1922	442,252	171,831
June 8, 1922	465,837	180,832
Same date a year ago	381,746	162,000

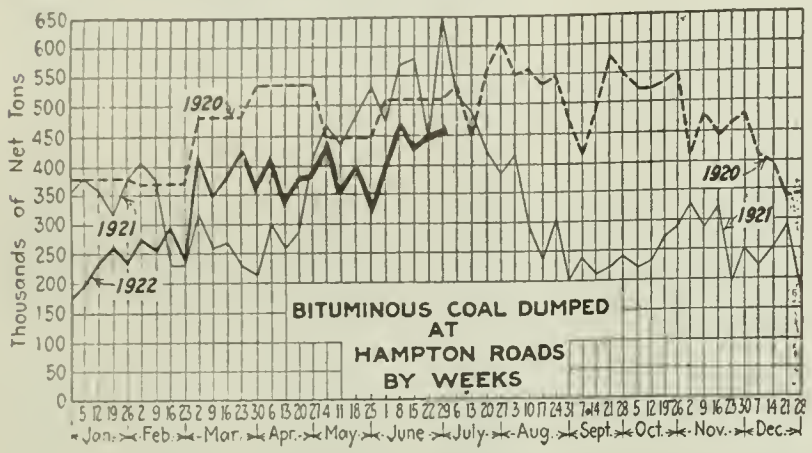
Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	June 5, 1922	June 19, 1922	June 26, 1922	July 3, 1922†
Smokeless lump	Columbus	$3.35	$3.50	$3.65	$3.50@$3.75
Smokeless mine run	Columbus	3.00	3.30	3.45	3.35@ 3.50
Smokeless screenings	Columbus	2.85	3.15	3.35	*3.25*
Smokeless lump	Chicago	3.10	3.25	3.65	3.50@ 3.75
Smokeless mine run	Chicago	2.85	3.10	3.40	3.25@ 3.50
Smokeless lump	Cincinnati	3.40	3.55	3.65	**3.75**
Smokeless mine run	Cincinnati	2.85	3.40	3.45	3.35@ 3.50
Smokeless screenings	Cincinnati	2.75	3.15	3.15	**3.25**
*Smokeless mine run	Boston	6.05	6.10	6.10	**6.10@ 6.25**
Clearfield mine run	Boston	3.20	3.05	3.30	**3.25@ 3.60**
Cambria mine run	Boston	3.65	3.50	3.65	**3.40@ 4.00**
Somerset mine run	Boston	3.15	3.20	3.40	**3.35@ 3.60**
Pool 1 (Navy Standard)	New York	4.40	4.40	4.45	**4.75@ 4.85**
Pool 1 (Navy Standard)	Baltimore	.....	4.00	3.85	**4.25**
Pool 9 (Super.Low Vol.)	New York	3.90	4.05	4.40	**4.50@ 4.75**
Pool 9 (Super.Low Vol.)	Philadelphia	3.90	4.30	4.30	**4.35@ 4.75**
Pool 9 (Super.Low Vol.)	Baltimore	3.40	3.85	3.75	**4 00**
Pool 10 (H.Gr.Low Vol)	New York	3.75	3.80	3.95	**4 25@ 4 50**
Pool 10 (H.Gr.Low Vol.)	Philadelphia	3.70	4.00	4.00	**4.00@ 4.50**
Pool 10 (H.Gr.Low Vol.)	Baltimore	3.35	4.00	3.75	**4.00**
Pool 11 (Low Vol.)	New York	3.60	3.50	3.75	**4.00@ 4.25**
Pool 11 (Low Vol.)	Philadelphia	3 25	3 75	3.75	**3 75@ 4.00**
Pool 11 (Low Vol.)	Baltimore	3.15	3.50	3.75	**3.75@ 4 00**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	3.65	3.65	3.90	**4 00@ 4 50**
Pool 54-64 (Gas and St.)	Baltimore	3.25	3.50	3.75	**3 75@ 4 00**
Kanawha lump	Columbus	3.15	3.35	3.65	**3.50@ 3.75**
Kanawha mine run	Columbus	2 85	3 25	3.40	3 25@ 3 50
Kanawha screenings	Columbus	2 65	3 25	3.30	3.00@ 3.25
W. Va. Splint lump	Cincinnati	3 25	3 35	3 50	**3 50@ 3 75**
W. Va. Gas lump	Cincinnati	3 25	3 35	3 50	**3 50@ 3 75**
W. Va. mine run	Cincinnati	2 75	3 00	3 40	**3 35@ 3 50**
W. Va. screenings	Cincinnati	$2.60	$2 90	$3 15	**$3 25**
Hocking lump	Columbus	3.10	3.35	3 65	3 50@ 3 75
Hocking mine run	Columbus	3.00	3.10	3 45	*3 25@ 3 50*
Hocking screenings	Columbus	2.85	3 15	3 45	*3 00@ 3 25*
Pitts. No. 8 lump	Cleveland	.....	4 00	3 95	**4 25**
Pitts. No. 8 mine run	Cleveland	.....	3 70	3 90	**3 90@ 4 10**
Pitts. No. 8 screenings	Cleveland	. . . .	3 70	3 90	**3 90@ 4 10**
Midwest					
West Ky. lump	Louisville	3 30	3 85	4 10	**4 25@ 4 50**
West Ky. mine run	Louisville	3 30	3 80	4 10	**4 25@ 4 50**
West Ky. screenings	Louisville	3 30	3 80	4 10	**4 25@ 4 50**
West Ky. lump	Chicago	3 40	3 75	4 20	**4 40@ 4 50**
West Ky. mine run	Chicago	3 40	3 75	4 20	**4 40@ 4 50**
South and Southwest					
Big Seam lump	Birmingham	2 20	2 20	2 20	**2 30@ 2 40**
Big Seam mine run	Birmingham	1 70	1 85	1 95	**2 00@ 2 25**
Big Seam (washed)	Birmingham	1 85	1 85	1 85	**2 00@ 2 25**
S. E. Ky. lump	Chicago	3 10	3 50	3 65	3 50@ 3 75
S. E. Ky. mine run	Chicago	3 10	3 25	3 40	3 25@ 3 50
S. E. Ky. lump	Louisville	2 85	3 75	3 60	**3 75**
S. E. Ky. mine run	Louisville	2 85	3 25	3 40	**3 50**
S. E. Ky. screenings	Louisville	2 85	3 10	3 30	**3 50**
S. E. Ky. lump	Cincinnati	3 25	3 50	3 75	*3 65@ 3 75*
S. E. Ky. mine run	Cincinnati	2 80	3 05	3 35	**3 50**
S. E. Ky. screenings	Cincinnati	2 75	2 85	3 15	**3 15@ 3 25**
Kansas lump	Kansas City	4 25	5 00	5 00	**5 00**
Kansas mine run	Kansas City	4 20	4 25	4 25	4 00@ 4 50
Kansas screenings	Kansas City	2 75	2 95	3 05	3 00@ 3 10

*Gross tons, f. o. b. vessel, Hampton Roads.
†Advances over previous week shown in heavy type; declines in *italics*.
NOTE—Smokeless prices now include New River and Pocahontas.

from North Atlantic ports thus exceed the quotations at the piers.

Northwestern fuel buyers are now fully aroused to the possibility of a shortage next winter and are canvassing the docks for tonnage. These stocks are so low, however,



that with one exception order taking is very limited. One dock company is still accepting orders and is even shaving prices in an endeavor to clear away the high-priced coal accumulated this season, it being the heaviest receiver of cargoes at the Head-of-the-Lakes this season. Congested roads and a strong market elsewhere are holding down the movement to the lower ports. It is this price factor that has deterred Lake buyers all season—no one wants to stock heavily when lower prices may be just around the corner.

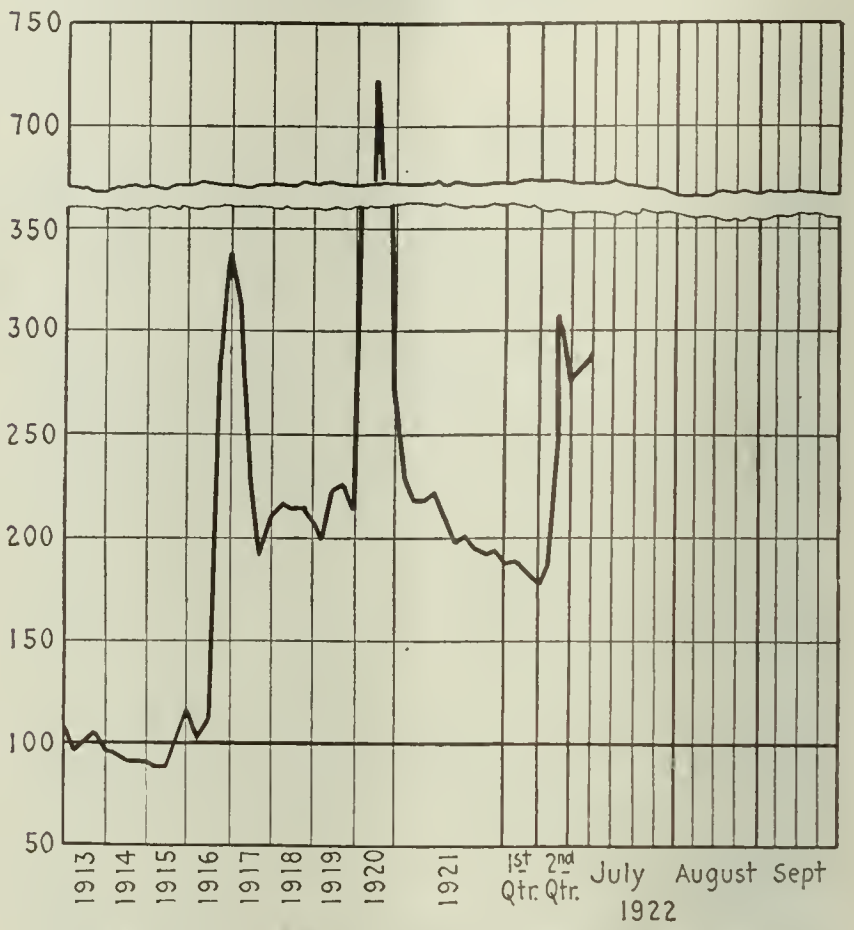
COKE

Beehive coke production increased to 109,000 net tons during the week ended June 24 from 106,000 in the preceding week. Additional Connellsville ovens are being fired, but the increased production is largely by furnace interests and is off the market, which is very strong. It is doubtful if any furnace would pay present coke prices, as the pig-iron market would not justify it. The extremely limited coke offerings are therefore being taken by foundries and miscellaneous users rather than by furnaces.

ANTHRACITE

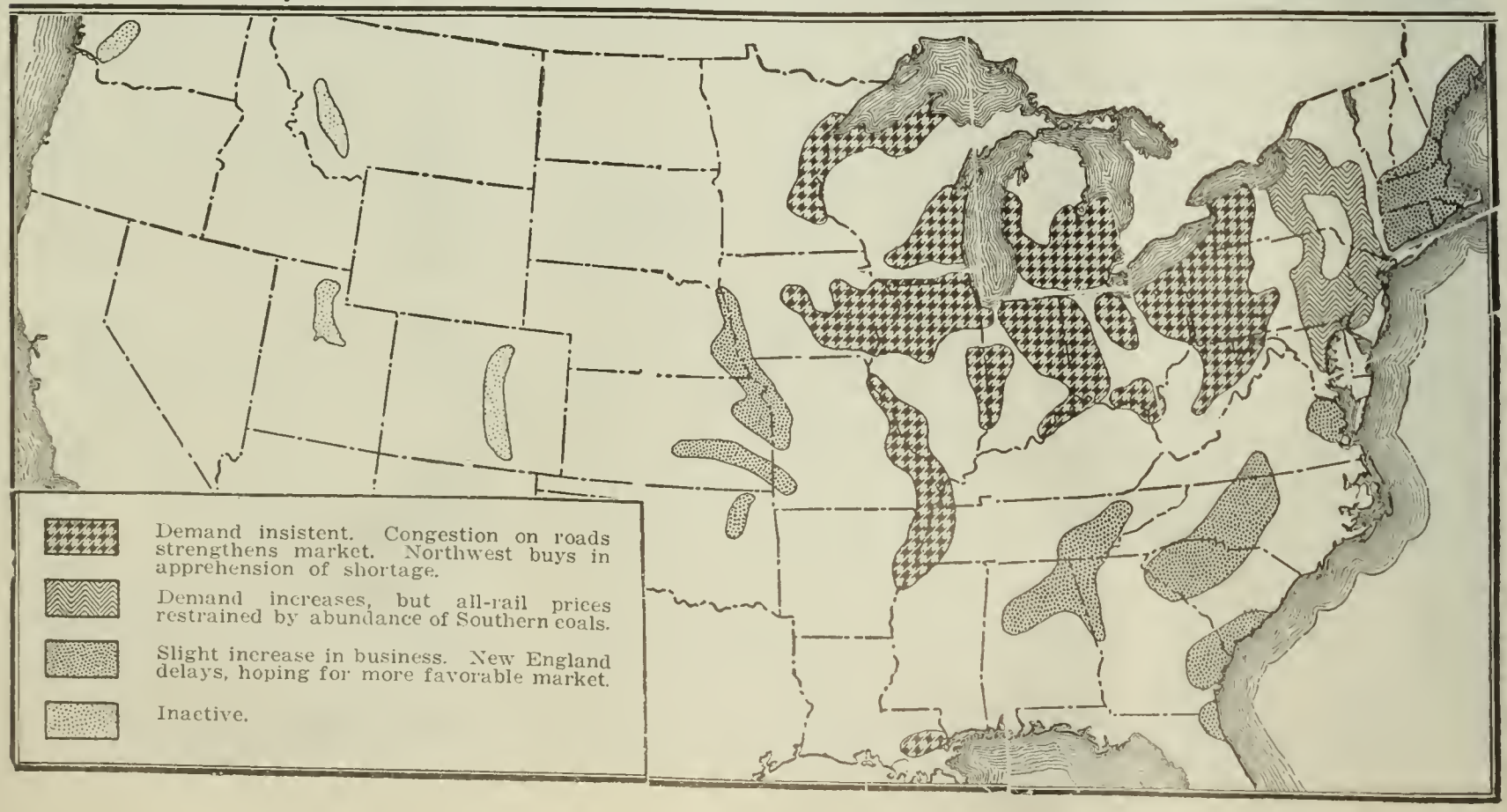
Production of anthracite is still confined to steam coal dredged from the rivers. The scarcity of fuel, however, is causing increased activity and production is larger, approximately 24,000 net tons being produced during the week ended June 24, a gain of 2,000 tons over the preceding week.

Retail stocks are dwindling as consumers are placing more orders. The prominence of strike news in the papers has impelled many householders to seek their next winter's requirements. Actual deliveries are necessarily low, however, and much of this deferred business will fall into the rush period after the strike has been settled.



Coal Age Index 290, Week of July 3, 1922. Average spot price for same period $3.51. This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the total output of the United States, weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. (Pittsburgh District, Illinois, Indiana and eastern Ohio prices not included in figures for last week.)

Relative Activity of Markets for Bituminous Coal at End of Thirteenth Week of Strike



Foreign Market And Export News

British Trade Feels Export Slump

British production during the week ended June 7 was 4,350,000 gross tons, according to a cable to *Coal Age*, a partial recovery from the severe slump of the previous week. Prices show no strength as the supply is still topheavy.

The Durham trade is very poor. Orders which have materialized lately are so spread over long periods that their effect on the market is practically nil. Several contracts for home public undertakings are the only ones to be recorded.

The Northumberland pits are better off. There is an improved demand for all steam varieties and the pits will remain active until the middle of July. The Swedish State Railways have asked for tenders for 25,000 tons of best steams, either Durhams, Northumberland or Scottish coals.

The South Wales market is uncertain and prices unsteady. Some producers are facing a shutdown. Wales has few contracts to report. The Argentine Department of Navigation and Ports has ordered 25,000 tons for delivery from August to the end of the year, and the Midland Great Western Railway of Ireland will require about 100,000 tons during the next twelve months.

Following the coal owners' recent intimation of a coming reduction of wages, notices of the reduction, effective Aug. 1, are now being posted in the collieries. The wages of employees receiving 24s. and upward per shift will be reduced by 2s. per shift and those receiving less will suffer a proportionate reduction.

Substantial reductions in the prices of domestic coal have been announced. These reductions in most cases amount to around 9s. per ton in the London area.

Strike Further Curtails Exports

That the strike curtailed exports during May is shown by the report of the Bureau of Foreign & Domestic Commerce. Only 399,551 gross tons of bituminous coal were shipped in that month, as compared with over 700,000 during April. In May of last year our exports were 2,500,374 tons, much of the tonnage being shipped as a result of the British strike.

MAY EXPORTS AND IMPORTS
(Gross Tons)

	May 1921	May 1922
Exports, bituminous coal:		
By rail to:		
Canada	1,124,246	272,146
Mexico	7,915	10,918
Total	1,132,161	283,064
By vessel to:		
West Indies	11,874	21,968
Panama	.....	6,477
Cuba	14,345	38,020
Total	26,219	66,465
France	50,136	.....
Italy	332,851	15,002
Netherlands	22,864	.....
Sweden	10,220	.....
Denmark	14,268	.....
Total Europe	430,339	15,002
Argentine	113,733	2,291
Brazil	103,474	19,898
Chile	4,685	11,004
Uruguay	30,455	.....
Total South America	252,347	33,193
Egypt	79,378	.....
Other countries	579,930	1,827
Total bituminous	2,500,374	399,551
Total anthracite	434,308	60,860
Total coke	15,641	21,798
Imports bituminous coal:		
Imported from:		
United Kingdom	.....	7,663
Canada	62,175	29,136
Japan	.....	666
Australia	3,856	4,189
Other countries	662	.....
Total bituminous coal	66,693	41,654
Total anthracite	891	484
Total coke	3,193	3,570

Coal Paragraphs from Foreign Lands

ITALY — The price of Cardiff steam first is now 37s. 3d., according to a cable to *Coal Age*, a slight decline from last week's quotation of 37s. 9d.

GERMANY—Production of coal in the Ruhr district during the week ended June 17 was 1,593,000 metric tons, as cabled to *Coal Age*. The output during the preceding week was 1,447,000 tons.

NORWAY—The Norwegian Spitsbergen Coal Co. has been very active during the winter. The output has been well over 3,000 tons weekly and about 300 men have been employed. Shipping will go on during this season both to North Norway and Christiania.

French Secure More Coal Markets

All things considered, the market for French coals remains rather satisfactory. Sarre collieries are developing their sales to Central Europe, and they are now sending increased tonnages to Germany (where they recently sold large quantities to the State railroads), to Switzerland, Italy and Austria. They have just sold 50,000 tons of flaming run-of-mine to the Vienna Electrical Works at the price of 54,000 Austrian crowns per ton at the German-Austrian frontier, which is yet below the price in Austria of Czecho-Slovak or Upper-Silesian coal.

The 2 fr. rise of the British pound within the last 10 days has partly whittled down the difference in price, on some Inland markets, between French and imported British coals.

Hampton Roads Pier Situation

	—Week Ended— June 22	June 29
N.&W.Piers, Lamberts Point		
Cars on hand	2,826	2,644
Tons on hand	147,102	142,365
Tons dumped	190,743	197,797
Tonnage waiting	25,000	20,000
Virginian Piers, Sewalls Point:		
Cars on hand	2,022	1,886
Tons on hand	109,550	101,400
Tons dumped	105,077	123,601
Tonnage waiting	10,000	8,800
C. & O. Piers, Newport News:		
Cars on hand	1,576	1,672
Tons on hand	87,450	98,000
Tons dumped	106,172	119,836
Tonnage waiting	6,500	.....

Export Clearances, Week Ended June 29, 1922

FROM HAMPTON ROADS:

	Tons
For Brazil:	
Ital. S.S. Masaniello, for Buenos Aires	6,447
Braz. S.S. Barbacena, for Pernambuco	4,837
For Canal Zone:	
Am. S.S. Cristobal, for Cristobal	9,594
For Cuba:	
Dan. S.S. Elizabeth Maersk, for Havana	2,257
Nor. S.S. Aagot, for Havana	5,614
Nor. S.S. H. K. Waage, for Havana	3,029

Pier and Bunker Prices, Gross Tons

PIERS

	June 24	July 1†
Pool 10, New York	$7.25@$7.50	$7 25@$7 60
Pool 9, Philadelphia	7.45@8.10	7 60@8 20
Pool 10, Philadelphia	7 25@7.60	7.50@7 75
Pool 71, Philadelphia	8.35	8 50
Pool 1, Hamp. Rds.	6.00@6.15	6 25
Pools 5-6-7 Hamp. Rds.	6 00@6.50	6 25
Pool 2, Hamp. Rds.	6.00	6 10@6 15

BUNKERS

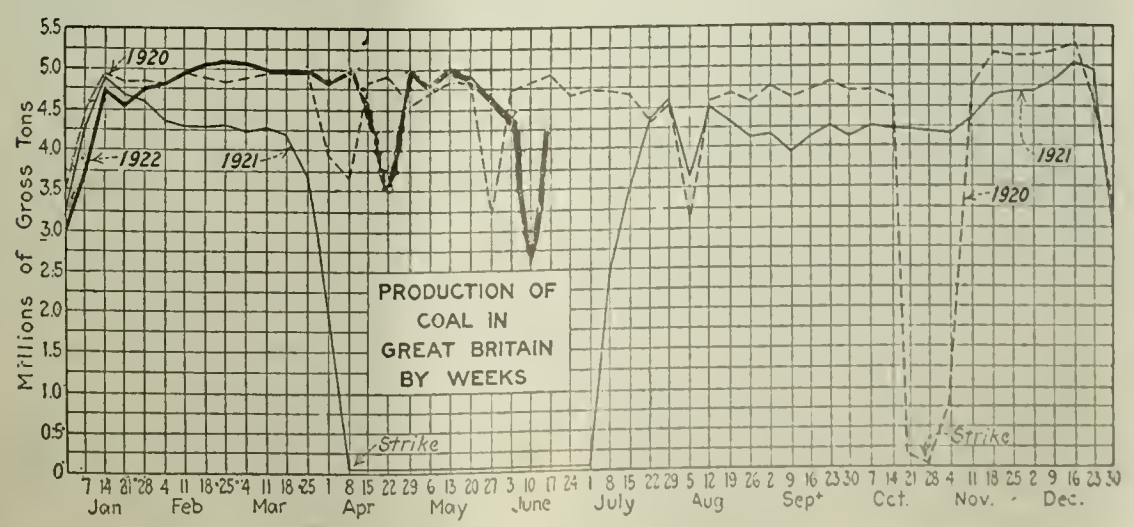
Pool 10, New York	$7.50@$7.75	$7 55@$7 90
Pool 9, Philadelphia	7 60@8 25	7 75@8 35
Pool 10, Philadelphia	7 50@8.00	7.60@8 15
Pool 1, Hamp. Rds.	6 00@6 25	6 25
Pool 2, Hamp. Rds.	6.00	6 15
Welsh, Gibraltar	43s. f.o.b.	43s f o b.
Welsh, Rio de Janeiro	57s.6d f.o.b.	57s 6d f o b.
Welsh, Lisbon	43s. f.o.b	43s f o b.
Welsh, La Plata	50s. f.o.b.	50s f o b.
Welsh, Genoa	42s. t.i.b.	42s t i b
Welsh, Messina	39s f.o.b.	39s f o b
Welsh, Algiers	38s 6d.f.o b.	38s 6d f o b
Welsh, Pernambuco	65s. f.o.b.	65s. f o b
Welsh, Bahia	65s. f.o.b	65s f o b
Welsh, Madeira	42s 6d f a.s.	42s 6d f a s
Welsh, Teneriffe	40s 6d.f a s	40s 6d f a s
Welsh, Malta	44s 6d.f o b.	44s 6d f o b
Welsh, Las Palmas	40s 6d f a.s	40s 6d f a s
Welsh, Naples	38s f.o b	38s f o b
Welsh, Rosario	52s 6d f o b	52s 6d f o b
Welsh, Singapore	55s f.o b	55s f o b
Welsh, Algiers	38s 6d.f o b.	38s 6d f o b
Welsh, Constantinople	50s f o b	50s f o b
Port Said	49s f o b	49s f o b
Alexandria	43s f.o.b.	43s f o b
Capetown	35s 3d	35s 3d

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

	June 24	July 1†
Cardiff:		
Admiralty, Large	25s 9d @ 26s	
Steam, Smalls	17s 6d @ 18s 6d	17s 6d @ 18s 6d
Newcastle:		
Best Steams	24s	24s
Best Gas	21s 6d.	21s 6d @ 22s 6d
Best Bunkers	19s @ 20s	19s 6d @ 20s.

†Advances over previous week shown in **heavy** type; declines in *italics*.



North Atlantic

Release of July 1 Orders Has Strengthening Effect

Industries That Awaited Lower Freights Find Higher Mine Prices Now—Good Coal Scarce—Line Demand Greater Than Tidewater—Prices Lower at Tide—Eyes on Washington.

JULY 1 released many orders and strengthened the market. A number of industries had been running short of coal, but had delayed purchasing in order to obtain the benefit of the lowered freights. Mine prices have advanced, however, and it is doubtful if any material saving has been effected by this procedure. Good coals are difficult to obtain, being well sold up and unclassified fuels are about all that are offering.

Line demand exceeds that at Tidewater. Prices are lower at Tide points, where heavy shipments of Southern coals are being taken at attractive prices. The trade is watching the Washington conference, hopeful that an early resumption of union mining will result.

PHILADELPHIA

The buyer's interest increases, although there has been considerable hesitancy to give orders in view of the conference called by the President. Since so many of the consumers, especially the moderate users, have held off so long, they are taking a little more time to get a perspective on what may be established at the meeting. On the other hand there were some orders let loose, without a doubt, on account of the lowered freight rate, and on the whole buying has been better.

Buying has actually been in advance of the increase in non-union production which has been claimed. The demand for the highest quality coals has become such that they are almost unobtainable except by the largest buyers and on contracts. Many houses are unable to get anything but unclassified coals, somewhat similar to Pool 10, and considerably lower.

A new factor entering into demand lately has been increasing inquiries coming from plants of considerable size who during the past few years adopted crude oil as a fuel. On account of the greatly increased demand for gasoline, as well as the advancing prices, some of the oil producers are "cracking" all their crude for the last possible drop of "gas" and are not anxious to renew fuel contracts.

NEW YORK

Many inquiries were received at the end of last week for July delivery. Consumers as a rule put in sufficient coal to last three months. With their reserve supply nearly gone these consumers are becoming anxious.

Supplies at Tidewater are gradually growing smaller. On June 29 there were less than 1,100 cars at the piers, the smallest number in many weeks, but sufficient to meet all immediate demands. With the triple holiday approaching shippers expected that there would be a substantial increase in the number of cars at the piers when business was resumed on July 5.

It was reported that the new Clearfield rate to New York will be $2.74 instead of $3.11, and that the rate from the Fairmont region will be $2.99 instead of $3.36. Whether or not demand will now increase remains to be seen.

The low quotations for Pennsylvania coals at the local piers are due, many dealers declare to the heavy receipts of Southern coal here. Quotations for the latter ranged $7.75@$8.25 alongside.

The new freight rates to New York have not yet been officially published, but we understand that the freight on anthracite domestic will be $2.34 per gross ton and on pea and smaller coals, $2.22. Bituminous coal from Clearfield and Meyersdale now takes a rate of $2.74, Greensburg, $2.84, Westmoreland and Fairmont, $2.99, and Pittsburgh, $3.14. These rates are all to the lower ports; 5c. additional is charged to upper ports.

CENTRAL PENNSYLVANIA

United Mine Workers are devoting their time and attention to visiting local unions and encouraging the miners on strike to stick to the ranks. President John Brophy states that the morale of the men is good and that the situation is improving, as more miners join the locals and desert their work.

From the operators comes the report that production is increasing and has more than doubled during June over May. The Central Pennsylvania Coal Producers' Association held a meeting in Altoona on June 27, but gave nothing out as to whether any action had been taken relative to resuming operations. The principal gain in production is noted in the Windber district where the Berwind-White Company has extensive mining operations.

BALTIMORE

A number of industries are running short and it is becoming more difficult to assure purchasers. More consumers are in the market every day and they are paying any reasonable price. Bunker coals are extremely scarce, the price at the piers being around $7.30 trimmed.

Baltimore is still getting considerable coal from Hampton Roads, and the pioneer move in this trade has been joined by other interests in bringing Pocahontas and New River fuels up the Chesapeake Bay. Some of this coal is sold to local consumers, but a great part of it is reloaded for transshipment. This coal can be moved to Baltimore at a price which brings it below the present cost of fuels offered in bunker trade at the local piers. The present price at Norfolk is probably influenced by the fact that the heavy tonnage shipped to the piers has outstripped the demand.

From mining regions came confidential reports that the miners are growing short of funds and are becoming desperate. Only the fact that the union leaders have been using the talk of a railroad strike for July as a weapon has prevented a number of miners from returning to work, irrespective of union connections. Many of the private advices received here predict that the unions will begin to slip seriously before mid-July. There is a growing belief that the mine strike in a number of regions is near its close.

FAIRMONT

With surplus stocks in the East getting low, there was a perceptible stiffening in demand and a recovery in prices during the week ended June 24, notwithstanding the fact that many consumers had been waiting for the advent of July with its lower freight rates. Production is still climbing, having reached a daily average of 25,000 tons. There was a marked increase in the number of mines in operation, 177 plants running on an open-shop basis. Disturbances were somewhat more general among the strikers as they realized that there were defections in their ranks.

UPPER POTOMAC

Not only are mines gradually resuming but production is being increased at all operations owing to the larger number of men reporting for work. Sentiment for a return to work is growing among the miners and disturbances are at a minimum. Prices have advanced and all at the maximum, owing to a marked increase in demand.

West

KANSAS CITY

There is a quiet tone to the market. The wheat threshers laid in a supply early from Colorado and New Mexico, and there is practically no demand for domestic grades. Steam grades are in demand to some extent and as some more large mines have opened up, the production is taking good care of it. Prices are unchanged.

In the Kansas fields, the miners are about equally divided between the Howat following and the national organization, and this fact no doubt has helped to keep the peace in that district. Most all of the miners that are digging coal are Howat men and as they are of the radical element, no trouble is anticipated, for, as is general in all coal fields, the radical element rules.

A chestnut size of anthracite from New Mexico is being offered at retail in Kansas City at $11.25 per net ton. If this is any indication of what prices are to be after the mines resume work, it looks like the elimination of anthracite from Pennsylvania and a very low price for Arkansas anthracite and smokless, which are the popular grades of domestic coal in this market.

Anthracite

Strike News, Rail and Coal, Brings More Retail Orders

Many Yards Cleared of All but Pea Coal—Consumers Able Only to Place "Applications" Pending Arrival of Replenishments—No Announcement on Pennsylvania Tax.

INCREASING prominence of strike news—rail and coal—brought more retail orders and has cleared many yards of nearly all stocks except pea coal. The Washington conference has aroused consumers to the gravity of the situation, but retailers can do little but take "applications" for next winter's needs.

No announcement has been made as yet regarding the attitude of companies as to levying of the Pennsylvania coal tax, pending appeal to the high court.

Some pea coal is moving for steam use and mine stocks are going down. River barley is in increasing demand, production is heavier, and prices up.

NEW YORK

The efforts of the authorities at Washington to settle the mine troubles has resulted in more of the public's attention being focused on the situation. Consumers have at least seemingly become aware that they might have difficulty in getting their next winter's coal supply. Retail yards are about empty of the sizes generally used and the dealers themselves are beginning to see dark clouds ahead.

Very little is heard here of the decision of the Pennsylvania Courts declaring the coal tax law constitutional. Nothing has been announced as to the attitude to be taken by the companies regarding the levying of the tax, pending the probable appeal to the United States Court.

Buyers are still able to pick up some buckwheat coal but it is not plentiful. River barley is coming into this market, quotations ranging $1.90@$2.15, at point of loading. Regular independent barley was scarce, but some shippers were reported as quoting $3.50 for stock coal.

BOSTON

News items from Washington have somewhat allayed public anxiety, but they come at a time when retail dealers have all the business they can possibly take care of, present stocks considered. It will be hardly more than a fortnight before the larger retailers will be in position to take nothing but "applications" for stove and chestnut.

The trade is much interested in reports of a cargo of Welsh anthracite reported en route to New Bedford. The delivered cost is understood to be around $13.50, but opinion is as yet uncertain whether the cargo is for one retailer or whether it is to be divided up for distribution among several dealers.

BALTIMORE

The prospective rail troubles and the fact that the anthracite situation remains unsolved are menacing hard coal consumers. An inspection of the storage yards shows that there is not more than a total of several thousand tons, at most, in this city.

No hard coal is offering here. Some semi-bituminous is being brought to Baltimore and offered as a substitute, but so far is being received without enthusiasm.

PHILADELPHIA

There could not help being considerable change in the retail business, with the increasing prominence of strike news—coal and rail—in the daily papers. Even though the most prominent news seemed to promise some sort of a settlement of the coal strike through Government intervention, it would seem that the coal user was most affected by the threat of a rail tie-up. At least this was the inference of the dealers, all of whom have been called on this week to deliver coal. So strong was the demand on some of them that they are about cleaned out of everything but pea.

In accord with their belief of an early ending of the strike the retailers have slightly let up in their demand for storage pea coal, at least this size has lost some of the momentum it had been acquiring during the past three weeks.

With the exception of an occasional stray car of buckwheat the only steam coal offering is river barley and the producers of this fuel are gradually getting their price up. Recently there have been quotations of $2.50@$2.75 and some sales made. Thus is the advantage of the new rates of freight quickly lost.

ANTHRACITE FIELDS

A count of the votes recently taken shows an overwhelming majority cast in favor of giving the general scale or policy committee authority to call a strike, if necessary. Action is being deferred, however, pending the outcome of the conference at Washington, called by the President.

A split has occurred in the union ranks in District 1, where an organizer has defied the local leader's order of dismissal and has secured the endorsement of 4,000 of the men. Some picketing is being done at the Woodward Colliery of the Glen Alden Coal Co., and at the East Boston Coal Co., but otherwise the region is quiet.

BUFFALO

The consumer seems to be waking up at last. It has generally been the policy of the producing end of the trade to hold that there is going to be enough coal anyhow and nobody need be disturbed. Some of them are now advising friends to buy at least a load of coal and the advice is likely to be followed. There is some coal to be had but the prospect is good for it to disappear speedily.

It would have been easy, had there been considerable independent anthracite, to make a price $3 or so above standard and stir up the trade in that way. Some of that coal has sold at such figures, but there has not been enough of it to make much of a trade.

Coke

UNIONTOWN

The last week has been devoid of any special developments. There has been no public recognition on the part of organizers of the statement of William Herron, former organizer, telling the miners they have no chance to win and challenging his former associates to disprove his statement. Another intensive effort by organizers to force the closing of Leisenring No. 2 has failed. For three months the mine worked has 100 per cent while adjoining operators were closed by the organizers.

What apparently was a move on the part of miners to retaliate for the Herron statement was a petition in the Fayette County Court asking for a grand jury investigation into the status of mine guards. The move, operators claim, was made to concentrate the minds of the strikers upon the mine guards and away from the Herron statement.

BUFFALO

The lack of interest in the general market continues. Jobbers can do little more than keep in touch with the supply and wait for special needs. They quote $7@$7.25 for best 72-hr. Connellsville foundry, $6 for 48-hr. furnace and $4.25 for stock.

CONNELLSVILLE

While production of coke continues to increase slowly, the amount offered in the open market does not seem to increase at all, the heavier production being by furnace interests, particularly the Frick company. The iron and steel industry shows that it is not merely maintaining its supplies of coke and coal, but is increasing them somewhat. Byproduct production continues heavy and there is probably more coke coming from West Virginia, supplementing the increased production in the Connellsville region.

Offerings of coke being very limited and there being foundries and miscellaneous users who must have coke, prices have been bid up farther even though it is doubtful whether any furnace would pay present prices, the market price of pig iron not justifying. It is claimed that all the coke offered now in the open market is of indifferent quality, and the distinction of "foundry" coke is lost, the market being simply for "coke."

The *Courier* reports coke production during the week ended June 24 at 52,790 tons by the furnace ovens, and 15,260 tons by the merchant ovens, a total of 68,050 tons, an increase of 1,200 tons.

Chicago and Midwest

Premium Prices Prevail, But Buying Is Backward

Congestion and Shortage of Cars in Kentucky Curtail Offerings—Only Perfunctory Sales Efforts Made With Output Largely Contracted For—Screenings Very Scarce.

COAL was more or less at a premium on the Chicago market last week even if consumers were indisposed to buy heavily. Orders were held up as a rule because of the lower freight rates, yet prices climbed daily in the western Kentucky field and on Saturday they had reached the high mark of $4.60. A growing car congestion and shortage in the Kentucky districts made the offerings lighter each day and toward the end of the week operators were making small efforts to sell. The low production in Kentucky was pretty well contracted for and what coal was free was held at producers' prices. Mine-run was offered at $4.50 and prepared sizes at $4.40@$4.50 at the close of the week, an advance of 25c.@35c. from the opening of the period. Screenings were a very scarce product at $4.60.

CHICAGO AND MIDWEST

Adding to the distressing car situation, locomotive equipment on the L. & N. in Kentucky was condemned and some of the Western roads were reported sending in their own engines to haul coal for their own use. There was very little immediate buying in any of the fields reported by the railroads. Movements were on sales previously made.

Large industrials in Chicago permitted the week to drift by without any marked purchasing. What coal was taken was in small lots and there was no apparent concern over the threatened rail strike. Consumers were more affected by the news of the Washington conference and held hopes for the beginning of some kind of negotiations looking toward peace in the strike. Such a turn, it was said, will be the only thing that will break the present high western Kentucky market. This probably had more influence on the buying than appeared on the surface.

The docks at the Head of the lakes continued to call for eastern Kentucky coal, but operators were pretty well sold up and said they could not take on any more orders. Prices in the eastern Kentucky fields remained at the Hoover maximums with only occasional reports of higher selling by jobbers. There were a number of inquiries reported from small industries and the country trade in Wisconsin, Michigan, Iowa and Illinois, as there were also in the western Kentucky fields.

West Virginia high-volatiles were in good demand at the high suggested by Secretary Hoover but Pocahontas struggled along a little weaker at $3.25 @$3.50 on mine run. The retail trade was reported as buying strong on the smokeless coals, under pressure of heavy inquiries from an awakened public and farmers who are demanding threshing coal.

INDIANAPOLIS

Much more of an industrial demand for coal prevails. The fact that industries are running a little more than usual accounts for the activity displayed concerning prices and deliveries. The demand for domestic is quiet although there is a little winter fuel now being stored.

Prices are unchanged as far as domestic coal is concerned, inasmuch as the present supply was bought on a lower market than now prevails. Indianapolis retailers are not disposed to buy much coal at the maximum price of $3.50, inasmuch as considerable of this coal sold on the spot market around $1.75@$2 at the mine.

West Virginia coal is being sold in Indianapolis while the western Kentucky grades also are being offered here with fewer takers. No Indiana coal from standard mines is on the market.

LOUISVILLE

There is a very active demand for coal, which has chased eastern Kentucky screenings up to $3.50, along with mine run. Some of the mines in the Straight Creek field are quoting $3.75 on all sizes.

Western Kentucky is getting good car supply and running on a steadily increasing tonnage basis. Labor is also plentiful, as a result of many miners from Illinois and Indiana coming into the field for work.

In eastern Kentucky some of the branch railroads are overburdened with tonnage, and this along with congestion at Cincinnati and other gateways, is holding back car loading. However, production is very heavy, mines operating at around 70 per cent of the capacity of the field, or better.

Jobbers report that the demand for coal is so active that it is more of a case of finding tonnage to sell, than of selling it, although many consumers are haggling over the top ten or fifteen cents a ton.

Retailers are buying a little better than they have been, retail prices being about $1 a ton higher than they were in the early spring. Many consumers are worried over the threatened rail strike and long coal strike, figuring that coal may be scarce and high in the fall, with the result that they are making inquiries for prices.

WESTERN KENTUCKY

During the past few days demand has increased as a result of the threatening rail strike, reduced stocks in consumers' hands and larger railroad consumption. There was a great deal of tonnage held back by buyers until after July 1, to secure freight rate reductions, which should result in a much heavier demand.

Quotations are $4.40@$4.50 for all sizes. It is not especially easy to secure the $4.50 level, but there is no spot tonnage under $4.40. Some of the jobbers had anticipated a break after the market reached the high level, but inquiry and demand continue strong, and the price is holding firmly.

Whether there will be any advance over the $4.50 level, which exceeds the price demanded before the Hoover conference, but not accepted, is a question. The operators do not care to antagonize Washington, and there is a strong chance that the market will be held at that level.

Retail demand is picking up just a little, as retailers are getting better business from consumers who are afraid of the long strike making for higher prices and fall shortage. The threatened rail strike also scares consumers into stocking now. Retailers, however, are lucky where they are able to keep 40 per cent of their delivery equipment in service.

ST. LOUIS

There is a stronger evidence of buying on the part of large steam users. Storage piles are depleted and both west Kentucky and Alabama coals are moving into this market, with west Kentucky favored on account of freight rates. The domestic demand continues quiet.

The country demand for threshing coal has slackened because the season is now on and dealers are afraid to purchase high-priced coal and have it arrive perhaps after the threshing season is over.

Prevailing prices on west Kentucky coal in this market are $4.25 on mine run, and, although some prices have been quoted on 2½-in. lump at $4.50 per ton at the mine, there seems to be nothing available but mine run and very little of that.

The fact that Mr. Lewis has been invited to Washington to attend a conference with the President with a view to starting negotiations between the miners and operators seems to have had no effect on the Kentucky market, the prices this week being 25c.@40c. higher than they were a week ago.

SOUTHERN ILLINOIS

Since the disturbance in the vicinity of Marion and Herrin in the Carterville field has been quelled, it is not anticipated that mining operations of any nature will be attempted until officially sanctioned by the United Mine Workers.

In the past two days sales have been made of some few cars of lump, egg and nut held in storage by operations on the Illinois Central, near Herrin, at $5.50. In the Mt. Olive district there is no tonnage available.

In the Standard district there are perhaps 2,000 tons in storage, all of which has been sold at $4.50@$4.75. This is being loaded and shipped as rapidly as equipment is available and the cars can be loaded. This tonnage is principally on lines having mines located on their rails in the non-union fields and in which fields most of their equipment is at present engaged. Otherwise this small tonnage would have been moved long ago.

Northwest

Buyers Now Anxious, Having Too Long Held Off for Drop

Few Orders Being Taken—Shortage Seen Unless Mining Is Resumed Soon —Milwaukee Price Advance Exceeds Freight Cuts—Duluth Dock Reduces Price to Pare Heavy Stock.

THE anxiety of buyers is growing. Many held off too long in the hope of lower costs while dock stocks slipped away to other users. Order taking is now infrequent and production must be resumed soon to overcome a definite shortage at the Head of the Lakes docks this winter.

At Milwaukee bituminous prices have been advanced 50c. per ton, more than absorbing the freight reduction of 35c. on all-rail coal. One dock in Duluth has cut its prices, but this move has not been followed by others. The cut is explained by the fact that the dock has been the heaviest taker of coal this season and was spurred to this action by the fear that a strike settlement would find it embarrassingly long on high-priced coal. It is this fear that has kept most docks from replenishing their stocks until new cost conditions can be determined.

DULUTH

An inexplicable weakening in prices has taken place at the Head of the Lakes. One dock has been reported as shading 50c. from the market in order to insure orders. This dock is the one which has received the largest shipments this year. and it is thought that fear exists of a sudden ending of the strike and a surplus of high priced coal on hand.

Four cargoes of coal arrived last week and two were loaded out for lower ports. Two more cargoes are scheduled to go this week, and none are known to be on the way here from Lake Erie.

One indication of the scarcity of coal here is shown in the fact that vessel fuel has advanced and that docks are not loading these ships for the round trip as previously reported.

The anthracite situation is attracting considerable attention, and local consumers are filling their bins against a scarcity this winter. It is estimated that 1,100,000 tons more than the 300,000 tons now on docks will be needed to carry the territory through the winter. Unless the strike is settled by July 15 it will be physically impossible to get this amount of coal here.

Country dealers are not buying. The main factor controlling this is that they are in desperate straights financially. They have come through trying financial times and have many accounts receivable on their books which they are unable to collect. Their credit with the docks is nearly exhausted.

MINNEAPOLIS

Some coal buyers are beginning to get rather uneasy. They were well content to hold off as long as possible, but now that the season of navigation is about half gone, they are beginning to wonder if their strategy has been as satisfactory as could have been hoped. It is still not too late for the Northwest to be easily provided for,—if coal production is resumed soon. But there is no assurance that it will be resumed soon.

A number of the wholesale companies are not taking orders now, and those which will, would speedily be exhausted if any rush of business set in. Hence there is nothing that can be done by the buying trade but await developments. Some small business might be handled, but the stocks on hand are down to a small tonnage, after the coal covered by contract is excluded.

So the next few weeks will be rather anxious ones for the trade of the Northwest, unless there is something very tangible being done toward a resumption of production.

While the tonnage needed is much smaller, the hard coal situation is the most urgent here as elsewhere. It is probable that soft coal can be furnished from some field, sufficient to care for the most urgent needs of the Northwest. But hard coal production is at a standstill and there are no substitute fields nor coal available.

So the coal trade must needs await developments, earnestly wishing for some real action within a short time. Quotations are about withdrawn, because of the scant stocks now available.

MILWAUKEE

There is an increasing demand from users of hard coal, who are becoming alarmed at the prospect of a shortage. As there is no anthracite on hand dealers are forced to decline orders or file them for future delivery.

Jobbers report that there is quite a demand for July shipments of soft coal because of the new freight rates. The reduction amounts to about 35c. per ton on Eastern soft coal received by rail. Dealers have been notified that all soft coal, with the exception of Pocahontas, will be advanced 50c. for July. Western Kentucky and Alabama coals are now being offered.

An appeal has been sent to the State Railroad Commission by the Secretary of the Wisconsin Utilities Association requesting a relief from the coal shortage in Wisconsin. The average supply by utilities is sufficient only for but two or three weeks more.

Cargoes by Lake thus far this season aggregate 700 tons of anthracite screenings and 566,193 tons of soft coal, against 382,748 tons of anthracite and 1,104,170 tons of soft coal during the same period last year. Thus far this season 180,000 tons of soft coal have been delivered to Lake Michigan ports from Duluth. Milwaukee received one cargo, Escanaba two, and the remaining cargoes were delivered to Sheboygan.

New England

Inquiry Improves Somewhat But Receipts Are No Heavier

Discounting of Freight Cut by Pocahontas and New River Shippers Lowers Prices Slightly—June Holdbacks Must Now Enter Market—Imports Interest Trade.

WITH the approach of July 1 there was somewhat better inquiry last week, both for spot cargoes and for shipment Inland from rehandling plants at this end. Most of the Pocahontas and New River shippers have already discounted the 28c. reduction in tolls, and in consequence prices are modified a little as compared with a fortnight ago. Receipts are no heavier, but buyers who waited through June are now obliged to enter the market for small tonnages. Arrival of foreign coal interests the trade.

Prices f.o.b. loading port range $6@$6.25. A few agencies are asking $6.44, this being the $3.50 Hoover price plus the reduced rate of freight from mines to the Roads.

After throwing out bids for July and August coal, one of the State Charitable Departments re-advertised and now has accepted new proposals on practically the same basis as the old. Contrary to the impression we gave a week ago, the rejection of the former bids was due to a misunderstanding with regard to the strike clause on the part of some of the bidders. In any case, the purchasers lost nothing by waiting.

The trade is much interested in cargoes of Newcastle coal that have begun arriving at this port. The first cargo was unloaded at the N.Y..N.H.& H.R.R. wharf and is assumed to be for engine supply, the delivered price being rumored around $6.40.

What small output of Pennsylvania coals happens to be offered is quoted at somewhat higher levels. Several mines that were in operation a week ago are now shut down, due doubtless to the tragedy at Herrin, Ill. Receipts all-rail continue very light.

Coastwise freights are on the same easy basis reported last week. Steamers can be had at 90c.@$1, with smaller bottoms, either barges or sailing vessels, at a range of $1.10@$1.25.

Eastern Inland

Freight Cut and Rail Strike Tend to Enliven Demand

Some Hesitancy Shown Pending Outcome of Washington Parley—Prices Are at Hoover Level and Strong—Heavy Movement from Producing Fields Causes Congestion of Loaded Cars.

THE Washington conference has created some buying hesitancy on the part of consumers in the hope that mining may be resumed and lower prices follow. Despite this factor, there is an increased demand, as July 1 released many orders which had been held in abeyance until the freight reduction became effective. The rail trouble is another factor in enlivening demand.

Coal prices are strong, being at the Hoover level, and in the case of Connellsville, $3.75. There is some congestion of loaded cars, due to the heavy volume rolling from the few producing fields and a troublesome car shortage is predicted when reserves are being built up again.

CLEVELAND

The past week has uncovered a broader and more insistent demand than in any similar period since the beginning of the strike. Numerous consumers had been holding off ordering until after the freight reductions became effective. This event together with the rapidly dwindling stocks has helped to liven up the market. Prices continue firmer.

Operators are optimistic regarding a settlement of the strike as a result of the negotiations initiated by the administration. They insist that every week's delay in resumption of full-time production will make a coal shortage this winter that much more probable. Only the lack of realization of the true facts in the general situation has prevented any rush to buy, according to some opinions.

Greatest concern now is being felt over the Northwest. With upper docks cleaning up and with only a small fraction of the 23,000,000 tons required in that territory shipped, congestion or actual shortage is feared. Some operators are looking for a car shortage when output is started in full swing and when crop movements get under way.

COLUMBUS

A stronger demand for all grades has developed. With reserve stocks becoming depleted and with industrial revival coming on there is a more widespread call. Quotations have advanced to almost the Hoover level. In a few instances some quotations above this have been made but has brought no orders.

Retailers are still cleaning up but are fairly well sold out and will soon be in a position to take in some stock. Household consumers are getting rather anxious over the prolonged strike and are in a frame of mind to lay in stocks for the winter. Retail prices are growing stronger in sympathy with higher prices at the mines.

Lake business is becoming more active. The H. V. Docks at Toledo during the week ended June 28 loaded 114,000 tons, making a total of 1,131,490 tons for the season. No coal has been loaded by the T. & O. C. docks at Toledo.

PITTSBURGH

Just before President Harding called the conference of operators and miners' officials for July 1 the rumors that an effort would be made in the first week of July to start some of the mines in the Pittsburgh district grew thicker, but since this call was issued the rumors have been in abeyance. The general feeling is that there is much doubt whether the President's efforts will lead to a settlement, while the common estimate is that even if they should, a month or so would probably be consumed.

The opinion of the trade for some time past has been that whenever a settlement should be reached coal would not become plentiful for quite a while. This explains the making of 60 and 90-day contracts for some time past, without much thought being given to the ending of the strike.

One cannot find in the coal market any weakening traceable to the Washington efforts to end the strike, while on the other hand some buyers are taking the threat of a railroad strike somewhat seriously and are more anxious to buy. The Connellsville steam coal market, which is almost all the coal market there is in Pittsburgh, quickly regained the slight loss in strength reported a week ago and has since stiffened farther, being now quotable at $3.75. It is notable that there is but little price range now, and this is probably attributable to buyers taking a firm stand instead of bidding freely for tonnage. There is a fairly wide market, with numerous small sales, though but little more tonnage than a month ago. At no time has the market come near the $4.50 price which the Connellsville operators wished Secretary Hoover to countenance.

DETROIT

Sluggishness and inertia continue the predominating features of the market for bituminous. Wholesalers and jobbers are still waiting for the increased volume of business that was forecasted to develop after July 1. Its materialization apparently will be slow. Even the talk of a possible strike of railroad employees has failed to bring anything like active demand.

From the jobbers' point of view the present indifference of buyers is creating a situation that will develop into a shortage later in the year. Warnings already are being given of the probable development of car shortage and freight traffic congestion on the railroads within a few weeks.

Smokeless lump and egg is quoted $3.50. West Virginia or Kentucky lump and egg holds about the same level. Mine run is bringing $3.25 and nut, pea and slack holds around $3.10 @$3.20.

EASTERN OHIO

Reports of activities in the trade indicate that demand is increasing. A factor which has created some hesitancy on the part of consumers is the anticipation that the present conference at Washington will result in the early resumption of union mining, at which time they expect to be able to cover their fuel needs at prices considerably under those prevailing at this time. There has not yet developed with the rank and file of industry any situation of dire straits for coal.

There has been some interference with stripping mine operations, this apparently being an aftermath of the recent outrage at Herrin, Ill. At Lafferty, Ohio, one steam shovel operator was killed and several other workers injured. Notwithstanding this interference, the stripping mines continue to produce some 40,000 tons per week.

Spot prices stiffened somewhat early in the week but have since reacted. Eastern Ohio stripping slack, nut and slack and mine run is $3.90@$4.10, lump sizes, $4.25; eastern Ohio deep mine and No. 6 mine run, $3.75.

Receipts of bituminous coal at Cleveland during the week ended June 24 showed a decrease of 128 cars under the preceding week; industries received 1,018 cars, retail yards 101 cars, total 1,119.

BUFFALO

As the time progresses the inquiry increases and there is now quite an improvement in the general movement. In fact the outlook is so much better that a certain shipper confesses that he is holding coal on track and paying demurrage, with the idea of making money on the venture.

Still there is the bear in the trade who does not believe there is going to be a flurry. He takes the position that manufacturers cannot afford to buy $5 coal. At the same time there is the concern that uses coal for heating and this must be supplied at whatever price. All of which goes to show that nobody can tell now just what is likely to happen.

While it does not seem proper to quote coal higher than last week, it is certainly growing stronger, at $4@$4.25 for ¾-in. lump and $3.75@$4 for mine run and slack, with slack rather more active. The new freight rates to be added are $2.09 from Allegheny Valley, $2.24 for Pittsburgh and No. 8, with a rate for occasional shipments from the Connellsville district of $2.39.

NORTHERN PANHANDLE

The effects of the strike are being felt only to a limited extent. All but two or three mines are running regularly. Most plants are now entirely free from any disturbance or demonstrations. During the closing days of June prices were a little firmer, the general range on mine run and slack being $3.50@$3.75.

Cincinnati Gateway

Flood of Inquiries Puts Hoover Prices to Test

Wholesalers and Jobbers Hard Put to Keep in Bounds—Big Industrial Buyers Find Retailers Competing for Fuel—Mines Ask Limit Prices.

THE opening of July saw this market flooded with inquiries and most of the wholesalers and jobbers fighting an uphill task of keeping within the bounds set by Secretary Hoover. Lake, railroad and steam buyers, all of whom have been prominent in purchases for the past two weeks, saw the retailers stepping in for their share of the small doles that are being sent out from the union fields to be spread over constantly increasing demands for fuel.

The result has been an unprecedented endeavor to get coal and had there been no restraint placed upon prices as set by the government there is no telling where the values would have gone to. As it is, buyers are going directly to the mines, which are taking the full Hoover price, threatening to eliminate the wholesalers.

CINCINNATI

Both in volume of business and strength of inquiries the stiffest of the post bellum business can hardly compare with the fight that is being made for coal. Not alone was the lower freight rate inducement before the buyers, but there was a period of inactivity that has to be reckoned with for there will be little coal produced between the last day of June and July 5, and at this time every pound of coal that does not go into the cars leaves just that bigger a hole to fill.

Producers in the southeastern coal field of Kentucky and those in the Elkhorn and on the N. & W. are exacting the full Hoover price. There have been talks of "premiums" being paid to get coal, but this is hard to trace to an actuality. The fact remains, however, that the buyers are going to the mines direct and many of these are taking the full Hoover price. This condition caused J. C. Layne of the Fair Price Committee to wire Mr. Hoover the state of affairs and who asked that specific incidents of such practices be forwarded to the Department of Commerce in Washington.

Retailers have issued a warning to buyers to get in their coal and say that if the maximum government price continues for any length of time they will be forced to a higher level. In answer to a request from Julius H. Barnes that a price committee be named the local Chamber of Commerce answered that Cincinnati prices were 60 cents below those that would have been allowed.

LOW-VOLATILE FIELDS

New River and the Gulf

The effect of a strike in the New River field has been reduced, owing to the progress made by producers in resuming operations. The output lacks only about 50,000 of full-time capacity. Market conditions were somewhat more conducive to a larger production. With the possibility of a railstrike, buyers have entered the market again and there is a fairly large volume moving to eastern and western markets.

Gulf mines are managing to maintain production at about 30,000 tons a day although having a shortage of labor to contend with and experiencing further trouble in securing the prompt placement of cars. The Virginian has not been able to supply all the empties needed. Mines were placing a large part of their output at Tidewater during the closing days of the month. Spot prices were on a somewhat higher level, the range being $3.25@$3.50.

Pocahontas and Tug River

Labor shortage losses were reduced to some extent in the Pocahontas region, but there was little or no gain in production, owing to tardiness of the railroad in delivering cars, growing out of congestion. The Norfolk & Western is taxed to capacity in attempting to handle the tremendous tonnage originating in the Pocahontas region. Prices have hardened somewhat, though they hardly reach the maximum.

Tug River mines are producing almost 115,000 tons a week. Operators find themselves somewhat handicapped by inability to secure placement of empties as promptly as possible. Mines are unable to take care of all the business tendered them especially in view of the fact that one of the larger companies is shipping so much of its product to an affiliated steel company. The demand for byproduct in the Western market is active and a large part of the output is being consigned to Western points.

HIGH-VOLATILE FIELDS

Kanawha

Operators are gradually overcoming the effects of a strike, as disclosed by the fact that nearly 100 mines are now producing. Injunctions and promises of protection in the event of any future agreement with the union are encouraging men to return to work. The demand was a little stronger toward the close of the month, owing to the fact that stocks were dwindling and that there was a possibility of a rail strike. This brought prices near the maximum, with minimum strong at $3.50.

Logan and Thacker

Logan production is well over 350,000 tons a week. Coal trains are being given the right of way over all other traffic and the movement to the Lakes and to other Western points is heavier than it has ever been. Congestion in yards and on sidings was somewhat in evidence during the latter part of June. There is expected to be a rush for coal during July but producers will not be able to handle much more business.

Thacker mines are operating virtually at capacity. There has been more or less delay in placing cars owing to congestion and the crowded conditions of sidings and assembling yards. More miners could be used if they were available. Toward the close of the month there appeared to be a further impetus in the demand. Prices showed a tendency to stiffen and were not far below the maximum.

Northeastern Kentucky

After holding back for a month for lower freight rates consumers are securing more coal and this has appreciably stiffened the demand for all grades. Transportation difficulties, however, are holding back production, all lines being badly congested. Mine run is averaging $3.25 or better, with lump bringing $3.50@$3.75.

South

BIRMINGHAM

Alabama mines are moving a large tonnage to Western points and new business is being booked for emergency users, there being a good demand for medium and lower grades of mine run, and some better inquiry for Cahaba, Black Creek and other high quality fuels. It is estimated that from 40,000 to 50,000 tons of steam coal is being disposed of in foreign markets on orders recently booked. Buying is still restricted in the territory normally supplied, but the lowering of freight charges is having a stimulating effect.

Domestic dealers are beginning to evince more interest in arranging for future supply, and the lower and medium quality coals which have been hard to move, are in somewhat better demand.

Quotations f.o.b. mines follow:

	Washed	Lump and Egg
Cahaba	$2.25@$2.75	$3.05@$3.85
Black Creek	2.25@ 2.75	3.05@ 3.30
Carbon Hill	2.00@ 2.25	2.30@ 2.55
Corona	2.25@ 2.50	2.85@ 3.10
Pratt	2.00@ 2.25	
Montevallo		3.90@ 4.35

Both commercial and furnace company mines are operating on better schedules and production is on the increase in all parts of the district. There is some shortage of skilled labor.

VIRGINIA

With the demand somewhat stronger during the closing days of June, more coal was produced than during preceding weeks, production being almost equal to capacity in some sections of the district. Consumers had been withholding orders pending a reduction of freight rates, but seem to have become somewhat alarmed as to a railroad strike. Car and labor shortage losses are the principal ones in this territory. Although mine run is holding up the best in point of demand, domestic sizes have a little better market, as retailers have commenced to replenish their stocks.

News Items From Field and Trade

ALABAMA

The County Coal Co. is making extensive improvements on its properties in the Cahaba Valley near Birmingham work now being under way on a spur track for connection with the Central of Georgia. A steel bridge over the Cahaba River is practically completed and work is being pushed on houses at the camp. It is understood that steel tipples will be built at the junction of the spur track with the railway, and that the company contemplates making two additional openings on its holdings. William F. Sossong, Carnegie, Pa., is president, and W. S. Pritchard, Birmingham, vice-president in charge of operations.

INDIANA

The State of Indiana has started a test suit in the Vigo County Circuit Court at Terre Haute, to ascertain who owns the coal under the Wabash River in that county. The suit was filed against the **Western Indiana Mining Co.**, of that city. For years companies have been taking coal from beneath the river bed. The first question to be determined by the suit, is whether the river is navigable in Vigo County. If this is found to be true, the State will have established its claim to ownership of coal that has been taken out and also coal that is still beneath the river. The State asks the court to enjoin the company from trespassing on the state's property and from taking any more of the coal. The State requests first a temporary injunction and then a permanent one. A number of other companies and other coal beds in the river will be affected by the ruling in the test case.

Property, both real and personal, of the **Reliance Mine Company** and the **Carlisle Coal Company** of Sullivan, Ind., have been sold at public auction.

The General Fuel Corporation has just completed one of the most modern mines in the Central West, which is located on the east side of the E. I. & T. H., in the vicinity of Somerville. This company has under construction a second mine in the same locality, but on the west side of the railroad, which is built on the same scale and equipped similarly to the first.

The Oakland Coal Co., of Oakland City, has just completed a test drill hole on property owned by the company near its Gudgel Mine. It is said that at a depth of about 350 ft. a vein of coal 7 ft. in thickness was drilled.

The Indiana & Ohio Coal Co., has been incorporated with home office in Linton. The company has a capital stock of $150,000 and the organizers are John Williams, Charles W. Wenner and John A. Young.

The sheriff of Vigo County has received warrants from Clay County for the arrest of more than 200 striking miners and officials of District No. 11, charging riot and conspiracy. The warrants were issued upon complaint of owners of mines in that county, forced by striking miners to close. Other members of the invading miners reside at Clinton and a number of similar warrants were sent to Vermillion County for service.

William Mitch, secretary of District 11, U. M. W., which comprises the Indiana bituminous field, and **John Gay**, of Alva, Ia., have left for Europe to represent the United Mine Workers of the United States at the world's mining conference to be held at Frankfort-on-the-Main, Germany, in July. They will inspect the European mines before the meeting.

The Irvington Coal & Lime Co., Indianapolis, has filed a petition with the Indiana Public Service Commission, charging the Evansville & Indianapolis R.R., the Evansville, Indianapolis & Terre Haute Ry. Co., the C., C., C. & St. L., with the assessment of "unjust, unreasonable, unduly prejudicial, or preferential" freight rates. The petition says the Irvington company was made to pay from May 3 to May 20, 1920, $1.32 a ton freight charges on coal shipped from Elberfield, Ind., to Indianapolis, whereas other companies paid only 97c. a ton for the same distance. The petition adds that from Sept. 12 to 26, 1921, the defendants charged the Irvington company $1.85 a ton on coal shipped from the same point, as compared with $1.36 a ton charged other companies.

MINNESOTA

Charles Beuglet, sales agent of the Northwestern Fuel Co., at Duluth, was called to a conference at his company's headquarters at Minneapolis recently to consider the merchandising policy to be adopted in the present emergency.

The city purchasing agent of St. Paul recently suggested that it would be necessary to place orders on informal bids for coal rather than regularly advertise since the strike makes it difficult to let the usual annual contract.

The City of Waseca is arranging to establish a city fuel commission to handle a municipal coal yard. The city won in a legal controversy against a local coal firm which sought to prevent the city from engaging in the coal business on the ground that the charter did not enable it to do so.

The first arrival of a river packet at St. Paul and Minneapolis in several years was the subject of much rejoicing, as indicative of the revival of river transportation. It was a steel barge, drawing about 20 in. of water, driven by a gasoline tug. But the capacity was about 75 tons—possibly two carloads. It will take a large number of barges to make any appreciable showing on the traffic moving by rail.

MISSOURI

As soon as a suitable site is definitely decided upon, construction work will be begun on a new plant for the **Broderick & Bascom Rope Co.**, St. Louis. The buildings, of fireproof construction throughout, will cost about $250,000, exclusive of equipment.

W. M. Summers, of Kansas City, who with a group of Kansas City business men, own a tract of 3,000 acres of coal land at Waineright in Callaway County, has announced that the company will begin at once to mine the coal on a large scale. New machinery, including a steam shovel.

The property of the **Cooper County Cannel Coal Co.** will be sold at Boonville at the direction of Al Coffman, the receiver, and under an order of the Circuit Court of Jackson County.

Yingling & Brown, Oak Grove, who have been conducting a coal business here for several years, have disposed of their interests to **Williams & George**, who also have been in the coal business in this territory.

Anticipating a shortage of coal, the Missouri, Kansas & Texas R.R. has contracted with the **Blackfoot Coal Co.**, of Columbia, to furnish 60 cars in 30 days, with an option to purchase 120 cars during the next 60 days.

NEW YORK

The Pittsburgh Fuel Co. has leased from the William H. Payne estate for a term of forty-two years, the water front property at 129th St. and the Harlem River, New York. A coal plant containing eight concrete coal pockets, and other modern equipment will be erected.

The Rubel Coal & Ice Corporation, of East New York, Brooklyn, which recently purchased the Jamaica Ice Co., has purchased the John B. Reimer coal business at Ozone Park, the Home Coal Co., at Richmond Hill, the Atlantic-Logan Coal Co., at Cypress Hills, and the Hyatt-Wood Coal Co., of Jamaica.

Anson W. Burchard, vice-chairman of the board of directors of the General Electric Co., has been elected president and chairman of the board of the International General Electric Co., succeeding **Gerard Swope**, its former president, who was recently chosen president of the G-E company, and **Charles Neave**, former chairman of the I.G.E. Company, who has resigned.

Nearly four million tons of coal and coke were consumed in supplying Greater New York with gas and electricity during 1921, according to reports filed by the gas and electric companies with the Public Service Commission. Of this tonnage the gas companies used 1,744,607 net tons of coal and coke and the electric companies 2,185,967 net tons of anthracite and bituminous coal. In the same period two of the gas companies made 425,145 tons of coke, of which they used 294,039 tons and sold 134,609 tons.

OHIO

Opposing views of operators and mine workers on the strike which has tied up all Ohio producing fields were aired at the weekly forum of the Columbus Chamber of Commerce by **W. D. McKinney**, secretary of the Southern Ohio Coal Exchange, who represents the operators, and **Lee Hall**, president of the Ohio miners' organization, representing the workers. Each speaker was allowed 20 minutes to develop his side of the argument and time was given for questions.

Announcement has been made by H. H. Liggett, president of the Liggett Brothers Coal Co., Cincinnati, that his company had purchased a mine at Hazard, Ky., **The Liggett Coal Mining Co.**, of Hazard, was formed with a capitalization of $60,000. The company has planned to erect hoppers in its storage yards in the western part of Cincinnati, at an estimated cost of $25,000.

The White-Barr Coal Co., Cleveland, has been chartered with a capital of $30,000 by W. L. Barr and others.

The Rutledge Coal & Mining Co., Toronto, has been chartered with a capital of $30,000 to mine and sell coal in the eastern Ohio field. Among the incorporators are James A. Rutledge.

The C. D. Peters Ice & Coal Co., Cincinnati, has been chartered with a capital of $25,000 to do a retail business by C. D. Peters, S. C. Donahue and others.

J. M. Wright, head of the Raleigh Coal & Coke Co., has returned to his headquarters in Cincinnati after about a week spent at the plants of this company in Raleigh County, W. Va. Mr. Wright predicts that as a result of the increased price for gas for domestic use in Cincinnati, smokeless coal will come more and more into vogue in that city.

United States District Judge John Weld Peck dismissed without prejudice to the filing of a new action, the suit of the **Tildesley Coal Co.**, Cincinnati, against H. D. Everett, trading as **Western Coal Co.**, for recovery of $10,144.07, alleged to have been due under a contract for coal. Application of the plaintiffs resulted in the court's action.

Southern and Kentucky coal dealers on the Cincinnati market recently were: **D. C. Campbell**, president of the D. C. Campbell Coal Co., of Knoxville; **A. R. Anderson**, of the Liberty Coal & Coke Co., of Straight Creek, Ky.; **O. M. Bolling**, of the Cherokee Coal & Coke Co., of Knoxville; **J. R. Clark, Jr.**, of East Lynn, W. Va., and **I. A. Funk**, of Sutton, Ky.

PENNSYLVANIA

The National Mining Co., a subsidiary of the United States Steel Corporation, will open two mines in Washington County, one in Carroll township, where an unusually large development is planned, and the other in Cecil township. Ginger Hill, 14 miles east of Washington, on the Monongahela pike, has been selected as the site for the new coal town and development in Carroll township that will commence its existence with 700 houses and a population of at least 3,500. The steel corporation is opening up a block of 16,000 acres of coal, extending from the Monongahela River almost to Eighty-Four, in Washington County. It is the last big unopened block of coal in the county with a river frontage. The field was formerly held by the H. C. Frick Coal & Coke Co., and the Mingo Coal Co., both of which are subsidiaries of the steel corporation. The field is located in Carroll, Union, Nottingham and Somerset townships and in New Eagle borough.

In addition to the holdings of the H. C. Frick Coke Company, in this section and the Mingo Coal Company, the National Mining Company, has purchased all the interests of the **Star Coal Co.**, including its tipple at Courtney, and part of the holdings of the **Harbison-Walker Co.** the balance of this company's property going to the Pittsburg Coal Co.

The Hudson Coal Co. has arranged with T. M. Chance for the installation of a Chance Flotation System Plant at one of its collieries.

Samuel S. Lewis, Auditor General of Pennsylvania, will go ahead with his plans for the **collection of the anthracite tax** of 1½ per cent on coal produced at the

mines unless the proposed appeal to the United States Supreme Court from the decision of the State Supreme Court halts the work. The tax bills were sent out after the producers had filed their reports last February for the period from July 1, 1921, when the tax law became operative, to Dec. 31, 1921, but collections were stopped because of the bringing of the test case on the question of constitutionality. According to the auditor general's records between $6,300,000 and $7,000,000 would be due the State for the first year, had the coal strike not intervened. Only a few small companies have already paid their taxes and these payments were made prior to the decision in the first court case. The records of the department show that the total tonnage mined during the first six months after the act of 1921 became effective, according to the reports on file, were 31,590,171.83 tons and that the total value of this was $210,053,310.43. The amount of the tax, provided the constitutionality of the act is upheld finally, will be $3,150,799.85. The value of the coal was based on the average sales prices of various classes at the mines, covered by the reports filed by eighteen representative operators. These prices were: Broken, $7.5355 a ton; egg, $7.551; stove, $7.822; chestnut, $7.7623; pea, $5.7414; buckwheat, $3.5415; rice, $2.1058, and barley, $1.362.

The semi-monthly employment report of the State Department of Labor and Industry for the period ending June 15, says regarding the coal strike: "Reports from the mine fields indicate the number of miners involved total 275,498. This does not include miners unemployed at the time the strike began. In many sections the miners are reported to be seeking employment in other fields, thus helping to relieve the shortage in some lines of industry." The report shows enforced idleness was decreased 25,000 during the first two weeks of the month. There were 141,460 unemployed on June 15 as compared with 167,405 on June 1.

Through the efforts of the coal operators of western Pennsylvania, another year of extensive research work in coal mining will be conducted by the Co-operative Department of Mining Engineering of Carnegie Institute of Technology and the Pittsburgh Experimental Station of the U. S. Bureau of Mines. The research will be carried on through teaching and research fellowships appointed by Carnegie Tech and supervised by senior investigators in the Experimental Station. The establishment of four fellowships to do this work in 1922 and 1923 is an endorsement of similar investigations conducted this past year at these institutions

The first relief station to be opened in the anthracite region for distribution of food among idle miners and their families was established late in June in Hudson. Scores of families whose income was wiped out by the suspension have applied for aid. The relief policy was inaugurated by members of the Hudson local union.

The unexpected resignation of **Dr. Elwood S. Moore**, dean of the school of mines, and approval of the establishment of a graduate school with **Dr. Frank D. Kern** as dean, developed at the annual meeting of the Pennsylvania State College board of trustees recently. The loss of Dean Moore is a severe blow to the college. In the five years that he has had charge of the mining school it has not only grown in size, but he has figured largely in the establishment of a mining experiment station and has started a valuable extension work among the coal miners of the state.

Are coal operators liable for the pollution of water in natural streams by the drainage from their mines, is the interesting legal question involved in the suit of the Pennsylvania R.R. against a score or more operators in the Indian Creek Valley, which will come to a hearing Aug. 1 in the Fayette County courts. The suit has been pending for almost two years in the hope of a compromise. The Pennsylvania has constructed a huge water plant in the Indian Creek Valley for the purpose of providing water for railroad engines. Since the opening of mines in the valley the claim is made that the sulphur in the mines has polluted the water and made it undesirable for engine purposes. The object sought is an injunction to prevent the draining of the water into the natural stream.

Mortimer Van Voorhis, of Maidsville, W. Va., has purchased at receivers' sale the property of the **Columbia Coal & Coke Co.**, with a mine at Percy, for a cash consideration of $10,000 and obligations amounting to approximately $100,000. There is some talk among West Virginia creditors of the corporation in contesting the sale.

The Piedmont Coal Co. has filed a suit in equity in Federal Court at Pittsburgh against J. A. Campbell, of Youngstown, Ohio, in an attempt to recover an undivided interest in a Greene County coal tract. The bill alleges that Campbell neglected to turn over to the company his interest in the land which was conveyed to it as part of the estate of J. V. Thompson of Uniontown.

UTAH

R. J. Williams, of Iron County, is trying to make a present of his 7-ft. vein of coal underlying 53 acres of land to the State for the benefit of the Agricultural College at Cedar City. Williams is doing this in order to avoid paying the mineral tax assessed by the state. It is probable that the State will be able to accept.

The Martin Coal Co., Salt Lake City, has been permitted by the State Securities Commission to sell 1,000 shares of 7 per cent cumulative non-voting preferred stock at par value of $10. Commission of 10 per cent is allowed.

According to **Sylvester Q. Cannon**, Salt Lake City's engineer, about 200 coal consuming plants will be remodeled during the summer. The work will be done under the inspection of city officials. Every effort is to be made next winter to abolish the smoke nuisance.

VIRGINIA

The Steamship Fuel Co. has established a Norfolk office with J. H. Gibson in charge, to deal in general coal business, domestic and export.

O. B. Ferebee, vice-president of Nottingham & Wrenn, Norfolk, spent a few days at the company's mines at Twin Branch, W. Va., recently.

Robert Hasler, president of Robert Hasler & Co., who has been on a business and pleasure trip to England and the Continent, has returned to his home in Norfolk. While abroad he established connections for his business.

Arrangements are being made by coal men in Virginia to send an exhibit to the Centennial Exposition in Brazil, and several Norfolk agents and dealers are making preparations to attend the exposition, and incidentally to visit other parts of South America in an effort to develop there a stronger demand for coal from this section. The City of Norfolk is planning to send Mayor Albert L. Roper as its representative, and for the purpose of establishing better communications between the business interests of the two countries.

Fred Hasler, of the New York office of Robert Hasler & Co., has been a visitor to Norfolk, making an inspection of the coal situation here.

Department of Justice agents have been keeping a watchful eye on Norfolk headquarters of the I. W. W. opened for the purpose, according to the officials, of making efforts to hinder the movement of coal to the North. Agents of the I. W. W. made an effort to organize the coal trimmers at the Norfolk & Western Piers, in the hope they might quit work, but the men were ejected from the company's property The representatives of the organization made overtures to seamen operating coastwise ships, in an effort to have them delay movement of coal, but the seamen rejected all overtures.

WEST VIRGINIA

The Consolidation Coal Co. has prepared plans and specifications and has asked for bids on three shafts for a new mine near Welch, in its Pocahontas-New River Division. It expects to proceed with this work at once. Plans for this operation are very elaborate and this new mine will have a large daily capacity.

After three days spent in the New River field, the committee appointed by Rabbi wise to investigate living conditions, when exception was taken to statements made by Lawrence Dwyer, of the United Mine Workers that miners in the region were starving, gave out the following statement: "The committee is finding much actual need among the striking miners. Owing to the interrupted employment that prevailed for nearly a year before the strike, this need is more acute than it would otherwise be. During that year many towns were idle for months at a time and in others the miners worked only two or three days a week. This used up savings, exhausted credit at local stores and tended to deplete other resources upon which the families might have relied in time of need. Wages were generally reduced last November and December. If it were not for the relief being distributed by the union a large number of people would be facing starvation. Most of this relief is coming from outside sources, but the union is distributing it. The relief is not adequate. Many families are receiving less than 30 cents a week." The committee does not mention the fact that a very large proportion of the New River mines were at work prior to the beginning of the strike, when they were induced to quit on the promise of the union that it could secure higher wages for them.

The Perdue Coal Co., Yukon, has been formed with capital of $75,000. Incorporators: T. H. Perdue, W. D. Goode, O. C. Tice, Yukon; W. T. Williams, Bluefield; H. J. Brook, Huntington.

The Greer Gas Coal Co., Morgantown, capital $300,000, has been formed. Incorporators are: H. C. Greer, D. R. Richards, W. R. Chapman, A. W. Hawley, R. E. Guy, all of Morgantown.

The Pike Pond Creek Coal Co. has been incorporated by Williamson; capital, $50,000. S. H. Goodloe, Jr., H. A. Goodloe, P. D. Nelson, J. R. Wheary, Lant R. Slaven, all of Williamson.

There is a possibility that wagon mine production in West Virginia will be checked by a rule issued by the Norfolk & Western, denying the use of open-top cars for wagon mine loading. This order became effective on June 21. Under such a ruling the wagon mine producers will only be supplied with box cars. Until the open top rule of the N. & W. was issued, the wagon mines had no trouble in securing all the cars needed, and in northern West Virginia where fewer mines are in operation than in southern West Virginia and where not so many open tops are needed, wagon mines are still securing all the equipment they can use.

George T. Watson, president of the By-Product Coal Co. of Fairmont, returned to his headquarters there the latter part of June after an Eastern business trip.

R. M. Hite, of Fairmont, well-known coal operator of northern West Virginia, spent the last few days of June on a fishing trip on the South Branch of the Potomac.

Adoption of a part of the equipment of war for peace-time purposes gives promise of becoming general in the mining industry of West Virginia since the **Raleigh-Wyoming Coal Co.**, with headquarters at Charleston, discovered that the much-used steel helmet affords miners engaged in certain kinds of work much protection from injury. During the sinking of a shaft at the Glen Rodgers plant in Wyoming County one of the workmen was struck by a rock which fell from above. A supply of helmets then purchased served their purpose so well that the men engaged in certain kinds of work have been equipped with them.

J. H. Johnston, secretary and treasurer of Johnston Brothers Co., Inc., Wellsburg, stopped off at Cleveland and Buffalo enroute to Toronto, as delegate to the Kiwanis International Convention.

W. H. Ruby and associates have taken over the **Bowyer Smokeless Coal Co.**, of Whitby, and have reorganized the company, which in the future will operate under the name of the **Spencer Coal Co.**, of Whitby. This property is to be developed by the new management.

The Hewett interests of Bramwell, have purchased the mines of the **Miller Pocahontas Coal Co.**, at Corinne, this property being in the Wyoming County field on the Winding Gulf branch of the Virginian, about a mile and a half above Mullens. Additional equipment is to be installed at this property with a view to increasing the tonnage.

One of the largest coal deals consummated in the Brooke County field in recent months was that under the terms of which the J. C. McKinley interests secured 3,000 acres of coal land from the Sawtell-Ferguson interests near Cliftonville, the consideration not being given. It is understood that the acreage thus acquired will be developed whenever circumstances appear to be propitious.

The capital stock of the **Sugar Creek Coal Co.**, of Mt. Hope, has been decreased from $125,000 to $100,000 under authority granted by the secretary of state.

Extension of the Virginian Ry. to Oceana on a branch line from Maben will make available for development several thousand acres of coal land in the vicinity of Oceana. Connection will be made with the main line of the Virginian from Mullens. The extension will be down Laurel Creek. Construction work on the new branch is being pushed and rights of way are being secured by representatives of the Virginian.

A. W. Patton, of the Patton Coal Co., of Fairmont, was a recent visitor in Parkersburg.

BRITISH COLUMBIA

Dr. J. D. MacKenzie, of the Canadian Geological Survey will this season continue his investigations of the underground structure of the Cornox coal field which he began in 1921. The northward extension of the field will be examined and its relation to the Nanaimo field will be studied.

The Community Coal & Coke Co. has been organized to take over and exploit the Normandale property in the Nicola Valley. Recently a 10 ft. seam of high grade coal was cut in a tunnel that was driven above the government road. It is proposed to commence mining and shipping in a small way immediately.

ONTARIO

Toronto Fuels, Limited, has been organized in Toronto, and has been granted an Ontario charter. The provisional directors are G. G. Sedgwick, J. W. Pickup and C. C. Calvin, of Toronto. Another new company about to embark in the wholesale and retail coal business is the **Martin-Lyons Fuel Co., Limited**, which has been granted a charter to do business in London, with a capital stock of $40,000. Among the incorporators are E. G. Winn, T. J. Murphy, G. M. K. Gunn and C. J. Murphy, of London.

The Western Coal Operators' Association has now advised the Minister of Labor at Ottawa that, as a guarantee of its readiness to re-open its mines, it is willing to accept the basis of wages proposed in the minority report recently submitted by a section of the Conciliation Board, which suggested an increase on day wages of approximately 10 per cent over that proposed on contract rates. The association offers to accept this as a temporary means of reopening its mines, an agreement to be on that basis.

C. W. Moss and **W. D. Smith**, of the Weaver Coal Co., Buffalo, were recent visitors to the office of the Penn Canadian Fuel Co., Toronto.

J. L. Good, of the National Coal Co., Cleveland, was a caller on the Toronto coal trade late in June.

Frank Howard, of the Bellebridge Coal Co., Pittsburgh, was a business visitor in Toronto recently.

WASHINGTON, D. C.

The executive committee of the **American Wholesale Coal Association** announces that it will appoint a commissioner to represent the association at Washington as soon as practicable. The committee is devoting itself to the consideration of various persons who have been suggested as possible candidates for this position. The committee will appreciate suggestions from members. These suggestions should be mailed promptly to the president. Pending the appointment of a commissioner, Ira C. Cochran, Traffic Manager, will assume the management of the routine of the Washington office in addition to the Traffic Bureau. At the meeting of the executive committee, C. A. Owen and C. L. Couch were appointed to act with the president as a committee on trade relationships. At the same meeting a special committee to consider the advisability of establishing a Credit Bureau and all questions relating thereto was appointed. This comimttee consists of R. S. Bain, J. W. Johns, C. G. McGill, and E. K. Downey. At the executive meeting in New York City the following firms were elected to membership in the association: The Webb Fuel Co., Cincinnati, Ohio; Fuel Service Co., New York City. G. H. Snowdon of the G. H. Snowdon Co., Pittsburgh, has been elected a director to fill the vacancy at that point.

In discussion of Navy coal before the Senate Appropriations Committee recently, officials of the Navy Department stated that last year, up until April 1, 1921, the Navy commandeered coal at $4.40 per ton, and that since that time the price had been $6.36. Coal was commandeered at $.42 per ton at West Virginia mines and $4.25 at Pennsylvania mines. Since April 1, 1921, the Navy has purchased in the open market West Virginia coal at $3 per net ton, or $3.36 per gross ton, and at Pennsylvania mines at $4.05 per gross ton. The present price of West Virginia coal at the mines was quoted at $2.24 per ton. Four-fifths of the coal transported from the Atlantic to the Pacific coast is by commercial vessels at $4@$7, and the balance is carried by naval colliers. It was testified that in coal the Navy secures reductions from current market prices more frequently than on oil, it being explained that oil prices are more firmly fixed than coal. The Navy expects, on account of the reduction in the number of coal burning ships in the Pacific, to draw on the reserve storage of coal in the Pacific this year to the extent of 62,965 tons, 21,285 from storage at Cavite, Philippines and 21,000 from storage at Hampton Roads, leaving 215,000 tons in storage on the Pacific coast and 7,000 in storage at Cavite. For the coming year the Navy estimates it will require 533,119 tons of coal at an estimated cost of $8.84 a ton.

Obituary

Mortimer T. Green, one of the best known and extensive retail coal dealers and contractors in Buffalo, was killed on June 20th in collision between his automobile and a trolley car. He was a director of the local Kiwanis club and was making some hurried trips in preparation to attending a convention of these clubs in Toronto when the accident occurred.

Walton Rutledge, one of the best known residents of Alton, Ill., and for many years prominent in public life, died recently, after a long period of physical disability. Mr. Rutledge was in his early days a coal miner at North Alton and it was there he acquired the experience which fitted him for valuable public service to the state in various capacities, all of them connected with the mining industry. He served as county mine inspector for several years and also held the position of county surveyor of Madison County for twelve years. For more than thirty years Mr. Rutledge served the state of Illinois in the capacity of a state mine inspector. He was retained in the service under one governor after another, and he did not give up his state work until old age made it necessary for him to do so.

Traffic News

The Cincinnati, Indianapolis & Western R.R. Co. has applied for authority to acquire and operate that part of the **Chicago & Indiana Coal R.R.** extending north from Brazil, Ind., in Parke County, Ind., for 25 miles.

Work on the abandonment of the longest road ever permitted to be so handled by the Interstate Commerce Commission has been started, according to officials of the **Chicago & Indiana Coal R.R.**, who have decided to ignore the protests of the forty-eight towns and villages located along its right of way, and give up the road. The company, which is now in the hands of receivership, will abandon 162 miles of track. The road runs from Brazil, Ind., now a hotbed of mining trouble, to La Cross, but has sustained constant and regular losses for the last few years.

In the complaint of the **Standard Portland Cement Co.**, an examiner recommends that the rates on coal during Federal control from Dora, Empire, Carbon Hill and Townley, Ala., to Leeds, Ala., via the 'Frisco and Central of Georgia are unreasonable.

The commission has authorized the **Illinois Central** and the **Waterloo, Cedar Falls & Northern Ry. Co.** to establish rates on coal from producing points in Illinois and Indiana to Cedar Rapids and other points in Iowa via Freeport, Ill., and Waterloo, Ia., the same as rates by the direct lines.

The commission has authorized railroads to establish rates on bituminous coal from points in Ohio to stations on the **Fort Wayne, Cincinnati & Louisville R.R.**, New Castle, Ind., and south to Rushville and Connersville and to Indianapolis, the same as rates by direct lines.

The commission has reopened the case of the **Midland Coal Co.**, in which it awarded reparation of $427 for unreasonable rates on coal from Williams, Okla., to Kansas City, Mo.

Argument at Washington in the complaint of the **Little Fork Coal Co.** has been postponed from Sept. 13 to Sept. 26.

In the complaint of the **Illinois Coal Traffic Bureau**, an I. C. C. examiner recommends that the rates on bituminous coal from mines in the southern Illinois, Danville, Murphysboro, Centralia and DuQuoin districts in Illinois to Omaha, Neb., and Council Bluffs, Iowa, are prejudicial.

The Lackawanna Steel Co., in a brief filed with the I. C. C. in its complaint regarding coal and coke rates to Buffalo, alleges that the rates are unreasonable as compared with the rates on ex-Lake iron ore, and that the iron ore rates are non-compensatory and are too low as compared with the rates on coal and coke to Buffalo. It is pointed out that this places Buffalo at a disadvantage, while giving preference to interior competitors. **The Jones & Laughlin Steel Co.**, **The La Belle Iron Works**, **Pittsburgh Steel Co.**, **Weirton Steel Co.**, **Wheeling Steel Corporation**, **Wheeling Steel & Iron Co.**, and **Whitaker & Glessner Co.**, contend in a brief that there is no relation between the coal or coke rates to Buffalo and the ex-Lake ore rates, and that the ore rates should not be made with relation to the coal or coke rates. The railroads contend in a brief that the complaint has not been justified and that the present rates on ex-Lake ore from Lake Erie ports are not unreasonably low. The roads say that the coal and coke rates to Buffalo are not unreasonable and that no relationship exists between the rates on coal, coke and iron ore. It is also pointed out that since 1917 Buffalo has received 29c. less increase per ton on pig iron than has Pittsburgh.

Hearing scheduled at Minneapolis, July 3, in the case involving rates on coal from Kentucky, Tennessee and Virginia to north and northwestern points was postponed to July 13.

Association Activities

Northern West Virginia Coal Operators' Association

One of the largest meetings of the association in a year or more was that held in Fairmont during the latter part of June for the purpose of discussing developments in connection with the strike. Every section of the Northern West Virginia region was represented. President A. Lisle White, head of the association presided.

Although no statement was forthcoming it is known that northern West Virginia operators are becoming impatient at the failure of the officials of District 17 to make any move toward a settlement of the strike and are about ready to make their own plans without consulting district officials. Operators resent the attitude of the district officials in view of the fact that there has at no time been any controversy between the operators and miners in the northern part of the state and also as the operators on two occasions made an effort to proceed with negotiations.

Coming Meetings

American Chemical Society's annual fall meeting will be held Sept. 4-9 at Pittsburgh, Pa.; divisional meetings will be held at Carnegie Institute of Technology and general meetings at Carnegie Music Hall.

American Mining Congress. Twenty-fifth annual convention and exposition of mines and mine equipment will be held at Public Hall, Cleveland, Ohio, Oct. 9-14. Executive offices, the Hollenden Hotel; E. C. Porter, convention manager.

The Rocky Mountain Coal Mining Institute will hold its next meeting at Glenwood Springs, Col., Sept. 5-7. Secretary, F. W. Whiteside, Denver, Col.

New York State Coal Merchants' Association will hold its annual meeting at Richfield Springs, N. Y., Sept. 7-9. Executive secretary, G. W. F. Woodside, Arkay Bldg., Albany, N. Y.

National Safety Council. Eleventh annual Safety Congress at Detroit, Mich., Aug. 28 to Sept. 1. Executive secretary, W. H. Cameron, North Michigan Ave, Chicago, Ill.

Mine Inspectors' Institute of the United States of America will hold its annual meeting July 11, 12 and 13 at Chicago, Ill. Secretary, J. W. Paul, 4800 Forbes St., Pittsburgh, Pa. Headquarters Hotel Sherman, Chicago, Ill.

Coal and Industrial Exposition under the auspices of the Huntington Chamber of Commerce will be held Sept. 18-23 in the Chamber of Commerce Bldg., Huntington, W. Va. **The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers** will again hold its annual meeting in the same building during the exposition.

National Exposition of Chemical Industries will hold its eighth national exposition at the Grand Central Palace, New York City, Sept. 11-16. Manager, Charles J. Roth, Grand Central Palace, New York City.

The annual convention of the **American Mining Congress** will be held in Cleveland, Ohio, Oct. 9 to 14.

COAL AGE

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The President's Proposal

WITH the best intentions but with singular lack of courage and with but dim perception of the consequences of its course, the administration at Washington has hopelessly befuddled the coal problem. Firm and defiant at Marion on July 4, the President returns benign and benevolent to Washington and on July 10 avers that public interest requires that the coal operators grant the demands of the United Mine Workers. There has been no parallel to this since the passage of the Adamson law six years ago.

The situation with respect to supply of coal demands action, not delay. The solution offered by the President is no solution at all. It can and will only postpone the day of peaceful resumption of coal mining. In a panic over the coming shortage of coal, the principles at stake are to be compromised. The operators are asked to surrender to the campaign of intimidation, terrorism and massacre that has characterized the union's conduct in this strike.

Must this country have coal at such a price?

The fundamental issue in this strike is and has been the reduction of union coal-mine labor's wage in conformity with the same principles that prompted its war and post-war time inflation. To prevent such a reduction the United Mine Workers have wielded the big stick of a nationwide strike—they have exerted the full economic pressure of their organization. Hands dripping red from Herrin, is the union invited to Washington and told that coal production is going to be resumed at whatever mines and by whatever miners choose to work? No. On the contrary, in the most polite, hospitable manner they are invited to go to work at the wage scale that they are striking to maintain.

Knowledge and courage command respect. Who, even among the United Mine Workers present on that eventful Thanksgiving eve of 1919 at the Red Cross Building in Washington, but admired the grit, determination and command of himself and his subject exhibited by Dr. Garfield when he told the miners they could have a 14-per cent wage increase and not the 60 per cent they demanded nor the 31 per cent offered by the Secretary of Labor!

The present emergency calls for another exhibition of indomitable will and clarity of purpose. Apparently the operators must this time supply the stamina and take the punishment that attends opposition to the United Mine Workers. They have the brains, they have the perception of the issues to carry through if they but maintain their unity.

It is wholly idle to speculate on what might have been. It is sufficient to note that a week previous the coal operators offered a plan to which they were fully empowered to commit the bituminous-coal industry—a plan embracing essentially every point for which the administration had taken a stand. The plan offered the miners as a substitute for the Central Competitive Field a new grouping of districts. It provided arbitration boards to settle appeals arising from tangles in the conferences of collective bargainers. This plan was lacking only in not providing a basis for immediate resumption of work. Precedent for determination by an administrative officer of the government of a proper and suitable wage scale in such an emergency was set by Dr. Garfield in 1919. If the administration had a spark of conviction on the economic necessity of liquidation of post-war peak wages it could have accepted the operators' concessions coupled with an ultimatum to the union on wages. The data essential for such a determination are as accessible now as in 1919.

For the operators to agree to President Harding's proposal would be not only to surrender on the points for which they have taken a stand but to abandon the country to the rapacity of a strengthened, domineering labor monopoly. The country has patiently subjected itself to more than three months' strike in the coal fields as a necessary travail in the economic adjustment of this basic industry. The public most assuredly will not approve official recognition and unnecessary even though temporary perpetuation of an uneconomic wage scale under conditions that will rapidly elevate the cost of all coal to previous peak levels.

The administration has offered the country a solution of the coal strike that is not even peace without victory, for so ill-considered are its terms that even though operators and miners be forced into acceptance, coal production can proceed under nothing less than an armed truce. To mine coal under such a plan is but to recondition the contestants for further trouble in 1923.

One Law for All!

WHAT ails the state authorities, especially in Illinois, that they are mustering troops in order to protect the railroads? If the transportation interests would cease to carry mails, convey passengers and haul freight there would be no violence. Instead they fly in the face of Providence—and of the union—by attempting to operate.

Some arrangement should be made with the union so that it would be willing to let the union men work, and surely the railroad companies should be prevented from attempting to hire men to do the work which the union has interdicted.

It is said that the railroads have even gone so far as to hire guards to keep order and protect men who are willing to work. Such conduct is unthinkable. They should in all things rely on the state governments, which everyone knows are never remiss in keeping order, wherever, of course, everything is done in accord with the behest of the union.

As the country does not thus reason it must view the railroad strike in a different way from that in the coal regions. It is doing in the one what it almost invariably refuses to do in the other. If the states would put men in the coal fields and instruct them to keep peace at the mines and to maintain the rights of citizens, if the public would back up private guards in the execution of such duties as the state failed to perform, if men who wanted to work were given protection, strikes and bloodshed would be less frequent.

The nation coddles the coal strike. If it ceased doing so the strike would end. The country protests against private guards and refuses protection, yet it blames the coal industry for failing to maintain order, which is the function not of individuals but of the governments of the county, state and nation. If the officers of the law fail to keep order, then they themselves are to blame. It is the police of New York City and the public that hires them that are at fault when houses in that city are entered and men are sandbagged and it is in no way a dereliction of the persons victimized.

Similarly, it is the sheriff, the militia heads, the governors, the chief executive and the public of the United States that are to blame when men are killed as at Herrin, Ill., and when the mines are closed throughout the country in the face of men who are willing to work. The operators are the victims and neither the union nor the public can lessen their own guilt by malicious criticism of those whom they victimize.

The miners have a political advantage that the railroad men do not possess. They are grouped together where they have full control of the vote, and those in mining sections who are not mine workers usually are completely controlled by them. In Williamson County, Illinois, not only the miners but the county also is, as it were, unionized. The mine workers thus congregated elect State Senators and Representatives, and so long as they can do this they can and do make state laws and control executive action. Congressmen also are elected by them, and the laws they demand are too often enacted.

The railroad men, more numerous but more scattered, are less able to use their vote and are more likely to use it sanely because, living in the family with Uncle Sam, they somehow sense his needs, whereas the mine workers, who live alone, see only what they want and nothing beyond.

It is time that the state be made responsible for mob violence. Often to make the county liable is to put the burden on the very property owners who are victimized by the disorders. They are prevented by the negligence of the sheriff from keeping order and then have to pay the bills for any injury to their property that results.

When mine workers and coal companies whose property were destroyed can claim redress, and when the families of the mine workers are as well protected by the state against mob violence and even murder as they are against accident by the employer there will be less disorder.

The public is more responsible than the coal operators or the mine workers generally for the strife and strikes in that industry. If union anarchy is allowed to reign in the coal region it is because the states and the nation have divested themselves of their police powers and have evaded those duties for which they were in the main constituted.

The Bituminous Operators' Labor Policy

IT HAS long been a matter of speculation as to whether the bituminous-coal operators could manifest sufficient cohesion on a labor policy to devise and see through a consistent program. Sectional differences and even internal schisms in small groups have many times proved too much for the leadership of the operators. In the labor crisis of 1919 the Central Competitive Field dominated, even to the point of locking out, as it were, the operators representing the outlying fields.

The surprising unity with which the operators met the miners at Washington is the outcome of the leadership and concert of purpose developed by the National Coal Association. It is not necessary to infer that it is the association itself that has brought this to pass as an official function, although the decision this year to admit the subject of labor to the councils of that organization has been a potent factor. It is rather that five years of meeting and agreeing on other matters of great concern to all or to large portions of the coal producers has trained what before the war was a provincial aggregation in the manner of associating for a common purpose and acting as a unit. In the beginning it was only necessary to dig down into their pockets for cash to finance their part of the Fuel Administration program. Then it was cost accounting, railroad problems and threatened hostile legislation. Now the highest and most formidable hurdle, labor, is being taken with all the form of a trained athlete.

When, if ever, the inside story of what has transpired within the councils of the operators this year in handling the strike situation is told it will make interesting reading. The results are apparent and are a credit not only to those who have led the way but as well to those operators who under protest have submerged their views and desires in the common cause.

The strike is not over and no one is out of the woods. If the operators will carry on as closely as they have progressed thus far, supporting without reserve the program of the majority, they will accomplish that which few expected of them—they will have demonstrated to themselves the value of association and their particular national association. One step at a time, but each step is reaching farther and leading toward that integration of the bituminous-coal industry that alone will be its salvation.

Good Coke Now Manufactured from Non-Coking Coals of Illinois, with Saving of Byproducts*



Seek to Coke Coal Before Cementing Material Is Oxidized—Heat Graduated to Suit Thickness of Bed to Be Coked—Coking Time Lowered to Twelve Hours—Gas Introduced at Two Levels

By H. A. Patterson†
Chicago, Ill.

COALS of Illinois are rich in valuable byproducts and if considered from that standpoint alone they would compete with coals from any district. They have not been utilized in coke manufacture only because they coke indifferently when treated in any of the coke ovens heretofore on the market.

Although in and near Chicago there are over 2,000 coke ovens with a capacity for coking 33,000 tons of coal per day none of the coal coked is from Illinois. This is proof that the coals of that state will not coke in these ovens, for why should the companies controlling them pay the higher freight on Eastern coals if they can successfully coke the coals from the nearby fields of Illinois and Indiana?

Broadly speaking, the coals from Illinois are lacking in the humus and resinoid bodies which act as cements during the coking process. It is notable that the Illinois coals are high in oxygen, and it is further known that this is a characteristic of most non-coking coals.

The designers of the Roberts oven have spent many years in the study of coals and their coking qualities and it was their belief that the high oxygen content in conjunction with the low content of humus matter was the cause of the non-coking quality. They further believed that a method could be devised whereby the heat could be applied uniformly and continuously to a coke oven and in such large volumes per unit of time that coke would be formed before a harmful reaction could take place between the oxygen and the small quantity of cementing constituents.

After years of experimenting and the building of test ovens the present design was finally developed, and the ovens built in accordance with it have been in successful operation at Granite City, Ill., since January, 1921. During this year and a half of operation it has been definitely proved that the theories on which the ovens are built are correct, for not only have they been successfully operated during that period on Illinois coals but with the aid of the coke produced a new world's record in both coke-oven and blast-furnace operation has been made.

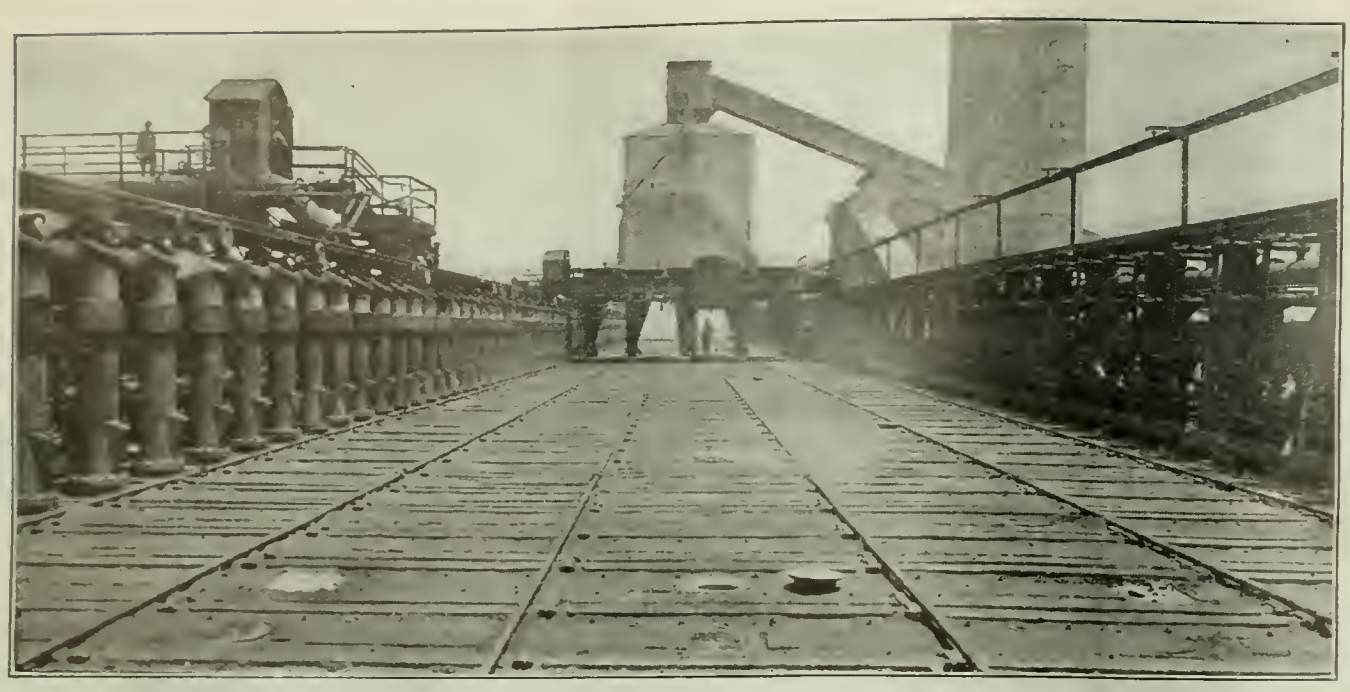
Anticipating that the successful use of Illinois coals would lead to great expansion of the steel industry in the St. Louis district, the Granite City plant was laid out for an ultimate daily capacity of 3,000 tons of pig iron and 8,000 tons of coal. This will mean six blast furnaces and 320 ovens.

The first unit consists of 80 Roberts byproduct coke ovens and one blast furnace. It is probable that another furnace and at least one more battery of 40 ovens soon will be erected. The daily capacity at present is 500 tons of pig iron from the furnace, and the ovens will handle 2,000 tons of coal.

Coal cars arriving at the plant may be unloaded for immediate use to track hoppers from which the coal is delivered to conveyor belts which serve the crushers, or it may be received for storage and dumped into hoppers where by means of a bridge it is distributed to stockpiles. A car dumper of up-to-date design also

*Abstract of paper on "Coking Illinois Coals." This paper was read before the Illinois Mining Institute at its summer session.

†Engineer, American Coke & Chemical Co.



On Top of Ovens

The ovens run from side to side of the illustration beneath the floor shown. It will be noted that the charging car has five spouts for filling the ovens and is a sort of gantry resting on rails on either side. In the rear can be seen the coal bunker.

is installed. It is capable of handling the largest cars now engaged in interstate commerce. This car dumper has a capacity of forty cars per hour and is used for both coal and ore. These are delivered by the dumper to an electrically propelled transfer car of 100 tons capacity. This transfer car travels about 100 ft. from the dumper to the track hoppers, which deliver to the conveyor belts.

In the crusher building are two coal crushers, each of 250 tons capacity per hour. They may be operated either separately or at the same time, the coal from them being delivered to the second conveyor belt.

The crushed coal is discharged to either of two bins of 100 tons capacity, which are in the top of the mixer house. Though no difficulty has ever been encountered in making excellent metallurgical coke from Illinois coals in the Roberts oven, there are certain characteristics of ash and sulphur which may be obtained by proper mixing. By combining them in such proportions as will produce an ash content suitable to blast-furnace operation, better results are obtained in the furnaces. All Illinois coals so far tried produce a perfect coke from the standpoint of cell structure, strength and free-burning qualities.

From the mixer bins the crushed coal is delivered to the mixing belts, where the coal is mixed in any desired proportions. These belts are 30-in. apron conveyors operating under gates which may be raised to pass any desired quantity per unit of time.

The mixed coal is dropped to the hammer mills through proper chutes, and by the action of the hammers the coals are not only pulverized but very intimately mixed. The true mixing, therefore, occurs in the hammer mills, and the belts are more proportioning belts than mixers.

The storage bin is divided longitudinally and each compartment is provided with five valves in the bottom which register with the five hoppers on the larry car. By having the storage bin divided, two different coals may be charged, and it is also possible to run tests on large quantities of new coals.

There are at present two batteries of forty ovens each. These are standard Roberts recuperative ovens as built by the American Coke & Chemical Co., of Chicago. The ovens were designed to operate on 15-hour coking time but the time has been reduced to 12 hours with a charge of 15 tons. This gives a capacity of 30 tons per oven per day, the largest capacity of any oven so far designed.

The products of distillation are taken off on the pusher side of the battery through a single ascension pipe which is connected to duplex foul-gas mains, so that separation of the rich and lean gas is possible. The foul gas passes first through the primary coolers, by which the temperature is reduced to about 90 deg. F. The water flows countercurrent to the gas and is under automatic control, so that the temperature of the outlet gas is maintained constant at any given point.

From the coolers the gas passes through the Roots exhausters, which are heavy-duty machines direct-connected to Chandler & Taylor engines. There are three exhausters, the center machine being used as a spare for either rich or lean gas. The exhausters are each capable of handling more than 10,000,000 cu.ft. of gas per day and are under control by governors that are actuated by the gas pressure at the inlet of the primary coolers. In this way the pressures are maintained constant, and the differential through the coolers also will remain constant under various operating conditions.

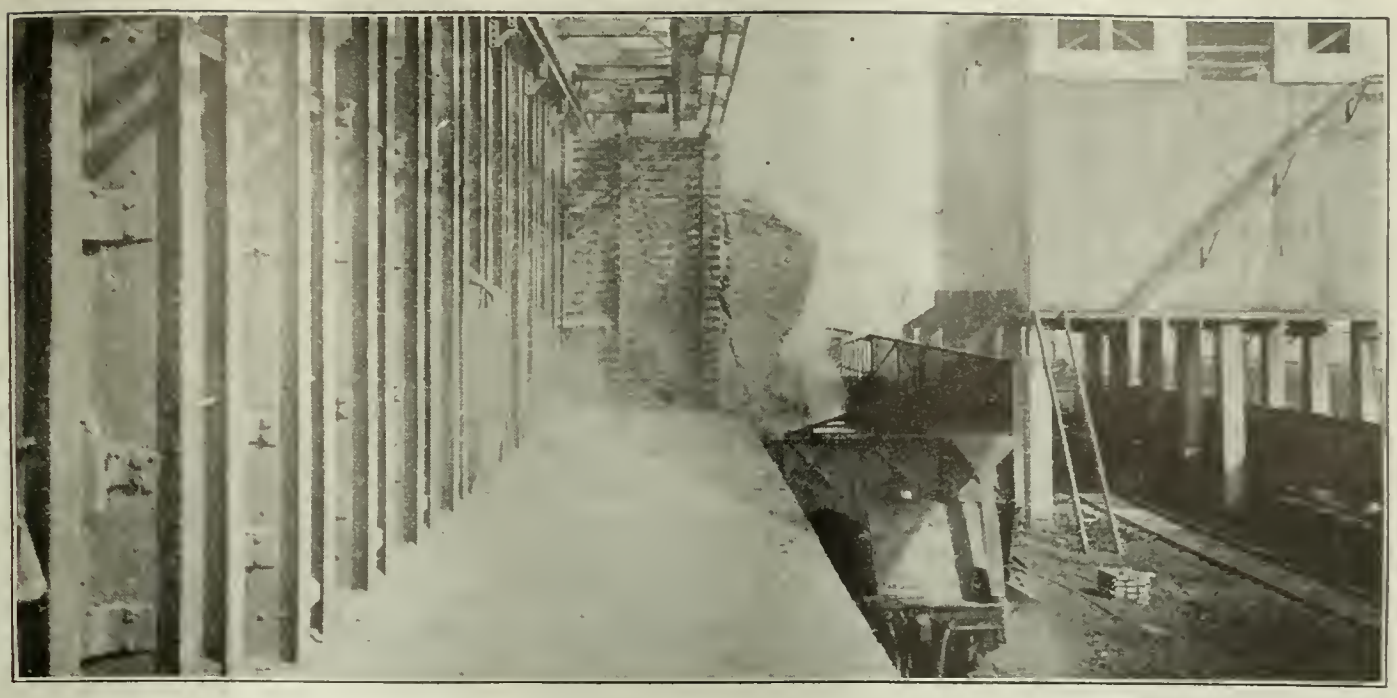
From the exhausters the gas passes through P. A. type tar extractors. The tar-free gas passes from the tar separators to the saturators, where the ammonia is extracted. The saturators are large lead-lined tanks containing a solution of sulphuric acid and water. The bath, as it is called, usually contains about 5 per cent sulphuric acid. The ammonia combines with the acid, forming ammonium sulphate, which is a white salt valuable as a fertilizer.

By means of air lifts the solution of sulphate and the mother liquor is raised from the saturator to a draining table on which the salt settles by gravity, and the mother liquor is again returned to the saturator. This process is continuous and involves nothing more than the addition of acid from time to time to make up for the loss due to formation of the salt. From the draining table the salt is run into centrifugal driers and in them is dried to about 2 per cent moisture, after which it is carried to storage, where it is kept until shipment is made.

From the saturators the gas passes to a set of final coolers. From these it passes into steel towers about 90 ft. high, where the light oils are extracted. These towers are filled with wooden trays or hurdles so set that the gas has a tortuous passage from the bottom to the top. A paraffin oil with a high boiling point is introduced at the top of the towers and passes down counter-current to the gas. This oil has the power of absorbing the light oils from the gas and as its contact

Pushing an Oven

The charge, duly tapered to ease pushing, is thrust out of the oven by a mechanical pusher which operates from the other side of the battery and falls into the hot or coke-quenching car, a measured quantity of water being nsed for its cooling.



with the gas is intimate, due to the hurdles, the absorption is efficient.

The saturated wash oil is pumped directly to a still heated by steam to such a temperature that the absorbed light oils will be removed from the wash oil, which has a higher boiling point than any of the absorbed oils. This still is called a light-oil, or stripping, still. The wash oil, after removal of the light oils, is cooled and again circulated through the towers, so the process is continuous.

The crude light oils thus extracted from the wash oil are stored in tanks and may be treated as a whole for use as a motor fuel or may be fractionated for refined products. In the case of motor fuel it is common practice to wash the light oil with 66 deg. sulphuric acid to remove the impurities, then neutralize with caustic soda, then redistill in a column that is under accurate temperature control. The resultant product meets all the requirements for motor fuel, but is seldom used alone. The general practice is to mix it with kerosene or some other comparatively heavy oil. The fuel thus made is far superior to ordinary gasoline, as it produces greater power and there is a noticeable absence of carbon in the cylinders.

If the light oils are to be worked into the several fractions they are first distilled as a whole with careful temperature control, cuts being made in the fractions at about 80, 110 and 140 deg. C. These fractions are the crude benzol, toluol, solvent naphtha, etc. Thus produced they are each washed separately with sulphuric acid and neutralized with caustic soda and again distilled with exceptionally accurate temperature control. The resultant products meet specifications calling for a boiling point varying not more than a few tenths of a degree Centigrade. They will be water-white and are in every respect high-grade products. Their uses are many, especially in times of war, when the call for explosives is heavy. They also are used in the dye industry and as the basis for many articles in daily use.

After extraction of the light oils the rich gas is ready for sale, and the lean gas is returned to the battery, where it is used for heating the ovens.

We now come to a description of the ovens, which are the heart of the plant. The Roberts type differs from any other oven in that there are no flues in the walls. The wall, therefore, operates under uniform conditions and there are no dead spots or lines caused by division walls between flues.

There is but one brick shape used in the heating wall. This brick forms both sides of the space allowed for the combustion of the heating gases. The surface of this brick which is exposed to the heating gases is about two and one-half times the surface which is exposed to the coal. The result is the rapid absorption of heat by the brick and an equally rapid distribution of this heat to the coal.

The effect may be likened to that of a well-known superheater in which the steam to be superheated passes through the interior and the heating gases pass around the exterior of a tube. The exterior is made with fins similar to those on an air-cooled automobile engine. The result is that a large volume of heat is transmitted to the steam and an exceptionally high degree of superheat is attained.

In the Roberts oven the heating gases are in contact with a large surface and the heat thus absorbed is transmitted rapidly to the coal through the small surface which forms the wall of the coking chamber. By having the brick set so that they act as baffles, the combustion is complete and uniform and as all parts of the wall are identical in construction, both the generation and transmission of heat will be uniform.

The gas used for heating is admitted at the top of the heating wall at a point about 16 in. below the coal line and at this point meets the air necessary for combustion. This air is brought up through the intermediate wall from the recuperators, which are directly under the oven chamber. The air is accurately controlled by means of dampers and by slide brick which cover the air ports, and, as the gas also is under control, the combustion is maintained at the desired point with great accuracy.

The control of the gas for heating is one of the features of this type of oven and will bear a somewhat detailed description. All coke ovens have a taper from the coke side to the pusher side—that is, the side on which the coke is discharged is wider than the side from which it is pushed. This taper is given in order that the effort in pushing will be reduced. In consequence the thickness of the coal on the coke side will be greater than on the pusher side of the oven and will vary at each point between the ends of the oven. It is equally apparent that in order to have the coking of each portion of the charge completed at the same time more gas will have to be burned where the coal is thickest.

Until the Roberts oven was designed this delicate adjustment of the quantity of gas was impossible. In

that oven, however, it has been worked out in a simple manner. The gas is introduced through cocks on the top of the battery, and these have holes, through which the gas passes, drilled accurately through the core. Beginning on the pusher side, where the coal charge is thinnest, the holes in the cores are gradually enlarged until the largest will be the last cock on the coke side, where the coal charge is the thickest. As the cocks are on 21-in. centers this means that the supply of gas is graduated for each 21-in. section of the oven. Furthermore, as the cores of the cocks are cast-iron and are always at atmospheric temperature they may be drilled to the thousandth of an inch and will always maintain their correct size under operating conditions.

We have then on each side of the oven a set of accurately graduated openings for the passage of the gas and it is well known that an opening of given size will pass a quantity of a gas in direct proportion to the size of the opening and the pressure. The result in our case is that each burner passes the exact quantity of gas necessary to coke the coal in that part of the oven which is to be heated by that particular burner.

Another point that must be mentioned is the introduction of the gas at two points in the height of the wall. That is, there is what is called the "primary gas," which is introduced at a point about 16 in. below the coal line. This primary gas is about 50 per cent of the total gas necessary for the coking of the charge. With it is admitted sufficient air to sustain combustion of the total gas required. The primary gas, therefore, has a 100 per cent excess of air necessary for its own combustion. This excess air tempers the flame temperature so that the generation of heat is commensurate with the requirements in the top of the oven.

After passing through a short mixing duct the burning gases meet the staggered construction previously described, and by impingement on the neck of the wall brick the combustibles are well mixed and combustion is sustained at the desired rate.

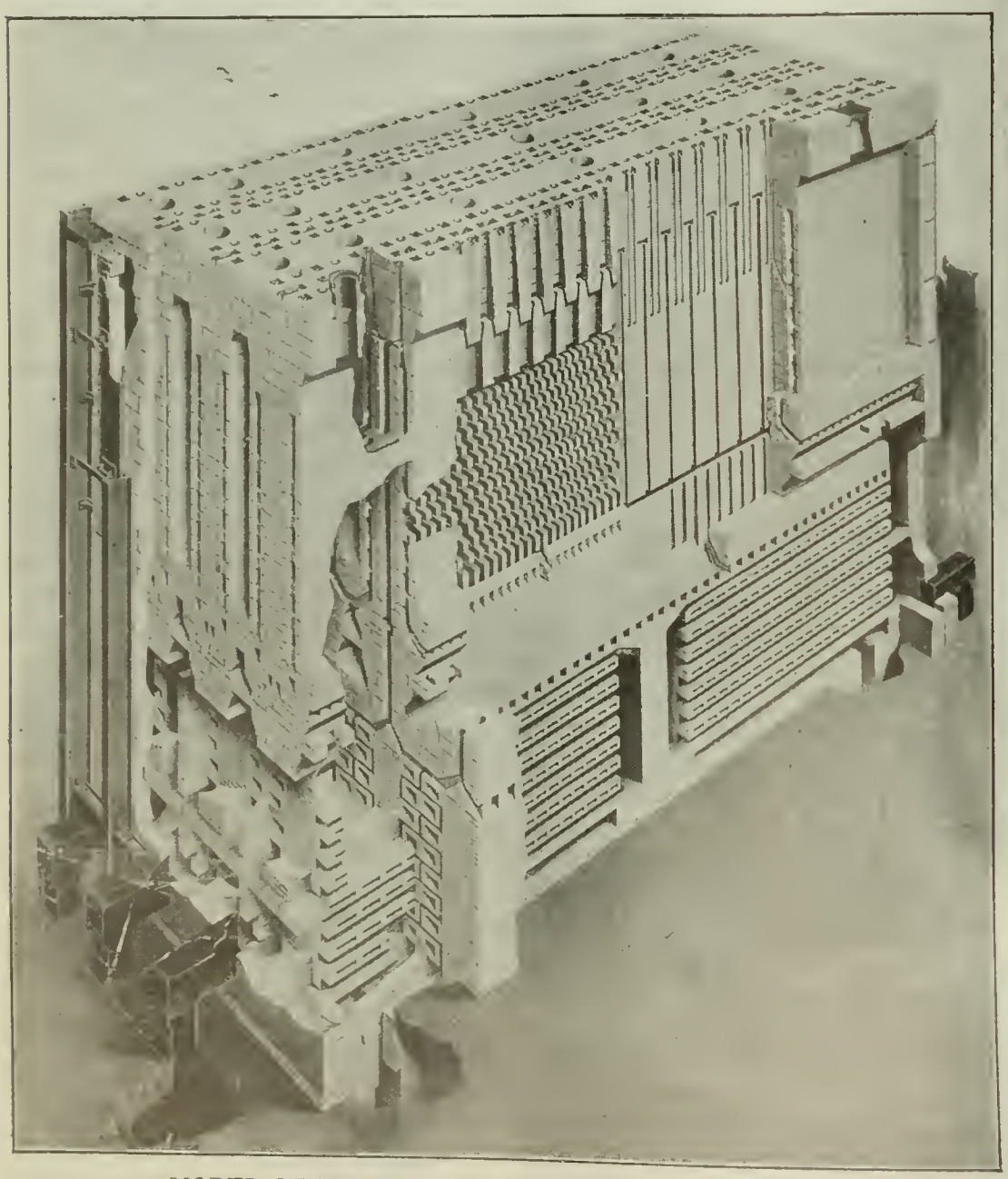
About halfway down the wall the primary gas is exhausted, and it is here that the "secondary gas" is admitted. This gas is under the same accurate control as the primary and although at the point of introduction it is at a high temperature it is admitted into an atmosphere filled with the inert products from the primary combustion. The burning of the secondary gas is, therefore, subdued by the inerts, and the generation of heat is continued in the same uniform manner as in the upper part of the wall. The lower part of the wall is identical in construction with the upper part and the extraction and transmission of heat is carried on with the same efficiency throughout the entire combustion space.

The proportions of primary and secondary gas are maintained by the use of orifices similar to those in the cores of the individual burner cocks. The simplicity of the entire control of combustion is therefore evident. To change the coking time it is but necessary to change the pressures on the main supply to the battery. Each oven header and each burner then will automatically carry its proper quota of gas.

The products of combustion, after heating the walls, still retain a large quantity of heat which is reclaimed in the recuperators. These consist of a series of flues through which the waste gases pass, and the air to be preheated passes around the exterior of the flues. The flow of the waste gases and the air are opposite to each other, and the air, therefore, meets progressively hotter flues as it passes upward through the recuperator. With this system the air for combustion is preheated to a temperature as high as 2,000 deg. F. After passing the recuperators the waste gases, which are then about 750 deg. F., are taken to the 250-ft. stack, which maintains sufficient draft to provide for the circulation of the air and gases through the regenerators and combustion chamber.

Each point of admission of gas and air is under exact control and the waste gases also are under control, so that the proper differential always is maintained in the combustion spaces and the generation of heat is in direct proportion to the requirements for the coking time at which the oven may be operating.

After the charge is coked for the desired length of time the dampers are closed and the doors are removed from



MODEL OF THREE OVENS AND PART OF A FOURTH

In the base will be seen the regenerators by which the air admitted to the combustion chambers is heated to 2,000 deg. F. The waste gases pass through a series of flues in the regenerator, the air to be preheated passing around the exterior of these passages. Gas is admitted to the combustion chambers at two points in the height of the wall.

each end of the oven. The coke is then pushed into a steel railroad car known as the "hot car," the doors are replaced and the oven immediately recharged. The process is, therefore, practically continuous.

The coke is taken in the hot car to the quenching station, where it is sprayed with water until it ceases to glow. The action of the quenching water is under accurate control, as it is essential that the moisture not only be as low as possible but that it be uniform for all ovens.

After quenching, the coke is dropped on a wharf and allowed to cool and dry for a short period and it is then fed to a 36-in. conveyor belt and carried to the screening station. In this it is sized on rotary grizzlies and shaking screens for foundry, furnace and various domestic uses. The sized products are either loaded direct to cars by boom belts or are stored in bins under the screening station and then loaded into cars.

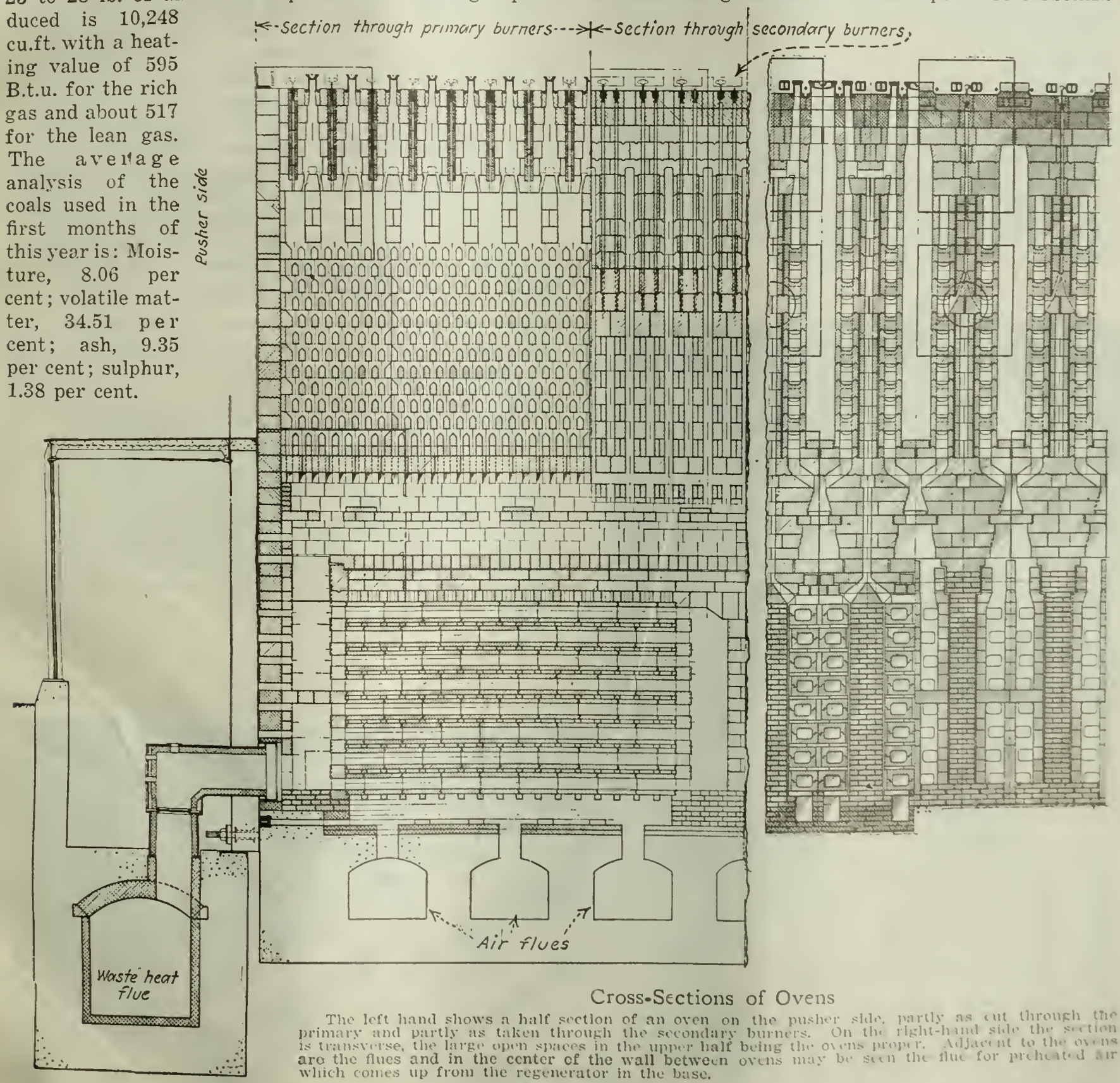
At Granite City, when using Illinois coals, a ton of coal produces 70 per cent total coke, of which only about 3.7 per cent is breeze; about 8 gallons of tar, and 25 to 28 lb. of ammonia sulphate. The total gas produced is 10,248 cu.ft. with a heating value of 595 B.t.u. for the rich gas and about 517 for the lean gas. The average analysis of the coals used in the first months of this year is: Moisture, 8.06 per cent; volatile matter, 34.51 per cent; ash, 9.35 per cent; sulphur, 1.38 per cent.

The coke from this will average: Moisture, 4.44 per cent; volatile matter, 2.47 per cent; ash, 13.06 per cent; sulphur, 1.13 per cent.

It is interesting to note that the percentage of breeze is only 3.7 because it has been generally assumed that the use of high-volatile coals involved large losses from breeze—and this is true with any other system of coke ovens.

The coke made in the Granite City plant is used in various industries and also for domestic purposes. Practically the entire output of one battery is used in the furnace which is operated by the St. Louis Coke & Chemical Co. This furnace, which was designed by Freyn, Brassert & Co., of Chicago, is rated at 450 tons per day. During the past two months the furnace has produced about 515 tons of pig iron per day with a coke consumption of only 1,785 lb. per ton of pig iron produced.

Many attempts have been made to carbonize Illinois coals but so far the only successful method is the one herein described. The more recent experiments have been along the line of low-temperature carboniza-



Cross-Sections of Ovens

The left hand shows a half section of an oven on the pusher side, partly as cut through the primary and partly as taken through the secondary burners. On the right-hand side the section is transverse, the large open spaces in the upper half being the ovens proper. Adjacent to the ovens are the flues and in the center of the wall between ovens may be seen the flue for preheated air which comes up from the regenerator in the base.

tion. This system produces a coke that makes an excellent domestic fuel but does not as yet form a metallurgical coke.

For a blast furnace, the coke must stand the rough handling that occurs in transferring it to the stock bins and from these to the skip hoists and from these again into the receiving hoppers at the top of the furnace. In the latter quantities of hard limestone will be dropped on it, and after this it will be subjected to the heavy burden of the furnace. Not only is the coke subject to the burden of ore and limestone in the furnace charge but it undergoes also a grinding action as it passes down toward the hearth. The physical structure of the coke must, therefore, be such that it will stand very rough usage.

That the Roberts oven will coke not only Illinois but Eastern coals also and equally well was completely proved at Granite City.

By Twist in Track Cars Are Turned Partly Over, Dumping Contents

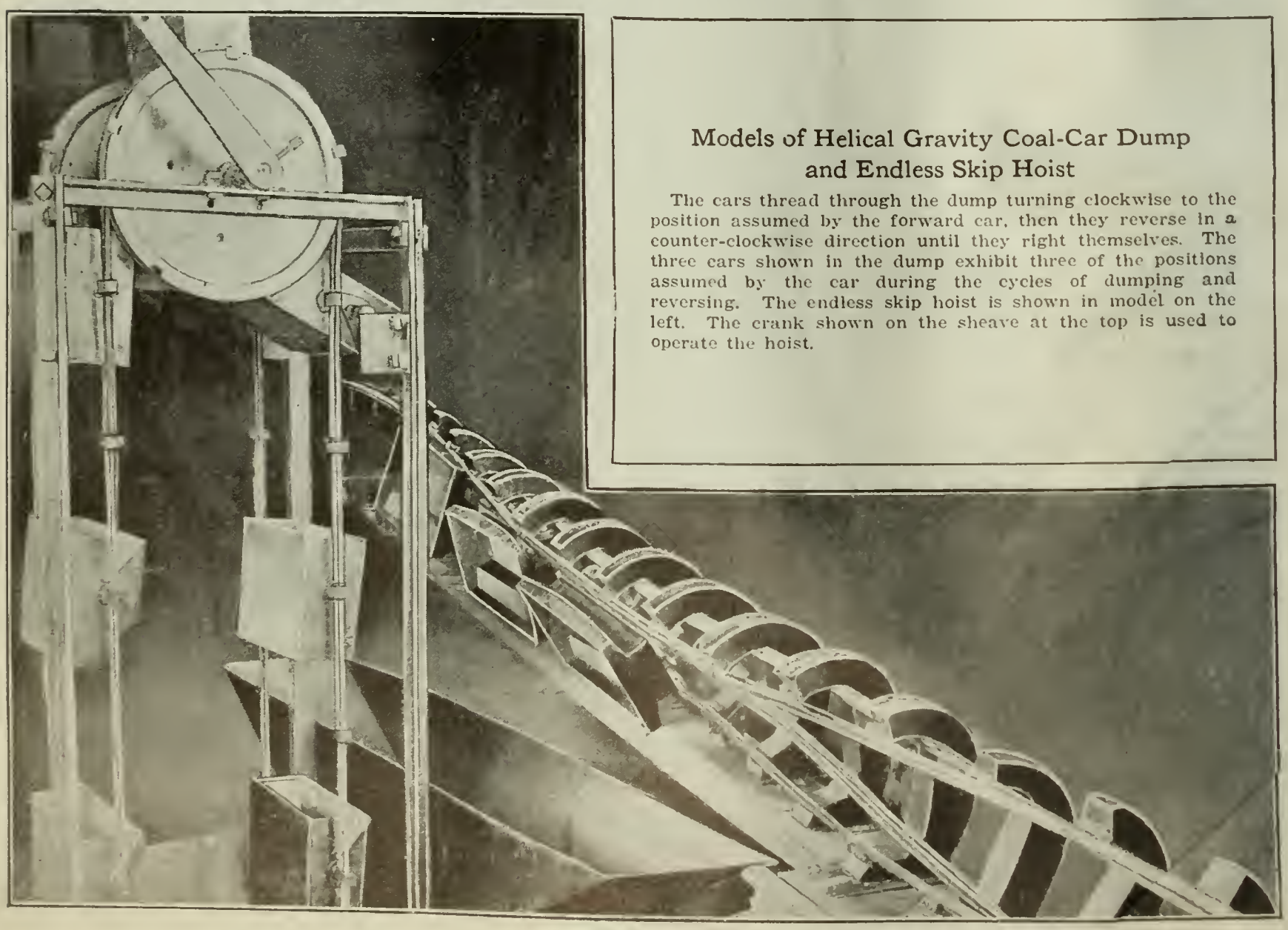
By A. F. Brosky*
Pittsburgh, Pa.

TRANSPORTATION congestion lies at the bottom of many low-tonnage difficulties. If the cars could be dumped promptly, fewer cars would be necessary and locomotives never would have to wait while a full trip was being made up. If a lull comes for some reason in the coal received at the dumping point, the locomotives when they come will be delayed in their return by the slow dumping of cars.

These delays are quite serious, especially where plants are designed to produce 8,000 to 10,000 tons per eight-hour day. Some plants indeed are already scheduled for 13,000 tons a day, and only an element of caution prevents their designers from announcing their ambition publicly. They are afraid they may have to wait as long as did Zeigler before they reach and pass as Zeigler did the goal set. In fact, many mines fail utterly to reach their projected tonnage. One of the principal difficulties with many concerns is slow dumping, which sometimes, because it lays locomotives idle, is charged up as a failure of transportation.

But fast dumping results often in degradation—in making coal worth $2.50 a ton into slack worth only 75c. With these points in mind, a new plan has been developed by General Edward O'Toole, general manager of the United States Coal & Coke Co. He is the patentee. The device is known as a helical gravity dump. General O'Toole also is devising an endless skip hoist which promises to eliminate many of the faults of present shaft hoist arrangements. This dump discharges coal from the mine car quickly and gently with no labor and no expenditure of power, as the dump itself does not move. The cars corkscrew through the dump until they assume a position where all the coal in them is ejected; they then reverse the direction of rotation, leaving the dump in an upright position. The accompanying illustration shows a working model, one-eighth of actual size, from which an excellent conception of the dump operation may be obtained. Like the rotary dump the cars are held to the track by means of a

*Bituminous editor, *Coal Age*.



Models of Helical Gravity Coal-Car Dump and Endless Skip Hoist

The cars thread through the dump turning clockwise to the position assumed by the forward car, then they reverse in a counter-clockwise direction until they right themselves. The three cars shown in the dump exhibit three of the positions assumed by the car during the cycles of dumping and reversing. The endless skip hoist is shown in model on the left. The crank shown on the sheave at the top is used to operate the hoist.

retaining guide, placed at a distance from the rails equal to the diameter of the car wheels. This comes in contact with the wheel tread when the car begins to enter the dump. Unlike the rotary dump the cars are not spotted, which detail of operation results in lost energy and also lost time.

In the rotary dump all the coal is emptied from the car by rotation without movement in the direction of progress. In this dump the car partly transposes as it progresses through the dump and thus the coal is unloaded. The car while moving ahead turns over gradually, and therefore the coal itself is dumped gradually. In consequence degradation is minimized. The tracks and guides are bolted to castings each of which is shaped to give the desired pitch and twist to the rail and guides. These castings, in turn, are securely anchored to an inclined foundation so that the dump itself is immovable. The slope of the foundation depends upon the speed of dumping desired and the frictional resistance of the car. However, the inclination of the dump will be such as to cause the cars to pass through faster than would be desirable in actual operation. The speed of dumping, therefore, will be governed by a car retarder.

The endless skip hoist, which is being developed in conjunction with the dump, also is shown in the illustration. This hoisting apparatus is an adaptation of the bucket elevator. The skips turn over on pivots which are secured to two or more cables, depending upon the depth of the shaft, the speed of hoisting, etc. The buckets will be fastened to the cables so that the loads on the respective cables will be as nearly equalized as possible.

Each skip will hold the contents of one mine car. As shown in the illustration the cables on each side pass over two large sheaves or sprockets secured to a heavy shaft. Projecting lugs from the pivot points on the skips engage in slots when passing over the sheaves.

The dump will drop the cars through, either singly or in trains, at any desired speed. The ordinary types of mine car and coupling can be used. The dump can be placed wherever other dumps are now employed. If placed at the shaft bottom in connection with the endless skip hoist, the speed of dumping and hoisting will be regulated so as to take the coal away as fast as it arrives. Any capacities desired can be obtained with this dump and hoist up to 25,000 or 30,000 tons in eight hours.

Removal of Ball Bearings from Mine-Locomotive Motors

This Operation, as Well as Their Replacement, Requires Skill and Care—Pinions and Bearings Should Be Pulled Rather Than Wedged Off

By E. Ashworth
East Pittsburgh, Pa.

IN THE successful operation of the ball bearings of mining motors, lubrication is the first consideration. A close second in importance is the correct removal and application of the bearings and pinions. The latter deserve attention, for the procedure commonly followed around a mine in removing or applying ball bearings is quite likely to damage them.

Fig. 1 is typical of the ball-bearing mountings used in mining motors. Various schemes for locking the bearings in place are employed. The fit of the bearing on the shaft and the results obtained usually are the same regardless of the particular scheme of locking. That is, the bore of the inner race of the bearing is slightly smaller than the shaft itself, giving a press fit upon it, which, assisted by any of the several types of locking devices, prevents rotation of the inner race with respect to the shaft. The outer race, however, has a sliding fit within the housing, so that it will creep around slowly, thus distributing the wear on the bearing and obtaining a maximum life.

To remove the pinion and ball bearings in such manner as to avoid possible damage to the shaft, bearings and housings a proper puller should be used. It is common practice to remove the pinion which is shrunk onto the shaft, by driving thin wedges between it and the nuts of the ball bearings. This procedure is quite likely to damage these nuts while the shock on the bearings certainly does them no good. With some constructions if wedges are used they must be driven between the housing and the pinion. This is likely to put heavy stresses on the bearing which is arranged to take the end thrust.

Fig. 2 shows one type of pinion puller in operation. This consists of puller jaws in the form of semicircular plates, which are encircled and held in place by a steel ring. Four bolts, two in each section, extend through the puller plate. A brass plug in the center of the plate bears against the end of the shaft. When this device has been put in place the nuts are tightened, care being taken to pull the plate up evenly. After a reasonable pressure has been obtained the plate should be bumped

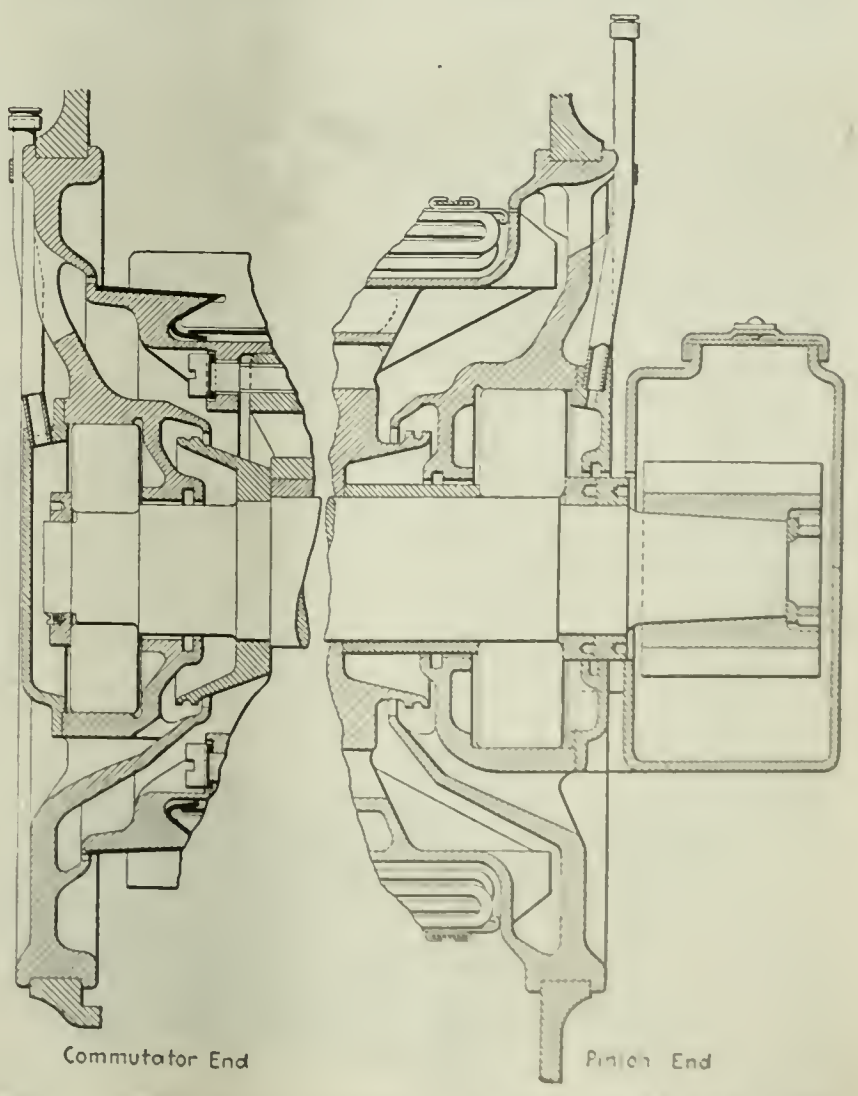


FIG. 1. TYPICAL BALL-BEARING MOUNTINGS FOR COMMUTATOR AND PINION ENDS OF MINING MOTORS

The bore of the inner race of the bearing is slightly smaller than the shaft itself, giving a press fit upon it which, assisted by a locking device, prevents rotation of the inner race with respect to the shaft.

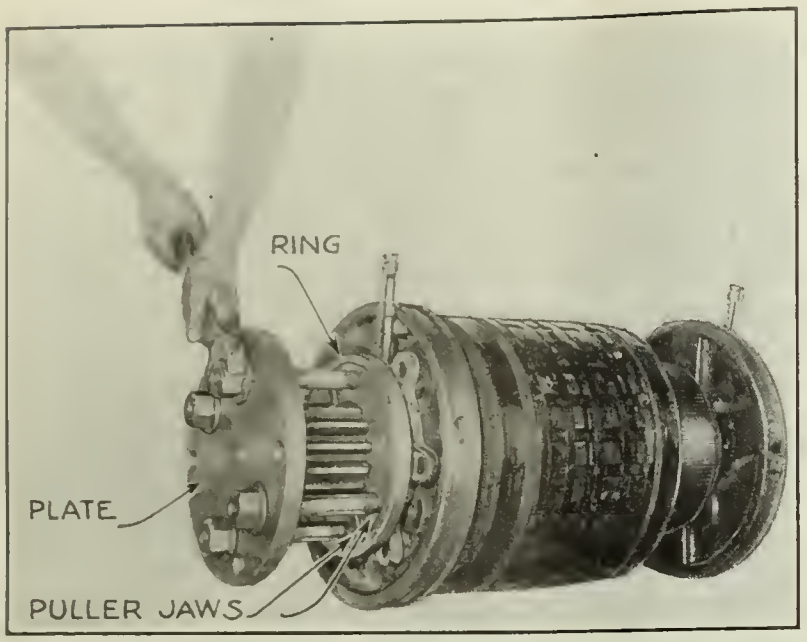


FIG. 2. PINION PULLER IN OPERATION

Puller jaws in the form of half rings are held in place by a steel band. Four bolts extend from these rings through the puller plate. A brass plug in the center of the plate bears against the end of the shaft. By tightening the nuts evenly and adminlstering a judicious bumping to the plate with a copper bar the pinion is loosened.

in the center with a heavy copper bar. The jolt thus imparted will loosen the pinion without putting as great a stress on the puller as would be necessary if the plate were not thus treated.

The same puller plate is used to pull the ball bearings on both the pinion and commutator ends. In the latter case, however, the four bolts are screwed into tapped holes in the housing. It is not necessary to bump the center of the plate when pulling bearings, as they move more easily than pinions. Fig. 3 shows the bearing puller in operation.

Fig. 4 shows a type of construction with which, if wedges are used to remove the pinion, there is danger of damage being done to the pinion-end housing as well as to the commutator-end ball bearing which is arranged to take the end thrust. It will be seen that driving a wedge between the pinion and the cap of the ball bearing might break the cap. Also, all of the end thrust caused by driving the wedge will be taken by the end housing of the commutator.

Although this housing is arranged so that the thrust will be exerted against the inner race of the bearing it is quite probable that under the high pressure required to withdraw the pinion this race will bend so that part of the thrust will be taken through the balls. It will be noted that the pinion is threaded in the counterbore, thus providing for a jackscrew arrangement in its removal. The puller for this type of housing is shown in Fig. 5. The bearing cap in this case screws into the housing. To pull the bearing the cap is removed and the puller screwed into its place. The bearing may then be withdrawn by tightening the jackscrew.

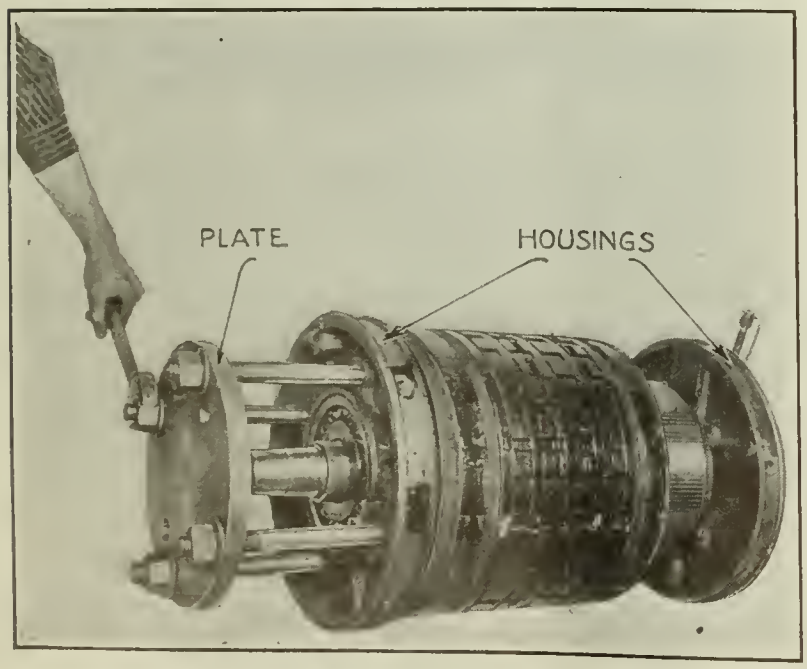


FIG. 3. PULLER REMOVING BALL BEARINGS

In this case the four bolts of the puller are screwed into holes already tapped in the housing. The bearings are dislodged more easily than the pinion, and no bumping of the puller plate is necessary.

Information regarding the removal of pinion nuts and ball-bearing nuts or other locking devices has been omitted. This was done, first, because it is obvious that these parts must be removed before attempting to pull the pinion or withdraw the bearings, and, second, because a great variety of schemes are used for this purpose. Whenever this information is desired it should be obtained from the manufacturer of the particular equipment.

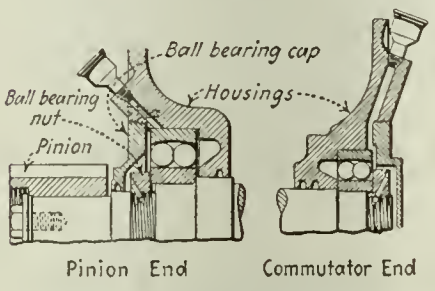


FIG. 4. CONSTRUCTION UNSUITED TO WEDGING

If wedges are used to remove the pinion, damage may be done to both and to the ball bearing of the commutator end which takes up the end thrust.

In applying ball bearings or a pinion, clean housings and contact surfaces are primary requisites. Both shaft and housing fits on the bearing should be cleaned well and covered with blue ointment to prevent corrosion at these points. The bearing should then be placed in the housing and either driven or pressed onto the shaft. The method commonly followed is to place a piece of brass pipe fitting over the shaft and against the inner race of the bearing and drive it with a heavy block of wood. Care must be taken to start the bearing straight upon the shaft. The bearing-locking device should be made to hold the bearing as tight as possible. If a pressed-on collar is used it should always be pressed to place and never be expanded by heat and then shrunk on. When that is done the collar cools so that it does not fit tightly against the bearing.

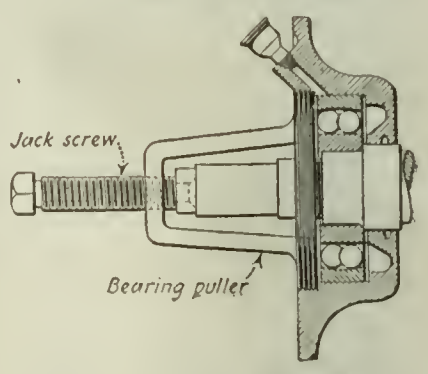


FIG. 5. BALL-BEARING PULLER

Bearing cap is arranged to screw into housing, and the bearing is pulled by tightening the jackscrew.

To apply the pinion properly both the shaft fit and the pinion bore must be perfectly clean. The pinion should be heated in boiling water for about an hour. It should then be removed and, while it is still hot, be driven onto the shaft with a few taps with a 4- or 6-lb. hammer, using either a sheet of copper or a block of wood as a buffer. The pinion nut should be tightened to place only after the pinion has cooled.

Boiler Tests Recently Were Made by John A. Davis, superintendent of the Alaska experiment station of the Bureau of Mines at Fairbanks, of the steaming values of Matanuska coals in comparison with Nenana coals, the results determining the purchase price of coal by the Alaskan Engineering Commission. The coal resources of the Broad Pass region and of the Copper Mountain district in the Kantishna region are being given consideration by the Bureau of Mines.

Making the Mine Layout Match the Surface Equipment*

Much Tonnage Lost by Two-Way Development—Takes Four Years for Big Plant to Earn Its Operating Expenses—Air Should Be Split Near Foot of Airshaft—Careful Drilling Important

By D. D. Wilcox†

WE all have dreams of the ideal mine, where accidents do not occur, where there are no strikes, where the machinery does not break down and where the coal comes out in a never-ending stream. We have even seen some we thought were ideal, but they always belonged to our neighbors, not ourselves, and the probabilities are that we saw only our neighbor's top equipment with its latest designed engines, with alternating-current turbo-generators, symmetrical tipple and beautiful buildings. He had the advantage of the knowledge and experience of the world's best engineers for that part of his work, but the part you didn't see was that which was left entirely to him, and that part was down below and well out of sight.

I have in mind a mine superintendent who was sent to take charge of a property, and, upon investigating, found a splendid coal field and exceptional equipment, but a bottom and mine plan that limited the mine to half of its rated capacity. Most of us are familiar with circumstances where the owners of mines have spent large sums of money to purchase new equipment with intent to increase the daily output and after the machinery was installed found that the increase in tonnage was not sufficient to justify the expenditure.

During the last few years owners and operators of coal mines have begun to realize that the designing of a mine plan is an engineering problem. The mining engineer is no longer a surveyor who puts up sights and takes levels. He is to be consulted in the plan and development so that the expensive modern top equipment may be properly co-ordinated with the work at the face.

It would be folly to attempt in a short article of this kind to dwell upon all of the features that must necessarily be considered when the development is being planned. A mere enumeration of them would take up too much time. It is evident, however, that the development of machinery and equipment has been much more rapid than underground advancement. It is not unusual to find mines with roller-bearing cars and with no place to oil them, or a mine with splendid electric haulage locomotives and with no suitable place underground for their repair. Even the safety engineer may have guards on all the machinery and no throws on the switches.

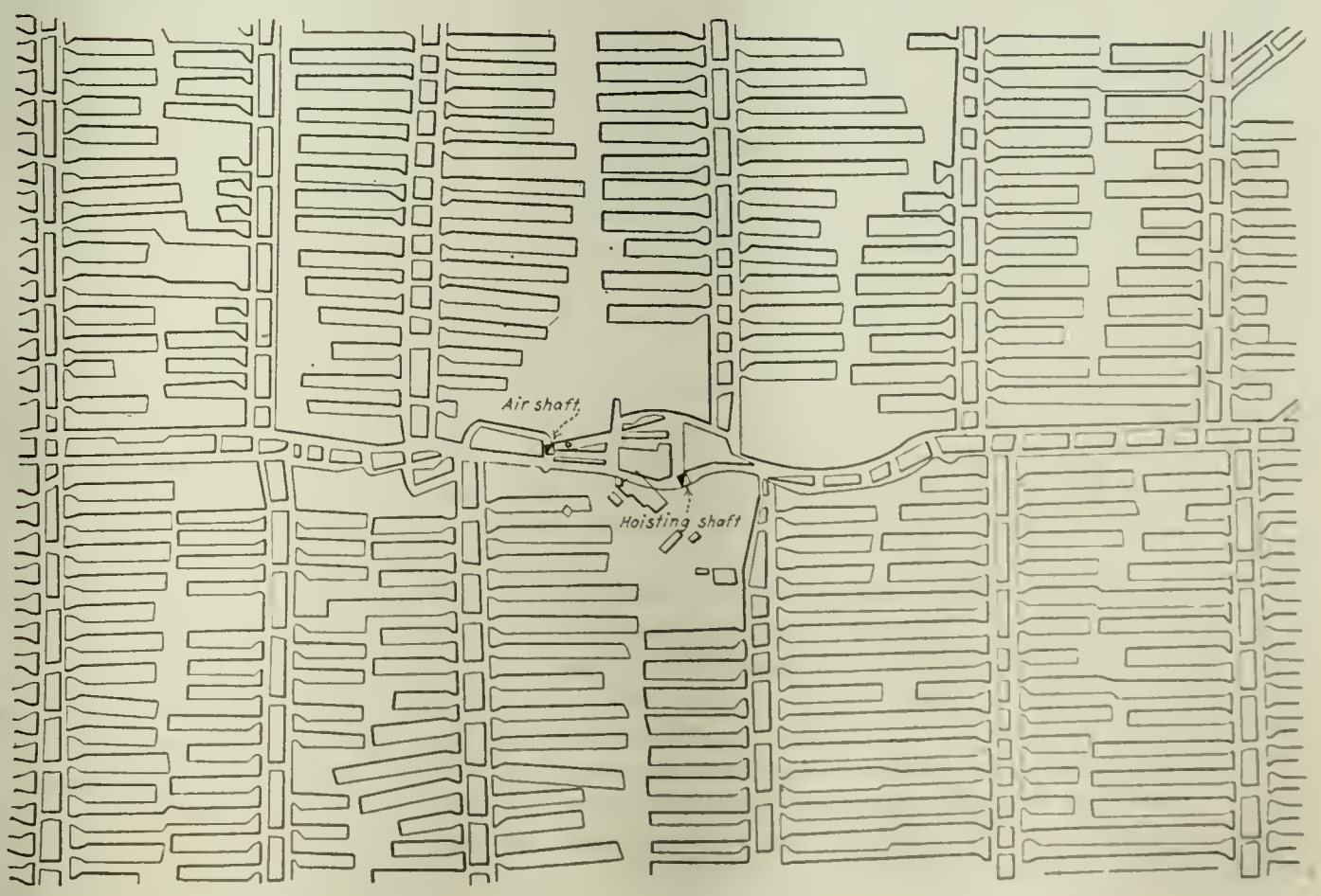
But worse than all of this is the plan that apparently takes care of all of the modern equipment, hoisting with skips, an auxiliary hoisting shaft, the bottom graded and the ribs concreted with a roof support of I-beams and concrete and yet neglects the airshaft. Every proper plan may have been made for the hoisting of the coal, but the air leaves the airshaft through a narrow entry to find its way inside if it can. A mine plan must be projected from the bottom of the airshaft and not from the bottom of the hoisting shaft. Major splits should be as near the bottom of the downcast as possible.

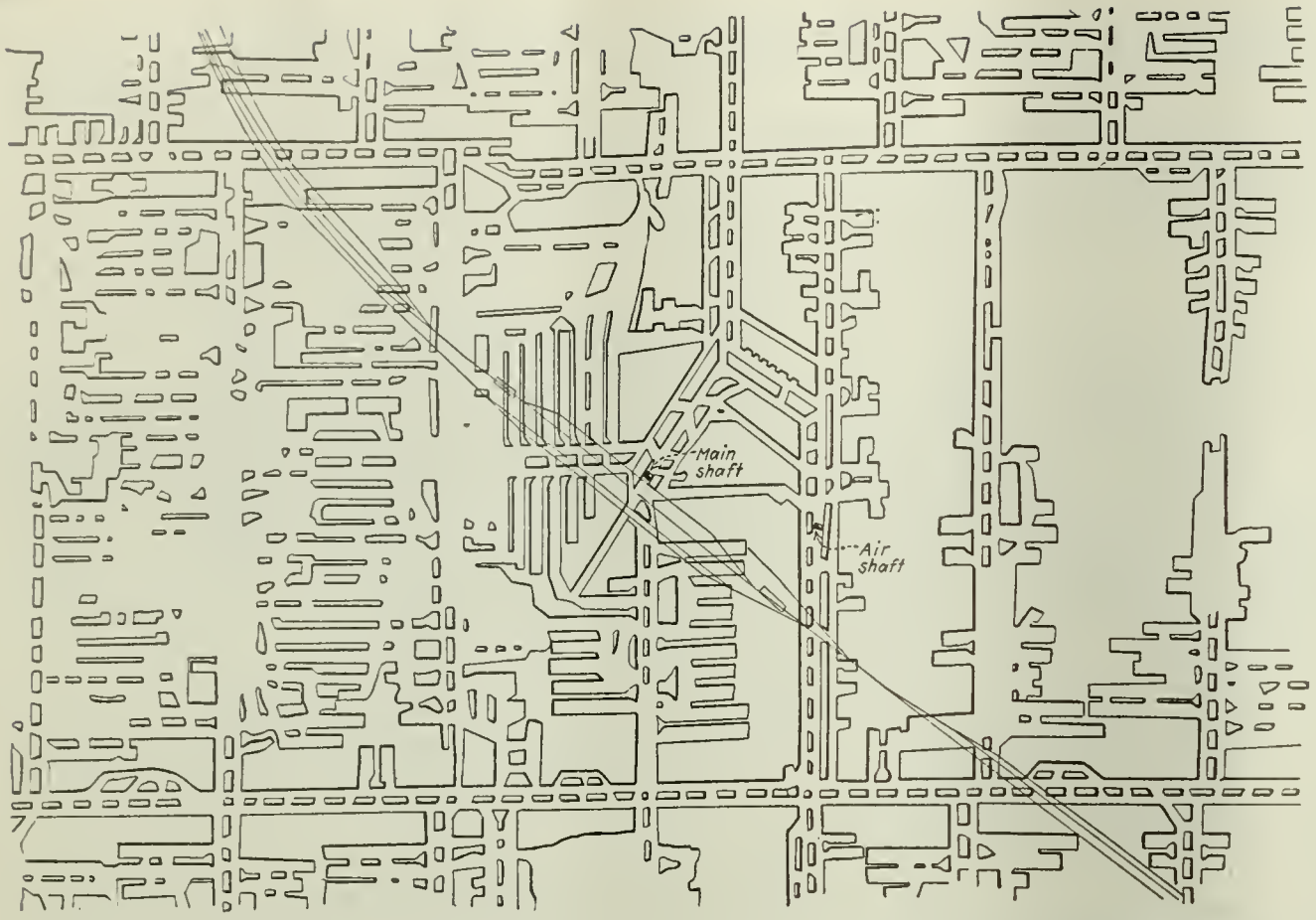
Most Illinois mines come under the provision of the law which now makes it necessary to install a cage

*Abstract of an article entitled "The Projection of a Mine Plan," read at Illinois Mining Institute, June 9, 1922.
†Superintendent, Superior Coal Co., Gillespie, Ill.

Two-Way Development

A mine in Illinois. All the coal and all the air must pass along one or other of two roadways, cluttering up the development. The mine bears evidence at the shaft bottom of having "just growed" at first but of being well developed thereafter. Still the early error of only a double approach, with only two main airways and two returns, was not and almost could not be corrected. The lack of early layout dooms a mine to failure.





An Iowa Mine

In this mine only about 10 per cent of the coal is lost. Here there are more airways than in the Illinois mine just shown. It is clear that with two main-entry systems, room headings can be driven toward one another. These are short and consequently soon finished. They are more easily ventilated therefore than long room headings which are alive to air and traffic for years.

in the airshaft for the hoisting and lowering of men. Skip hoisting also makes this the more practicable. This cage is to be used also in the sending down of material. Even with this cage and the stairway it is practicable and desirable to split the air three ways directly at the bottom of the downcast with a possibility of more splits immediately adjacent. This gives almost the same security as if three or more different mines were being ventilated.

All the advancement in the underground plans of mines in Illinois has been made in all probability since the members of this institute have been connected with the mining industry. You will remember the original plan was to start off the bottom each way with a pair of entries. At intervals room entries were turned off and driven to the boundary. Caging was from both sides of the shaft, the cars usually running on flat sheets. Haulage was entirely with mules, and the trips as a rule were so short that no storage room was required for empties. But haulage machinery calls for loaded and empty storage, and instead of mule barns motor barns are necessary. With the advent of these improvements caging on one side of the shaft was accepted, and caging machines with empty trippers were developed.

The danger of squeezes and fires forced the panel system on the industry. Designing a mine layout was no longer a "hit-or-miss" proposition but one for the engineer. As it is almost a criminal offense in Illinois to cause a subsidence of the surface, the room-and-pillar system is used in most mines, and more than 96 per cent of the coal in the state is mined by that method.

Most room-and-pillar mines have not departed from two-way development. This plan has the practical effect of creating two mines with a common hoisting shaft, as the sides are separated as to haulage and ventilation, but this is not enough. It soon is found that while the coal is worked on all sides of the shaft the development is only in two directions. The cross entries after reaching a certain stage are stagnant as far as development is concerned. In other words there are as many men working there when the cross entry has been driven one-half mile as there are when it has been extended almost to the boundary.

With the knowledge that the restricted area of the shaft itself is really the greatest hindrance it has been realized that with the present system of development and the increased efficiency of the hoisting equipment the time is near at hand when more coal can be hoisted out of a single shaft than can properly be developed with the present mine plans. Meantime men show an increasing distaste to the idea of double-shifting entries, and operators of coal mines are beginning to realize that night work as a rule is not efficient.

These facts have caused thought to be given to methods of development that allow a mine to be placed on an operating basis in a shorter period of time than in the past. In considering the cost of production of coal the public fails to take into account that after a mine is sunk and all equipment purchased and installed it is at least four years before the production is sufficient to pay operating expenses. In the meantime the development cost is growing.

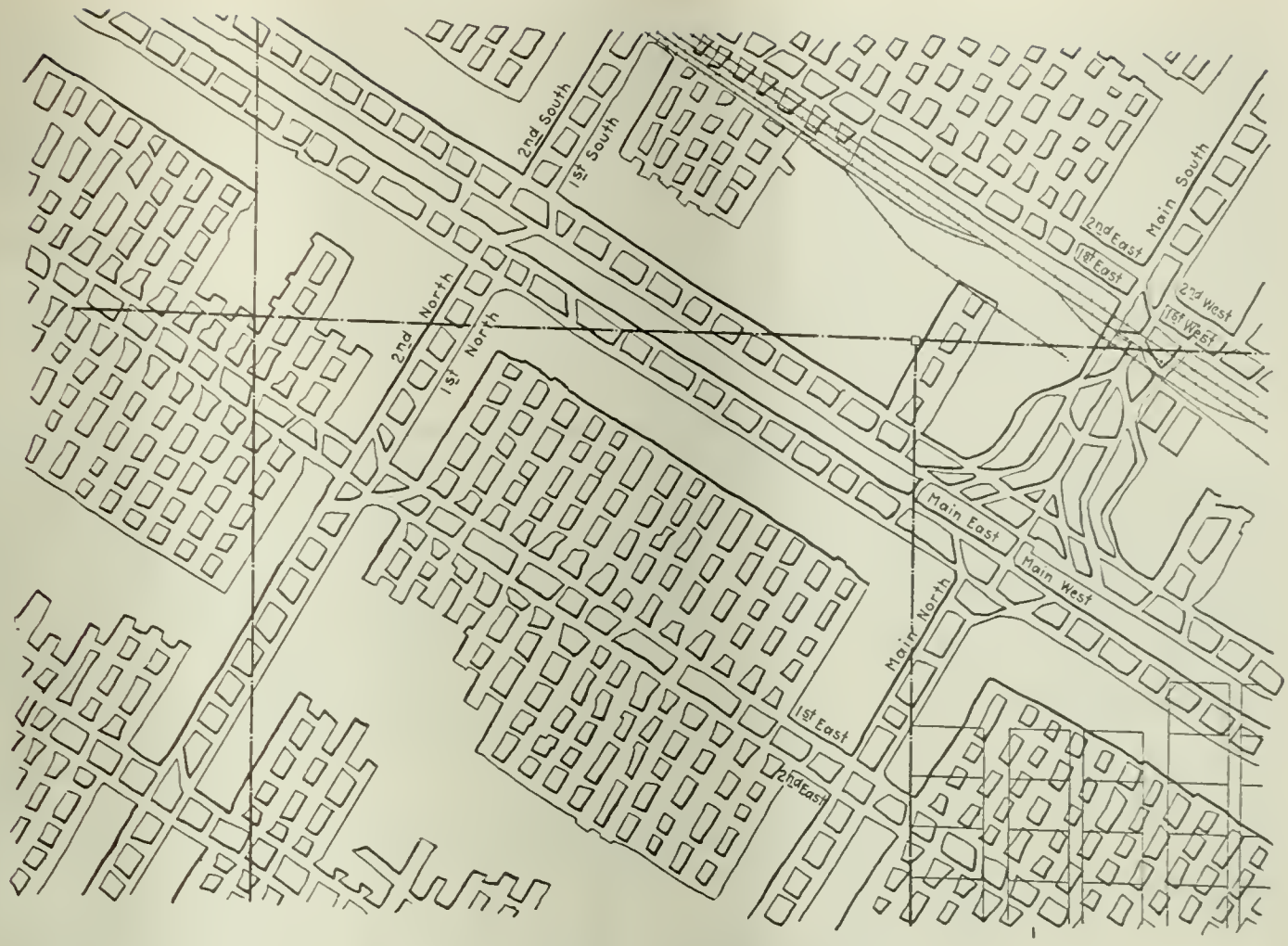
Any plan that will cut down this time is advantageous to the owner and the consumer. Greater recovery per acre will do it, and for this the plans now in effect can with little difficulty be used, and the recovery percentage raised from 50 to almost 96. It must be recognized, however, that not much above 50 per cent can be taken out without subsidence of the surface. The attached map of an Iowa mine shows a panel system of mining where the recovery is about 90 per cent.

In order to keep sufficient development in most large mines some unusual practice is necessary. Some mines still double-shift their entries, others place a gang of men with a machine in the entry, and in others experiments are being made with entry-driving machines which cut and load the coal. We have been told that one of these has passed the experimental stage. They would solve the problem of development but would not assist us with our haulage and ventilation problems.

The attached map of the Standard Oil Co.'s mine

Superior Coal Co.'s No. 4 Mine

This layout depends mainly on two four-entry systems running in opposite directions. As these are adequate to handle the coal and air and as the room entries provided are short, saving air from waste and unnecessary resistance, this plan gives good results. This statement is reflected in the large tonnages the mine produces.



near Carlinville shows a splendid method for development, haulage and ventilation. The operators of this mine believe a similar plan is being used in other large mines in the state. It will be noted that instead of two main entries there are four, and the development is in four directions instead of two.

This plan goes into another pressing problem—that of haulage tracks. After watching main-line haulage motors waiting on each other or motors compelled to do relay work instead of going directly to the bottom one usually considers the double tracking of the main line. This plan allows four main lines instead of two, or four distinct sections of the mine. If it had been necessary in the first instance to drive narrow entries because of top conditions, double tracking would be more expensive than the additional entry required by this plan. It also will be noted that four distinct air splits are possible as well as four distinct haulageways.

Safety is the first consideration in the planning and development of a mine, as it is in other features of the industry. For a long time we had a definite idea that more speed made more accidents, but it was found that when we arranged for more speed we inevitably arranged for more safety. A motor cannot run fast on poor track, neither can the motorman make speed when he shares the roadway with another motor.

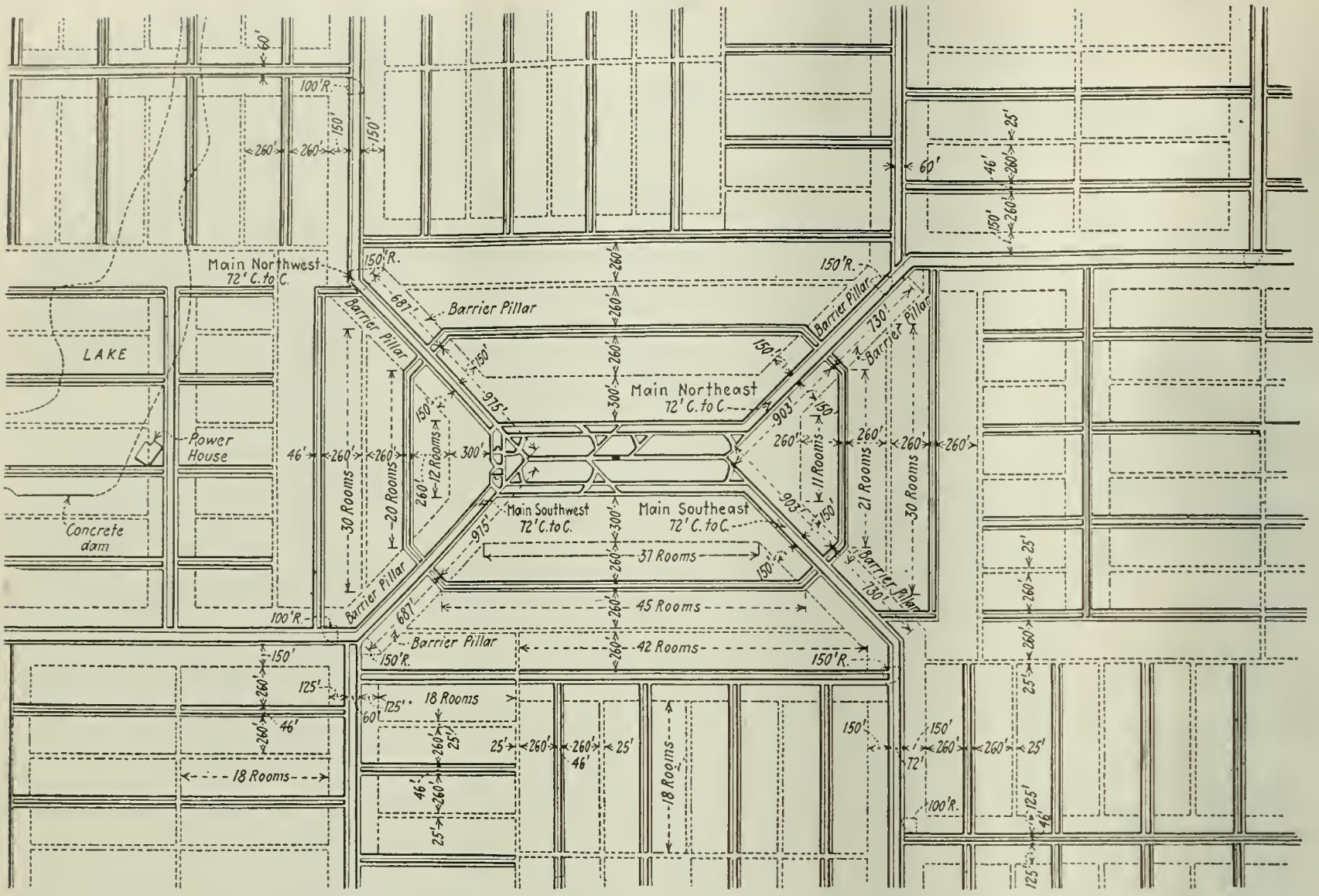
The installation of skips instead of self-dumping cages has made no material change in mining plans, though it is customary to run the main bottom parallel to the shaft where skips are used and across the shaft at right angles thereto where self-dumping cages are operated. Without question, however, a larger tonnage may be expected where skips have been introduced.

No industry in the world is more competitive than the coal-mining business, and in order to obtain a return on the more expensive equipment the development must be speeded up. It is true that the mines in the country are able at this time with their present equipment to more than supply the need of the consumer. It also is true that the installation of modern machinery has raised the output per miner and eased his working conditions. But the operator who develops a mine in this day must have all of the advantages of equipment and proper underground plans and development in order to get a return on the investment. He has a duty to the employee to see that the mine is so planned as to give the best working conditions possible and owes it, not only to the owner but to the public also, that the coal be put in the railroad cars at the minimum price possible.

While a few years back the large mines were equipped for an output of 4,000 tons, excellent management on the part of some, notably Orient and Zeigler, has doubled this figure and even now they are unwilling to concede that they have reached their limit. Some of the newer shafts are equipped to take care of 12,000 tons per hoisting shift. This means that places must be found for more miners. They naturally wish to work where they can make the most money per day, and the modern mine is more desirable than the obsolete operation as seen from that angle.

The mining engineer is prevented in many cases from making an exact plan of the underground work because of lack of knowledge of the contours of the coal strata. In some mines the change of plans made necessary because of adverse grades has cost thousands of dollars and, furthermore, has retarded development. Even in Illinois, where the grades usually are uniform, faults have been encountered which have disarranged the entire plan. Prospect holes should be drilled in sufficient numbers not only to ascertain the strata to be met in sinking but to establish the contour of the coal. If advantage can be taken of natural grades costly and troublesome machinery at times may be eliminated. I know of one mine where it is necessary to have in service a conveyor or drag on the loaded side of the bottom which would have been eliminated had the location of the hoisting shaft been shifted 100 ft.

Because of surface conditions or sometimes railroad service it is not always possible to locate a shaft in the center of the field and in some cases the bed or the holdings are irregular or uncertain or natural grades



STANDARD OIL CO. MINE WITH FOUR INDEPENDENT ROADS CONVERGING TOWARD STORAGE TRACKS

A carefully planned layout that should insure the rapid attainment and consistent maintenance of large tonnage. Each one-fourth of the mine is independent of the other three-fourths. Thus a large tonnage can be hauled without congestion on any road.

or conditions make a central position impracticable. The map of the Iowa mine accompanying this article shows the possibilities even under these conditions. To figure properly the length of loaded and empty storage tracks the engineer should know the size and kind of mine cars to be used before completing his mine plan.

By taking advantage of all the information afforded by mine inspectors and the bulletins of the Illinois State University and the U. S. Bureau of Mines the planning of the underground work may be done as exactly and scientifically as is the engineering work on the surface.

Scheme for Meeting Peak Hoisting Loads

COMMENTING on the remarks of J. L. Knight, of Glen White, W. Va.,* and on the statement of the Metropolitan Vickers Electrical Co.† relative thereto, Graham Bright, general engineer, Westinghouse Electric & Manufacturing Co., in response to a question addressed to him by the editors of *Coal Age*, says: "The scheme is fairly old and has been described many times in various publications in this country. Mr. Sykes, formerly with our company, gave an account of this system in 1910 in an address to the American Institute of Electrical Engineers, illustrating it with a wiring diagram. At the same meeting Messrs. Pauly and Rushmore, both of the General Electric Co., submitted a paper on hoisting equipments in which they also mention the converter scheme and illustrate it in a similar manner.

"About ten years ago the Westinghouse company installed an equalizing system at the Pennsylvania R.R. docks at Cleveland, Ohio, which is practically the same as that which Mr. Knight proposes. In this case considerable load was attached to the direct-current side of the rotary converter, so that the direct-current motor with its flywheel was used largely to equalize the direct-current load on the rotary converter. Of course any alternating-current load also would receive the benefit of the equalization system. I believe that two or three plants of this type are in operation in this country, but the scheme has never been particularly popular."

Coal Age, Nov. 10, 1921, Vol. 20, p. 764.
†*Coal Age*, June 22, 1922, Vol. 21, p. 1,046

Government to Expend $1,000 on Trophies For Rescue Work in Mine Disasters

CONGRESS has authorized the expenditure of $1,000 for the purchase and bestowal of trophies to be conferred by the Bureau of Mines, at the International Mine-Rescue and First-Aid Contests, upon miners who have performed noteworthy feats in rescue work in time of mine accidents and disasters. This is the first government recognition of the kind for the humanitarian, life-saving work of the American miner. The Commission of Fine Arts has been asked to prepare designs for the trophies that may graphically symbolize the humanitarian efforts of the American miner.

Letters to the Editor

Urges That Coal Operators Live Closer to Their Employees

IN your valuable *Coal Age* it seems to me that you should urge all coal operators to run their own business—give no check-off. Urge them to live closer to their miners, and help the miners to educate their boys and girls. Teach them what the laws of this country mean; teach them to earn money, save money, and respect their companies.

I would recommend that each company have a reading room, and the superintendent employ someone to explain the laws of this country to all miners and their families, show them the average wages of miners and what other laborers earn, so that they may see how the earning capacity of the mine worker compares with the earning capacity of common labor in other lines of industry.

The coal operators of the United States should be prevailed upon to own South American coaling stations; there should be exported enough coal from the United States to allow the coal industry of the United States to keep steadily moving.

The ruler of this nation should assist the entire coal industry in getting its valuable coal into South American markets; we should enjoy the market that Great Britain is now holding in that country.

D. W. BOONE,
President, New River Export Smokeless Coal Co.
Lookout, W. Va.

Attributes Wage Difficulties to Miners' Laxity in Observing Working Hours

AS I read *Coal Age* and the various bulletins that are coming out it occurs to me that the public should be better informed on what I consider the more salient points that the miners' officials bring out to justify the demand that the war-time scale of wages should prevail, and that is by reason of the intermittent employment of the miners in general.

Now, there surely is a reason why there are too many miners, and the answer is simply that the miners as a class have taken upon themselves privileges which no other industrial occupation would tolerate or admit of. The miner goes to work just about when he pleases and leaves the work when it suits him. Visit any mine in any state and you will find men coming home at any hour between starting time and quitting time and this on their own volition. If a miner feels like laying idle a day or two or three he does it. If he was working in a mill or factory he would be compelled, except on account of sickness, to work out his day and not come out and go home at any time it suited him, nor would he be permitted to lay idle two or three days after pay day for drinking or other causes.

I have been engaged in mining over fifty years. For the past twenty years I have been employed in an official capacity. I have had ample opportunity to observe the traits, character and habits of the miner. Being one of them, I am naturally much interested in their welfare, but justice is justice and it is the truth that the public is entitled to it. I have estimated, rather roughly, of course, that I have to have 20 per cent more working places, which means 20 per cent more miners, than should be necessary to a given tonnage output, but because of the men laying off at their own leisure I must necessarily have more men than should be needed.

Now, this simply means an increase in the production cost because the overhead remains the same whether all the men are at work or not. The working places all have to be examined by officials according to law. The pumpers have to attend to pumping out of the water. Timbermen have to attend to the safety conditions and, of course, there is so much more equipment tied up because of there being the additional number of working places over what should and would be necessary if the men would tend more steadily to their work. In my experience I have known a great shortage of men to harvest the crops but the miner could not be induced to go and engage in this work. Is it reasonable to expect the farmer who produces the foodstuffs to be content to work as he does work from daylight until dark and the miner expect to derive a good living from thirty hours per week?

The miner has privileges and his remuneration is so far in excess of other industries that it is beyond question. The labor-saving appliances that have been introduced during my experience have completely changed the condition of employment in mines and the miner has received nearly all the benefits derived from the introduction of these labor-saving appliances and that which is added to the safety and comfort of the men engaged in mining. He is entitled to a fair share of all these, but the public should be considered. There are a large number of mines opened up that should never have been opened; I question whether some of them will run again for many years to come. It simply means that they were opened up ahead of their time and economic conditions will prevent their operating because the production cost would be out of balance with the prices which the public generally have a perfect right to expect from coal.

WALTER R. CALVERLEY,
Union Collieries Co., Pittsburgh, Pa.

Are Foreign Workers More Careful Than Americans in Coal Mines?

IN *Coal Age* of May 18 there appeared a statement saying "That foreigners were more careful than Americans."

The following statistics, sent us by R. M. Lambie, chief of Department of Mines, Charleston, W. Va., show that during the year there were 188 Americans killed, or one for every 342 men employed. These figures also bring out the surprising fact that there was one person killed for every 645 Hungarians and one for every 555 Austrians.

FATAL ACCIDENTS, CLASSIFIED BY CAUSES, FOR 1921.

Causes	No. of Accidents	Percentage
Fall of roof and coal	196	56 65
Mine cars	65	18 78
Motors	23	6 65
Electricity	17	4 91
Mining machines	11	3 18
Explosions of powder and shot	20	5 78
All other causes	14	4 05
Total	346	100 00

FATAL ACCIDENTS FOR 1921 CLASSIFIED BY NATIONALITIES

Nationality	No. of Accidents	Percentage
American (white)	188	54 34
Negroes	72	20 81
Italian	24	6 94
Polish	12	3 47
Russian	9	2 60
Spanish	9	2 60
Hungarian	8	2 31
Greek	6	1 73
Austrian	4	1 16
Slavish	4	1 16
Roumanian	3	86
Other nationalities	7	2 02
Total	346	100 00

RATIO OF FATAL ACCIDENTS TO TOTAL EMPLOYEES

Nationality	No. of Employees	Men Killed	No. of Employees Per Each Fatality
Americans (white)	64,373	188	342
Negroes	20,781	72	289
Italians	8,078	24	336
Hungarians	5,161	8	645
Polish	3,492	12	291
Russian	2,280	9	253
Austrian	2,225	4	555
Spanish	2,212	9	246
Slavish	1,641	4	410
Greek	1,115	6	186
Other nationalities	5,368	10	537
Total	116,726	346	337



Problems of Operating Men

Edited by James T. Beard



Redeeming the Depreciated Value of the Mine Foreman's Certificate

What Study Does for the Mind—Value of the Certificate Discredited by Lack of Experience—Mine Foremen Should Work to Redeem the Certificate and Restore Its True Value

THAT holding a certificate does not make a man more competent to take charge of a mine has been stated by more than one writer of recent letters in *Coal Age*. It has been urged that experience is the chief factor in successful mine foremanship. Though a matter for regret both of these statements are undoubtedly true, to a large extent, at the present time.

There is one fact, however, that should not be overlooked. When a man commences to study the principles of mining, for the purpose of fitting himself to pass the examination and secure a certificate of competency, he is training his mind in a manner that will enable him to grasp the various problems that will later demand his attention and call for solution.

Goal of a Man's Ambition

The man that is truly interested and desires to make a success, in his chosen line of work, does not consider the gaining of a certificate as the goal of his efforts. When he has reached that point in his career he will still continue to study and read all that pertains to mining.

Such a man realizes that the certificate he holds merely proves that he has satisfied an examining board regarding his technical knowledge of mining. The holding of a certificate may or may not cause an operator to think the man worthy of giving him a chance.

Past Record of the Worker His Surest Commendation

Every ambitious worker knows, however, that success or failure depends on himself. He has a reputation to make and sustain and, to that end, his every effort is directed. What a man has accomplished, as shown by his record in the past, is his surest commendation for the future.

It cannot be denied that the value of the certificate of competency granted by examining boards has been largely discredited by the attitude of young men of fair education taking the examination, which they succeed in passing with flying colors because they are well versed in mathematics and have a mind trained to remember formulas.

Men of this type are wont to pride themselves on their technical ability and the fact that they have passed an examination in which older and more experienced men have failed owing to the lack of an early education, which made it difficult for them to answer the technical questions asked.

Disrepute of the Certificate

The result is that the certificate has fallen into disrepute with operators, who prefer to form their own independent judgment of men who apply for work, regardless of whether or not they hold a certificate.

In closing, let me ask all mine foremen to exert themselves to redeem the value of the certificate, by giving their best services in the management of the work in their charge, and proving thereby the practical value of the technical knowledge they have acquired.

William J. Walker,
Aultman, Pa. Mine Foreman.

Overcoming a Handicap

Determination and concentrated effort necessary to overcome difficulties—Analyzing success in life — One who achieved extraordinary success against great odds.

REFERENCE has been made recently, in *Coal Age*, to men who suffer by reason of being handicapped owing to their lack of early education, or being otherwise unqualified for the struggle they must undergo to advance to higher positions in life.

There is no question but that a handicap of this nature is a hindrance to the man thus trammeled. Nevertheless, my opinion is that the success of any man rests within himself. In launching out in any line of endeavor or business, one must first make sure that he is adapted to the work.

How to Succeed

Determination and concentrated effort are essential in any undertaking in which one hopes to win. Setbacks must be expected, at times; but these should not give rise to discouragement. By continuous effort, one must show that through constant failures he still has the power to rise.

The oft repeated adage, "There is always room at the top," will hold true in the case of any determined worker. The world is looking for men that are able to do things of which it has been said, "The thing cannot be done."

It is not too much to say that money, fame and positions are open and within the reach of all who strive honestly to attain the goal of their ambition. One writer has analyzed success as "Five per cent inspiration and ninety-five per cent perspiration."

One Who Overcame His Handicap and Rose to Prominence

Let no one think that these are idle words spoken for their possible effect on a few ambitious ones. They apply alike to all who accept their true meaning and are willing to work and strive for the results they hope to gain.

In this connection, let me refer to one who achieved extraordinary success against great odds. He is a man who came to this country about twenty-five or thirty years ago at which time he was unable to talk, read or write our language. It is true he had the benefit of an ordinary education obtained in his homeland, and, if I remember rightly, he had had one year in college, studying mining engineering.

This man came to our country with scarcely a sou in his pocket; took a job as laborer in a sawmill. On presenting his paycheck at the bank, at the end of a month, he was informed there were no funds and was compelled to lose that month's hard toil.

Following this experience and in the hope of learning the language, our friend worked for a time on a farm. Later he secured a job as draftsman in a mining office, at Charleston, W. Va.

Rapid Rise Comes as Reward for Faithful Work

His faithful work soon earned for him a position as mine surveyor and, a few years later, he was appointed superintendent of some mines. From that time, his rise has been rapid, until he is now conceded to be one of the ablest mining engineers in the United States.

At the present time, the man of whom I have been writing is vice-president and general manager of a large coal company who are installing two of the most modern and up-to-date plants in the state of West Virginia, at a cost of several million of dollars. In addition to this extraordinary record, the man is retained in a consulting capacity by several other large coal-producing companies.

No one will dispute the fact that, de-

spite his serious handicap, he has attained the pinnacle of success, which has been nothing short of marvelous. The story of such advancement gained through continuous and unremitting labor should be an incentive to all. The record exemplifies and proves the truth of the words of the poet:

The heights by great men reached and kept,
Were not attained by sudden flight,
But they while their companions slept,
Were toiling upward through the night.

The lesson may often prove a hard one, but there's no other way than to accept the challenge of unremitting honest toil if we would win.

J. W. POWELL,
Raleigh-Wyoming Coal Co.
Edwight, W. Va.

Blasting Machine-Mined Coal

Three writers agree that an undercut or mining being filled with water does not constitute a solid shot—The water, unless confined, offers no resistance to support the coal.

REFERRING to the inquiry that appeared in *Coal Age*, Mar. 30, p. 538, raising the question as to whether a shot fired in coal mined with a machine when the undercut or mining is filled with water could be considered a solid shot, I can see no ground for such a suggestion.

The reply to the inquiry assumes that the coal has been mined to a depth of 6 ft. Then, if the depth of the hole was less than that of the undercut, it cannot be claimed that this was a shot on the solid. The water offers no resistance that tends to support the coal, which is free to fall and would fall, into the space occupied by the water, the moment it is dislodged by the shot. Let anyone who thinks otherwise try the experiment in the mine and satisfy himself.

MINING LAW IN ILLINOIS REQUIRES COMPETENT SHOTFIRERS

Our mining law relating to shotfiring requires all shots to be prepared in a practical workmanlike manner and that when so prepared they shall be fired by a competent shotfirer.

I have had machine-cut coal, dipping 10 per cent and the undercut filled with water, but have never known a shotfirer to refuse to fire such a shot when it was otherwise properly prepared and charged. There has never been a question but that such a shot was safe to fire.

In that section of the mine, the men have loaded out more coal than in any other section, and no trouble has ever resulted of the nature of solid shooting. In my judgment, this Colorado shotfirer cannot be justly accused of firing a solid shot, under the conditions described.

PETE BOLAND,
Mine Manager, Mine B.
Herrin, Ill.

ON this subject, let me say I would not consider this as being a solid shot and cannot understand how any one could have claimed that the shotfirer should refuse to light the shot when he found the undercut, mined by a machine, filled with water.

In a place going to the dip and making water, it is quite natural to find the cut full of water soon after the machine has departed. But, as stated by the editor in his reply to this inquiry, the water is not confined in the cut and, though incompressible, exerts no pressure against the coal.

PRESSURE OF WATER IS DOWNWARD

In my view, the pressure of the water is all downward in this case. Where water heads up to a higher level, it is possible for it to exert an upper pressure against a surface that is below that level; but such is not the case in this instance.

Certainly, if there is no resisting pressure offered by the water on the coal, a shot in the coal is not a solid shot. Better loading conditions will, of course, be afforded by draining the water from the cut before firing the shot.

HARRIS COPELAND.
Crawford, Tenn.

WATER not being a solid can offer no solid resistance, unless it is confined, as has been stated in replying to the question as to whether the firing of a shot in coal when the undercut is full of water is the same as shooting off the solid. I can see no comparison between the two cases.

It is assumed, of course, that the hole was not drilled beyond the depth of the undercut and the charge is not, therefore, laid on the solid, which would be necessary before we can call this a solid shot.

IS THIS SOLID SHOOTING?

While it may cause some readers of *Coal Age* to wonder how it could be, I will cite one instance that occurred in this district. A room had been driven on a slight upgrade and the coal was undercut with a Sullivan shortwall machine to a depth of 5½ ft.

The drillholes were 5 ft. deep. The undercut was thoroughly cleaned of all loose coal. The shotholes had been examined, charged and fired by the shotlighter and yet it was claimed these shots were fired on the solid. Let me suggest that it will be well to study over the matter, in order to avoid a similar occurrence in one's own mine.

ANOTHER PRACTICE THAT IS EQUALLY DANGEROUS

Speaking of solid shooting, let me mention another practice that is equally dangerous, though followed by 90 per cent of our shotfirers. Attention has been drawn to the matter, in *Coal Age*, more than once and miners cautioned against the practice.

In order to hasten the work of firing, the custom is common, here, for a shotfirer to light from one to six shots in a wide room; or, perhaps, from one to three shots in crosscuts and then rush into an adjoining room to do the same thing there.

In more than one instance, it has happened that the crosscut shots have blown through the pillars and killed the shotfirer or crippled him for life. I mention this merely in the interest of safety in shotfiring.

Crawford, Tenn. OSCAR H. JONES.

Making the Mine Safe

Run the ventilating fan continuously day and night—Equip a gassy mine with two fans—Extensive mines having large abandoned areas require watchful care to avoid disaster—Study local conditions always.

TWO things have been mentioned, recently, in *Coal Age*, that have a most direct bearing on making the mine safe. One of these is the question of operating the fan continuously, or shutting it down when the mine is idle; and the other, the treatment of large abandoned areas.

In respect to the first of these questions, I agree with the statement made by a Tennessee mine foreman, in a former issue of *Coal Age*. He remarks "A ventilating fan should run continuously, day and night." I am a great believer in keeping the fan running all the time, or 365 twenty-four hour days a year, particularly at gassy mines.

LONG EXPERIENCE OF SHOTFIRER IN TWO GASSY MINES

For a period of six years, I served as ventilation boss in one mine where the fan was run continuously, day and night, including Sundays and idle days, throughout the year. This was a very gassy mine that was worked with safety lamps exclusively. At another mine I served in the same capacity for two years. That was also a gassy mine, but operated with open lights, and the fan was always kept running continuously.

These were both slope mines and very irregular in formation, besides having a deep cover. Each mine was equipped with two fans, one held in reserve in case of a breakdown. At the first mine, the speed of the fan was not slowed down on Sundays or idle days, but at the second mine, the fan was run at about one-third less speed on these days.

LARGE ABANDONED AREAS LEFT OPEN GAVE NO TROUBLE

As is commonly the case in large operations, each of the mines mentioned had extensive abandoned districts, which were left open or unsealed, though little trouble was experienced in either case. In my judgment, however, it was due very largely to the practice of running the fan continuously and giving no opportunity for gas to accumulate.

Speaking about ventilating abandoned areas, with the exception of gas accumulated on falls, it does not require more than a small steady current of air to keep such places clear. My observation is that barometric changes have little effect in a mine when the fan is run continuously.

Now, a few words in regard to whether it is safer to seal off abandoned portions of a mine or to ventilate them. It appears that the consensus of opinion, in that discussion, was in favor of ventilating large abandoned areas. In my opinion, however, this question can only be decided by a careful study of local conditions affecting the area in question.

Such areas require constant watch-care to avoid disaster. Conditions may be such that these areas cannot be sealed off with any degree of safety, but can be ventilated more effectively. As we all know, it is an easy matter to prescribe means and remedies for the elimination of dangers in mines; but when these are applied they are not always a success. Like the Indian's gun, they cost more than they effect.

Plan to Avoid Large Abandoned Areas

The question to be solved is: In the ordinary operation of coal mines, how must the work be planned in order to avoid as far as practicable the existence of these large abandoned areas; and where they do exist, how must they be treated to insure safety?

Experience shows that these evils cannot be wholly avoided and must be safeguarded by adopting such means as a careful study of local conditions may suggest. In any case, keep the fan running continuously and make the mine safe.

John Rose,
Former District Mine Inspector.
Dayton, Tenn.

Testing a Safety Lamp

What is a proper test to determine the safe condition of a safety lamp before entering the mine?—Is such a test customary with firebosses and men in charge of lamprooms?

ONLY recently, after reading the answer to an examination question given in *Coal Age*, I had a talk with three of our firebosses, in reference to the testing of a safety lamp to determine its safe condition before entering the mine.

During the last three years, I have employed several gas inspectors, some of whom have had long practical experience in the examination of mines. It was well known that my habits were to go into the mine, once every three months, on a Sunday afternoon, for the purpose of ascertaining what gas had accumulated in certain places since the shutting down of the fan at 11 p.m. the previous night.

Lamps When Tested by Foreman Are Found Unsafe

On one occasion, my firebosses asked the priviledge of accompanying me. Although it had always been my custom to make these trips alone, I gladly consented to their going along, and asked them to prepare their lamps carefully for running into sharp gas. When all was ready I decided to examine their lamps, myself, with the idea of seeing how carefully each man had prepared his lamp and to assure myself that all the lamps were safe.

Much to my surprise, I found that it was possible to blow out the light in each lamp, by blowing hard against it just below the glass cylinder, or where the glass rested on the brass ring supporting it. It was clear to all that this simple test showed that the lamp was not proof against a strong blast of air, which might be met in the examination of the mine.

Fear of Cracking the Glass

In answer to my inquiries, they all explained that they had never seen a lamp tested in that manner before. They stated, moreover, that they would be afraid to tighten the lamp against the glass more than what they had done in this instance. Their fear was that the heat of the lamp would expand the parts and break the glass. But this argument did not appeal to me, knowing as I did that the expansion of brass was much greater than that of glass, which would make the result the opposite of that claimed.

However, I have since been wondering whether this test should not be applied in every case before lamps are taken into the mine and whether it is possible to tighten the lamp too much for fear of breaking the glass.

Worley, Ky. Joseph Cain.

Shortwall Machine for Low Coal

Coal-puncher machine requires too much headroom for use in low coal—Shortwall machines used to good advantage, in the thin seams of Northern Illinois.

REFERRING to the inquiry asked a short time ago in *Coal Age*, Apr. 6, p. 578, asking if it would be of advantage to use a coal-punching machine in mining the coal from a 28-in. seam, let me say that there would not be sufficient headroom in this seam to enable a man to handle a coal-puncher.

The inquirer states that the coal is clean and the seam contains no sulphur. That being the case, the conditions are fine for employing a shortwall machine. These machines are used to good advantage in mining the low coal in Northern Illinois.

As is well known, the shortwall machine is particularly adapted to the mining of low coal. I make this suggestion in the hope that it may be of some assistance to this correspondent.

Herrin, Ill. Pete Boland.

Inquiries Of General Interest

Percentage of Gas Estimated from Volume Generated per Ton of Coal Mined

Mine Gives Off 4,500 Cu.Ft. of Gas, Per Ton of Coal Mined; But Inspector's Report Says "No Gas"—What Estimated Percentage of Gas Should Be Present?

WHEN going through the mine inspector's (Canadian) report, recently, what was my surprise to find a condition that took me back, in memory, several years when it was customary for an inspector or a fireboss, in reporting the gaseous condition of a mine, to say "a little gas," without attempting to define the condition more clearly by estimating the amount of gas generated per minute, or giving the percentage he found in the return current.

What particularly arrested my attention was the report of a certain mine known to be generated gas, the volume of which was estimated at 4,500 cu.ft. per ton of coal mined. Notwithstanding this rating of the mine with respect to gas, this fireboss' report would seem to indicate that no explosive gas had been found in the mine.

Such a thing is only what might have been expected years ago, before the danger point of firedamp mixtures was officially defined; but, nowadays, when every fireboss knows the inflammable and explosive limits of methane and air, and the means are at his command for determining the percentage of gas present in the air when making his examination of a mine, there is no excuse for a report not stating clearly and in intelligent language what percentage of gas is found in the return airway of a mine examined.

In this connection, I want to ask what would be a fair estimate of the percentage of gas that might be expected in the return airway of a mine rated as generating 4,500 cu.ft. of gas, per ton of coal mined? To my mind, for a report to state that no explosive gas is found in this mine is an evasion of a most important feature of the examination. The idea conveyed in the report is too ridiculous for expression and should call for a rigid investigation by some higher official in the district.

Mining Engineer.
————, Canada.

In replying to this inquiry, it is only possible to estimate, in a general way, what volume of air would be in circulation in a mine, as based on the

tonnage of coal mined. Assuming this is a gassy mine and making a liberal allowance of, say 200 cu.ft. of air per man per minute, and 600 cu.ft. per mule per minute, it is fair to estimate on an output of, say 6 tons of coal per man, per day. It may be more or it may be less, but this can be taken as a fair daily average of a miner.

Now, the circulation required, per man, being 200 cu.ft. per min., makes the daily air volume, per man, 200 × 60 × 24 = 288,000 cu.ft. But, adding, say 5 per cent, for underground employees other than miners, or 0.05× 288,000 = 14,400 cu.ft.; and assuming one mule serves twenty-four men and consumes as much air as three men, there must be added one-eighth more air for the mules in the mine, or ⅛(288,000) = 36,000 cu.ft. This makes the total air volume, per day, 288,000 + 14,400 + 36,000 = 338,400 cu.ft., which is the air required, for every 6-tons of coal mined; or 338,400 ÷ 6 = 56,400 cu.ft. of air, per ton of coal mined.

Finally, on this basis, the percentage of gas in the return air current would be (4,500 × 100) ÷ (4,500 + 56,400) = 7.39 per cent, which is a fair estimate of the percentage of gas in the return air current of this mine, under the assumed conditions.

Examination Questions Answered

Miscellaneous Examination Questions

(Answered by Request)

QUESTION—*In a large mine, the board and canvas stoppings erected between the main airways have been replaced by concrete stoppings. What changes would you expect to find: (a) In the quantity of air circulating around the faces? (b) In the total quantity measured in the fan drift? (c) In the water gage reading? Explain why.*

ANSWER—(a) Assuming the concrete stoppings are well built and sealed at the roof, the result of erecting such stoppings will be to increase the quantity of air sweeping the working faces. The reason for this increase is that the new stoppings will eliminate the loss due to leakage through the old board and canvas stoppings.

(b) Assuming that the power on the air remains unchanged, the total quantity of air passing in the fan drift will be somewhat decreased; because all the air is now traveling the entire length of the airways, instead of being short-circuited by reason of the leaky stoppings. Increasing the length of air travel increases the mine resistance and decreases the total quantity of air in circulation, the power remaining unchanged.

(c) For the same reason, the water-gage reading, in the fan drift, will be slightly increased, the increase being in proportion to the greater mine resistance.

QUESTION—*What should be the maximum adverse gradient on a haulage road, in order that a 7-ton electric locomotive having a tractive power of 2,600 lb. may haul a trip of twelve loaded cars weighing 3,000 lb. each? Assume the frictional resistance to be 1/40 of the gross weight, for the cars, and 1/70, for the locomotive.*

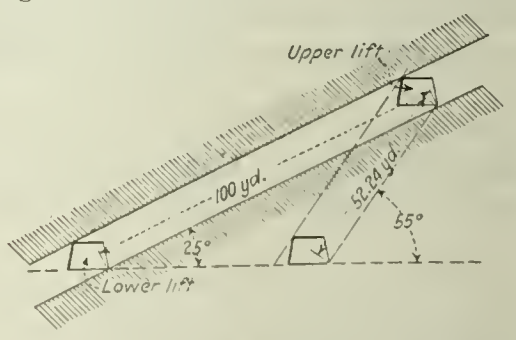
ANSWER—First, calculate the frictional resistance, which is, for the locomotive, 1/70(7 × 2,000) = 200 lb.; and, for the cars, 1/40(12 × 3,000) = 900 lb. The total resistance due to friction is, therefore, 200 + 900 = 1,100 lb., which must be subtracted from the tractive power of the locomotive, making the effective tractive power 2,600 − 1,100 = 1,500 lb.

The gross weight of the entire trip, including the 7-ton locomotive and the twelve cars is 7 × 2,000 + 12 × 3,000 = 50,000 lb.

Finally, the sine of the grade angle, for the maximum grade up which a tractive force of 1,500 lb. will haul a gross weight of 50,000 lb., is 1,500 ÷ 50,000 = 0.03; corresponding to an angle of 1° 43′ or a 3 per cent grade.

QUESTION — *If the distance between two lifts in a mine is 100 yd., measured on a pitch of 25 deg., what will be the pitch distance between these lifts, measured on a pitch of 55 deg.?*

ANSWER — Assuming the vertical height between the lifts remains unchanged, this vertical height for a distance of 100 yd., on a pitch of 25 deg., is (3 × 100)sin 25° = 300 × 0.42262 = 126.786 ft. Then, the corresponding distance measured on a pitch of 55 deg. will be 126.786 ÷ sin 55° = 126.786 ÷ 0.81915 = 154.16 ft.



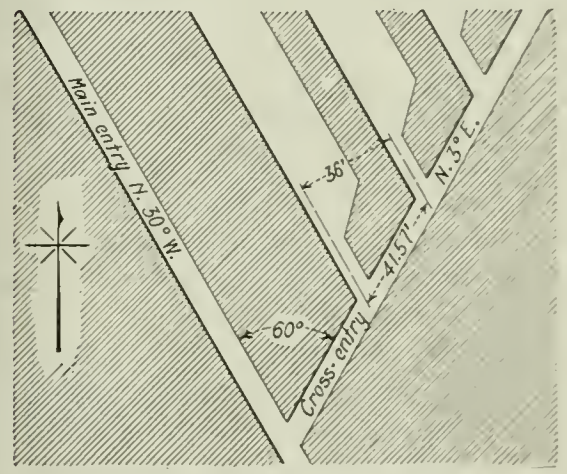
QUESTION—*The tidal elevation of the top of a slope is 900 ft. and that of the bottom 760 ft.: (a) What is the difference of levels between the head and foot of the slope? (b) If the slope is 1,000 ft. long, what is the grade?*

ANSWER—(a) The difference of level between the top and bottom of the slope is found by subtracting the elevation at the foot from that at the top of the slope; thus 900 — 760 = 140 ft.

(b) Assuming the length of this slope is 1,000 ft., measured on the incline, the sine of the slope angle is 140 ÷ 1,000 = 0.14, which corresponds to an angle of, practically, 8 deg., or a grade of 14 per cent.

QUESTION—*The bearing of the main entry, in a mine, is N 30° W and the bearing of the cross-entry from it is N 30° E. Rooms turned off the cross-entry run parallel to the main entry. If the perpendicular distance between the centers of the rooms is 36 ft., what distance should be measured on the entry between their centers?*

ANSWER—As shown in the accompanying figure, the bearing of the main entry being in the northwest quadrant and that of the cross-entry in the northeast quadrant, the angle between these two entries is the sum of their bearings or 60 deg., which is also the angle that the rooms make with the



cross-entry. Then, if the perpendicular distance between the room centers is 36 ft., the distance between centers, measured on the cross-entry, is 36 ÷ sin 60° = 36 ÷ 0.866 = 41.57 ft.

QUESTION—*Suppose a tunnel to be driven through a mountain, from east to west, a distance of a mile or more; in which direction will the air flow through the tunnel, in the morning and again in the evening? State why.*

ANSWER—Assuming that the height of the mountain above the two mouths of the tunnel is sufficient to produce a difference in temperature caused by the heat of the sun, which rarifies the air on the eastern slope in the morning and on the western slope in the evening, there will be a corresponding difference in the density of the air columns acting on the respective entrances to the tunnel.

In the morning, the denser column will be on the western slope and the result will be a flow of air from the west to the east, at that time. Again, in the evening the condition will be reversed and the denser column will then be on the eastern slope and the flow of air will then be from east to west. This reply ignores, of course, any prevailing winds that would modify the movement of air through the tunnel, even on sunshiny days.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

PRACTICALLY every industry for which figures have been received by the Department of Commerce showed greater activity in May than in April. Out of 42 production movements reported 38 showed an increase and only 4 declined, compared with the month preceding. Prices have shown the greatest increase for any month in more than two years. Forward orders are increasing and business again presents the picture of prosperity.

Prices on the average have not fallen below about 40 per cent over the pre-war level. They are now nearly 50 per cent above that level. No one knows at what level prices will finally become stabilized, but it is believed that care should be used in placing large forward orders for raw materials at prices much above the present level.

Fundamental conditions in this country are for the most part favorable. The agricultural situation is particularly good. The construction industry is having the biggest boom ever known, and this carries with it a large number of contributory industries. Employment has reached a point where a scarcity of men is reported at some points. The financial situation is favorable with abundance of money available at low rates of interest.

Receipts of wool in Boston during May showed a seasonal increase in the domestic product, while receipts of foreign wool were approximately equal to those in April. Total receipts were 40,972,000 lb. There was an increase in the activity of most woolen machinery, compared with the preceding month.

The activity of cotton spindles increased over the low point reached in April, but it is still below that of the closing months of last year. Exports of cotton cloth amounted to 60,448,000 sq.yd. in May, compared with 51,615,000 sq.yd. in April. This is the largest amount recorded for any month since last October and is nearly double the amount exported in January.

Both exports and imports of iron and steel showed moderate increases in May. Exports totaling 188,000 tons were the largest since March, 1921. Production of sheet steel showed an increase, although sales and unfilled orders fell off, compared with April. Copper production took another big jump, with a total of 88,714,000 lb., the largest for any month since 1920 and four times the production recorded six months ago. The exports of both copper and tin were less than a month ago.

The May production of petroleum amounted to 46,473,000 barrels, or only slightly less than the record attained in March. Consumption, at 49,572,000 barrels, also showed a marked increase. Imports reached a new record of 14,018,000 barrels.

All of the industries associated with building and construction showed a marked increase in output during May. The lumber industry as a whole is now operating at practically 100 per cent of normal. Production, shipments and unfilled orders of brick were much greater than in any recent month. Shipments and new orders for enameled sanitary ware showed large increases, while stocks on hand declined.

Exports of wheat and wheat flour increased over April, but were less than half as large as a year ago. Exports of corn fell off in May from the high figures attained in recent months. The total of 11,306,000 bushels is still far above the average for this cereal. In general the movement of foodstuffs was larger than in April.

Rail Strike May End Soon

The strike of railway shopmen on July 1, which threatened to involve 450,000 workers, including maintenance of way men, thus far has caused little inconvenience to traffic. The maintenance of way men have refused to go out and the companies announce that a marked drift back to work is noticeable and that skilled mechanics are applying in large numbers for the places of the strikers. B. M. Jewell, head of the striking shopmen, has expressed a willingness to entertain peace proposals.

Philadelphia Industries Better

Although June normally is a month of declining industrial activity, it has not proved so in the Philadelphia district, according to the July review of business conditions issued by the Federal Reserve Bank at Philadelphia. Reviewing activities there, the bank says that the improvement noticed in April has continued. "It is true," says the bank, "that the gains made during the last month have been smaller than those of May, but the improvement has been marked. Several of the industries that heretofore had not been affected by the general upward movement have recently reported considerably heavier sales, and this, coming at a time when a decline was to be expected, is especially significant as indicative of the underlying trend of business."

New England Trade Static

Business activity in New England during June was about on a par with that of May, or slightly better, according to the July review issued by the Federal Reserve Bank at Boston, covering conditions in the First Federal Reserve District. "The change, if any," says the bank, "was so small, however, that it has been difficult to measure accurately. New England manufacturing activity has been increasing at a nominal rate for the last two months, although there has not been a corresponding increase in car loadings."

Trade Gains in Richmond District

Reports received by the Federal Reserve Bank at Richmond, Va., late in June show clearly, says the bank's July bulletin, that the states in the Fifth Federal Reserve District are sharing in the apparently nation-wide improvement in business. West Virginia is temporarily disturbed by the coal strike, and the early appearance of the boll weevil is annoying South Carolina, but elsewhere in the district signs point to better conditions and outweigh the deterrent factors. Textiles and cotton both showed improvement and agricultural prospects in general are good.

Harding Proposes Resumption of Mining at Old Wage Pending Fixing of Basic Scale by Commission

IMMEDIATE resumption of coal mining under a plan of settlement of the strike proposed by President Harding is now being considered by operators and miners. Realizing that the conference was deadlocked the President suggested on Monday, July 10, that mining be resumed on the wage scale in effect on March 31 last. A commission to be composed of three representatives each of the miners and operators and five representing the public is suggested to investigate and report in thirty days, if possible, on a new wage scale to run until March 1, 1923. The President also stated that he would ask Congress to give authority to this commission to make a thorough investigation of the coal industry looking to its stabilization and to the promotion of peace in the industry.

The President's conference with the operators and miners adjourned at noon. The anthracite operators conferred on the proposal at the Bureau of Mines, the bituminous operators at the Washington Hotel and the miners' representatives at the Red Cross Building. The President asked the miners and operators to give him their answer by night.

Both operators and miners were unable to make answer to the President's proposal at once, the union being the first to move for delay on the ground that its representatives at the conference were not authorized to accept the proposal. They at first proposed to call the general policies committee of the union in conference at Washington on Monday, July 17. President Lewis went to the White House to ask for a week's delay and when he came away he said the general policies committee meeting would be advanced to Saturday, July 15.

No Answer at End of Day's Conferences

At the end of a day's conference both bituminous and anthracite operators announced that they had not reached an answer to the President's proposal. They said the delay of the miners in acting on the settlement plan was having no effect on their action in the premises. Attention was called by the bituminous operators to the fact that the miners' representatives have been participating in the conferences looking to settlement of the strike, although they appeared to have no authority to take action, while the operators have been ready to act.

To this John Lewis countered by saying that it was all along understood that the miners' representatives at this conference had no power to act. He also charged that the bituminous operators were not fully represented at the present conferences.

After the anthracite operators adjourned their conference announcement was made that they had not reached a conclusion on the strike settlement plan. They then went into informal conference with the bituminous operators.

President Ogle of the National Coal Association pointed out that the strike settlement offer submitted by the operators on July 3 met all suggestions advanced by the President in opening the conference and would have provided an ample and direct method of reopening the mines.

President Harding's address to the conference Monday follows:

"Gentlemen, the information has come to me that your conference is deadlocked, or, at the best, attempting to agree on plans which will require extended time to work out. I have said heretofore that the government prefers that you who are parties to the dispute should settle it among yourselves, because you best understand all the problems involved. The government cannot settle it for you. It will force no man to work against his free will, it will force no men to employ men against the free exercise of an employer's rights. The government will not be partisan, but the government is concerned with coal production sufficient to meet the industrial and transportation requirements of the country and to safeguard against a fuel famine when winter comes again, and it is desired to have production resumed at once.

"Your government does desire to be helpful. With such a thought, therefore, I submit to you the following proposal:

"Mine workers are to return to work on the scale of wages which expired last March 31, and mines now idle because of strike or suspended operation to resume activities, without interference with activities of mines now working. The 1922 scale to be effective until Aug. 10, 1922.

"A coal commission to be created at once, consisting of three members selected by the mine workers, three members selected by the mine operators, and five members to be named by the President. All decisions by this commission shall be accepted as final.

"This commission to determine, if possible, within thirty days from today, for the miners on strike a temporary basic wage scale, which scale shall be effective until March 1, 1923. In event that the commission is unable to report its scale by Aug. 10 it shall have power to direct continued work on 1922 scale until superseding scale is ready.

"The commission shall investigate exhaustively every phase of the coal industry. It shall reveal every cost of production and transportation. The President will ask Congress to confer authority for the most thorough investigation, and make appropriations necessary to do such work. The commission shall make recommendations looking to the establishment and maintenance of industrial peace in the coal industry, the elimination of waste due to intermittency and instability, and suggest plans for dependable fuel supply.

"I have taken this short cut to a resumption of operations because I believe it to be in the interest of the public welfare. It is that simple form of adjusting disputes which answers the call of good conscience and a just civilization. When two great forces do not agree there must be a peaceful way to adjustment, and such an arbitration opens the way.

"I do not expect reply without due consideration. Please take the proposal to separate conferences. I wish you to appraise the situation, weigh your responsibilities, and then answer this proposal as you wish to be appraised by American public opinion. I am speaking first of all for the public interest, but I am likewise mindful of the rights of both workers and operators. You also are an inseparable part of that public interest. With due regard for all concerned it ought to be easy to find a way to resume activities and command the approval of the American public."

Operators and Miners Withhold Comment

Comment on the President's plan has been withheld by both operators and miners. There is a general feeling that the miners sought the delay of one week in order to ascertain in advance of their decision what public opinion may develop and what progress the railroad strikers make in tying up coal production. They are no more inclined than the operators to flout the President and face public reproach. It has been suggested, however, that neither side may accept the administration's plan in full and that each side may tack on so many reservations to their acceptance as to prevent its operation.

It is being pointed out that there might well be great difficulty in moving coal from the soft-coal mines during the anticipated short period when the miners' wage would be at the old high rate and production costs high. Lake buyers, for instance, it is suggested, would hesitate at stocking such high-cost coal when lower prices were in immediate prospect. The anthracite operators are understood to fear that the same would apply to householders and retail dealers, who would postpone purchases until wages had been reduced and the mine price lowered.

On the other hand, some have seen in the power that would be delegated to the commission by the President to

extend beyond August 10 the March wage scale, providing no decision had been reached, a danger that the miners could hold indefinitely to their high wages, once they got started. The principal objection of the operators appears to center about the attempted imposition of the last wage scale after they have held out for over three months in an effort to get a lower wage. They appear to feel that to accept the plan would put them back where they were when the strike began.

Another point that provokes but little comment on either side has to do with the check-off. It is not stated in the President's paper that the old contracts be resumed, but only that the men return to work at the old scale of wages, and this might be interpreted as either with or without the check-off. Non-union operators are speculating on where resumption of mining on this basis would place them, as to hold their men they would doubtless raise wages and this would raise the level of prices all over the country. Mines now working would not be affected and this is interpreted to mean that in those areas, as Kanawha, where former union operations have been started open shop they would be permitted to continue. A large question is raised, however, in the case of the Connellsville area since full compliance by the union with the President's terms would presumably require the union to withdraw from that field and put those men back to work at the non-union scale in effect on March 31 of this year.

Observers at Washington are trying to square the government's position with railroad labor with that taken in the coal situation, and are not anticipating early acceptance from either miners or operators of the President's plan. In other words, those in close touch with the insides of the situation are not anticipating coal production to begin this month.

Washington, July 7.—The administration, it seems at this writing, has maneuvered itself into a position where it hardly can refuse to force the arbitration of the questions at issue between the coal operators and the United Mine Workers. There is no legal provision for compulsory arbitration of this dispute, but it is recognized that neither side to the controversy can afford to refuse to participate if the President proposes the setting up of an arbitration commission.

When the government called upon the representatives of the operators and of the miners to sit around the table and see if they could not work out some agreement it placed itself in a position where it would be difficult to refuse were one of the parties to the controversy to request that an arbitration committee be set up. The anthracite operators have stated that they want to arbitrate the matter. They can say to the President that he now has tried moral suasion without result and that the time has come for him to invite the mine workers to agree to such a plan. There is a widely held opinion that this will be the outcome, despite the earnest desire of Secretary Hoover to do something more fundamental than agree on wage scales which will make possible a one or two-year truce.

In that connection, however, it is suggested that the President could say that he would call upon the parties to the dispute to enter into arbitration proceedings, provided each would bind itself to undertake certain obligations with a view of effecting some fundamental betterments in the coal business.

There has been considerable speculation as to the possibility of the President's initiating a movement for the creation of a tribunal along the lines of the Railroad Labor Board. There is no indication, however, that such a plan is under consideration. It is recognized that the setting up of such a tribunal for a public utility, long subjected to government regulation, is entirely a different matter than making the same provision for a business which has been unregulated. To set up a coal labor board, it is believed, would involve more government interference with business than the administration is prepared to undertake.

Proposals to redistrict the union territory have gotten nowhere. Nevertheless there are some who see hope of some such plan going through. One of the suggestions for redistricting would reduce the thirty-five wage-scale districts to six. Another proposal would be the division of the union territory into fourteen districts. While the mine workers are outspoken against any changes in the existing wage-scale districts, it is believed that they would prefer, if forced to negotiate on a district basis, to do so in new districts along the lines of some of the suggestions which have been made. Increased freight rates and changes in markets have made desirable certain changes in district boundaries, and it is not improbable that some such changes will be agreed on in the settlement of the existing strike.

The demand that something be done by the federal government to end the strike and start larger volumes of coal moving to the Northwest and to New England is becoming more insistent. The most pressing appeals are coming from New England, where the public is beginning to fear for its anthracite supplies for the coming winter. The sentiment, however, is not confined to New England, for protests are reaching Washington in increasing numbers from all parts of the anthracite-consuming section of the East. As the situation now stands production of anthracite is fully 20,000,000 net tons behind the normal output. While this deficit can be overcome to a certain extent, it cannot be made up entirely and each day that the strike continues means that much further limitation on the anthracite which will be available to domestic consumers this winter. Even if work were resumed at once, there would be many thousand families who burned anthracite last winter who would not be able to obtain supplies for this winter's use.

The public in the Northwest has been particularly passive and it is only within the last week that any signs of anxiety as to next winter's fuel have developed. Senator Kellogg and certain of the members of the House of Representatives from the Northwest, however, have been conferring for the past two weeks or more with Commerce Department officials in regard to the situation. The unusually large carryover at upper lake docks has made available sufficient supplies to satisfy a considerable demand during the early part of the coal year, but reports as of July 1 indicate that stocks on the upper lake docks continue large with only a very gradual increase in orders. Throughout the entire time since the strike began there have been considerable supplies of coal available to the Northwest at lower lake ports.

The strike has resulted in two unusual movements of coal on the Great Lakes. The upper lake docks have been shipping coal to Lake Michigan docks, while steel plants at Buffalo have been getting coal from Lake Erie ports.

The canvass of public-utility coal stocks which was made by the National Committee on Gas and Electric Service, under the immediate direction of George H. Elliot, has been announced by F. R. Wadleigh, chief of the newly organized Coal Division of the Department of Commerce. Mr. Wadleigh's announcement reads as follows:

"The canvass of the coal stocks of electrical and artificial gas public utilities as of June 5 shows an average of 53 days' supplies in hand. A great many utilities are receiving current supplies from non-union production, and on the basis of their current encroachment on stocks it seems that their stocks would last about 12 to 15 weeks."

The canvass of stocks at metallurgical plants is about to be completed.

While isolated shipments of Nova Scotia and Welsh coal have come to American ports recently, it is not believed that price conditions favor any important movement of these coals to the United States in the near future. There has been, however, a notable increase in the volume of Nova Scotia coal mined and it is moving up the St. Lawrence in unprecedented quantities.

A DIRECT EFFECT OF THE COAL STRIKE is seen in a considerable slump in the sale of explosives in the United States recorded for the month of April by the Bureau of Mines. The quantity of explosives sold during April for use in the United States was 25 per cent less than the record for March; 18 per cent less than for April of last year; and 46 per cent below the figures for April two years ago.

Bituminous Operators' Plan Proposed Arbitration By District Boards and Nationwide Probe

BITUMINOUS-COAL operators made a proposal on July 3 to the joint conference of miners and operators meeting in Washington with Secretaries Hoover and Davis. In this plan they provided for regrouping of the union fields to avoid the objections to the old Central Competitive Field and at the same time give the miners an adequate substitute. To meet the desires of the administration for a more comprehensive and forward looking program on coal the operators provided in their resolution for a non-partisan commission to be given powers to make a thoroughgoing investigation of the coal industry and to make a report on the fundamental problems of the bituminous-coal industry and to make recommendations to the President for their solution.

District boards of arbitration were suggested to handle disputed points, with provision that they should settle all matters in controversy by Aug. 1. The miners refused to accept this plan of the operators and withheld its publication until July 10. The resolution in full follows:

"Pursuant to the call of the President of the United States and in order to bring about a speedy termination of the strike now in progress in the bituminous coal fields the operators offer the following motion and move its adoption:

"(1) That the negotiation of wage scale contracts in all of the scale-making districts here represented be referred to the miners and operators in each scale-making district for settlement.

"(2) In accordance with the suggestions of Secretaries Hoover and Davis this conference shall appoint a committee of six miners and six operators, which committee shall consider the practicability of grouping scale-making districts, where possible and mutually agreeable to the miners and operators in the districts affected, to reduce the work of scale making.

"(3) In order that there may be a speedy resumption of work and no unnecessary delay in reaching agreements a board of arbitration shall be established in each scale-making district or group of districts, to which board shall be referred all points of disagreement. The findings of the majority of each board of arbitration shall be final and binding upon both the miners and operators of the scale-making district officials.

"(4) The President of the United States is requested to appoint a board of arbitration in each scale-making district. Each board of arbitration shall consist of three disinterested members, none of whom shall be miners or operators nor in any way connected with the bituminous-coal industry.

"(5) In accordance with the suggestion of President Harding a board shall be appointed by him, whose duty it shall be to study the fundamental problems of the entire bituminous-coal industry and make recommendations to the President for their solution.

"(6) Negotiations shall proceed in all scale-making districts at once in order that the public may be supplied with coal and any disputed points remaining unsettled by July 15, 1922, shall be referred to the boards of arbitration as established by the President in each scale-making district. Upon questions so submitted to arbitration the boards of arbitration shall report on or before Aug. 1, 1922.

"(7) The legality of this plan of settlement shall be approved by the Attorney General of the United States before it becomes operative. Legal questions raised by the miners or operators under this plan shall likewise be determined by the same authority."

British Restore Export Trade in Coal, but At Great Cost; Welfare vs. Wages

WHEN the British House of Commons went into Committee of Supply on the Civil Service Estimates and took under consideration the financial needs of the Mines Department, the Secretary of Mines, Mr. Bridgeman, referred to the welfare fund set up under the Mining Industry Act by a levy of a penny (2c.) per ton on coal produced. The sum now available amounts to just a million sterling ($4,440,000 at present exchange) and four-fifths is to be spent in the localities where is was raised.

Among the objects for which it is to be expended are institutes, recreation grounds, mining school extensions and a sanitarium. The other fifth will be spent for large national purposes such as research or educational work. The experimental station at Eskmeals, Cumberland, has been found inaccessible and consequently inconvenient. Moreover, much of the plant is worn out. The committee expects therefore to give a large sum toward the erection of a new experimental station.

Mr. Bridgeman also commented on the fact that Great Britain had fewer fatal accidents per thousand employed than any other country except Belgium, but as he believed that carelessness was at the bottom of most accidents he was proposing to start a "safety-first" campaign. He also congratulated the country on the fact that the exports of British coal to every country outside Europe except South America were greater during the first three months of this year than they were in the corresponding period of even the great year 1913 and they were greater to France than in that year. The exports to western Europe were only 6 per cent below those in 1913, despite the depressed state of the industry. The output of coal, he declared, was satisfactory despite the seven-hour day. It had now reached one ton per man per day. Fewer men, it is true, were employed than in past years but during the last few months the number had been increased by 40,000.

Mr. Bridgeman's remarks ended, the Labor members started to tear the statement to pieces, speaking on a resolution to reduce the proposed appropriation. During the past fifteen months, said Mr. Adamson, wages had fallen more seriously than at any other time. In his own district, Fife, the fall had been 12s. ($2.66 at present exchange) or £3 ($13.32) in an average working week. In addition to the general fall, partial reductions had been made by certain owners. In three-fourths of the coal fields wages had been reduced to about 8s. 4½d. a day ($1.87 at present exchange), or two guineas per week ($9.32). Wages were being brought down to only 20 per cent over those in July, 1914, whereas the cost of living was 81 per cent above that ruling at that date. Moreover the working time was short at many of the mines.

Mr. Holmes, another Laborite, wanted an equalization fund set up in each district and provision made that after any individual colliery had received 17 per cent of its standard wages and 17 per cent of its surplus, 50 per cent of any surplus remaining should be paid to the fund. Similarly any colliery which could not afford to pay the rate of wage fixed for the district should receive out of the fund a sum equivalent to 50 per cent of the amount by which it failed to earn enough to pay the district wage.

Another Laborite, C. Edwards, found it hard to glory in the re-establishment of the British export trade in the presence of the low wage. He said the coal almost had been given away. Mr. Lawson said that large numbers of colliers were making no more than from £2 to £3 ($8.88 to $13.32) per week, and Mr.Walsh, another Laborite, said that "thousands of men were obliged to go week by week to the guardians to have their wages supplemented because they could not earn sufficient to keep body and soul together."

In response Mr. Bridgeman said that the taxpayers had subsidized the miners by a gift of £25,000,000 to keep up wages and £7,000,000 to ease their decline. He could imagine no greater folly than the desire of the men to repudiate the profit-sharing arrangement just because it happened that they were now at the bottom of the wave.

Kentucky-Tennessee Operators' Association Elects J. E. McCoy as Secretary

DIRECTORS of the Kentucky-Tennessee Coal Operators' Association met in the offices of the association, Knoxville, Tenn., Friday, June 30, and accepted the resignation of D. S. Miller, commissioner-secretary, and elected J. E. McCoy to succeed him in the capacity of secretary only. Mr. McCoy was for twelve years secretary and treasurer of the Southern Appalachian Coal Operators' Association.

The Kentucky-Tennessee Coal Operators' Association is a new organization, the result of the split in the membership of the Southern Appalachian Coal Operators' Association, and is composed of operators formerly members of the Southern Appalachian and non-members in the territory. The territory covered by the Kentucky-Tennessee Association is the southeastern district of eastern Kentucky and the State of Tennessee. The tonnage represented by the new organization is approximately 3,000,000 per annum.

Members of the Kentucky-Tennessee association operate under what they are pleased to term an "open shop, non-union" wage contract without the "check-off" feature which is provided for in all U. M. W. A. contracts.

The present contract expires March 31, 1924, and is a modification of the wage agreement negotiated for this field at Washington, in October, 1917, and approved by H. A. Garfield for the U. S. Fuel Administration. This contract provides for further modification in the matter of wages to meet competitive conditions.

Ford Offers to Lease Part of L. & N. Lines To Move Coal to Detroit

HENRY FORD has submitted an offer to lease that part of the Louisville & Nashville Railroad between Banner Fork and Corbin, Ky., and from Corbin to Cincinnati, and operate it with the present force of railway employees in order that coal may be moved to Detroit. Mr. Ford had made the offer to the president of the Louisville & Nashville after the railroad company had informed him it was unable to move 8,000 cars of coal consigned to Detroit industries because of labor troubles.

The Banner Fork branch is the coal carrying division of the railroad. Connection would be made at Cincinnati with the Detroit, Toledo & Ironton R.R., which is owned by Mr. Ford. Mr. Ford's offer included the taking over of the railroad's equipment on this branch under the proposed lease.

Members of the staff of W. L. Mapother, president of the Louisville & Nashville R.R., expressed surprise when they were told of the Ford offer. W. J. Michael, secretary to the president, said that press reports were the first intimation that had been received of the proposal.

Some of Ford's coal mining interests are located at Banner Fork. Through a private agreement with his men his mines are not affected by the coal strike.

Senator Pepper Argues Against Sale of Coal Stock to Reynolds Syndicate

THAT the stock of the Lehigh & Wilkes-Barre Coal Co. may come into the control of the Lehigh Coal & Navigation Co. should the bid of the Franklin Securities Corporation for the stock of the former company be accepted, was revealed July 5 in the hearing in the Federal District Court at Philadelphia of a case growing out of the Reading dissolution suit.

Acquisition by the Lehigh Coal & Navigation Co. of the Lehigh & Wilkes-Barre coal stock would materialize, it was said, if the Franklin Securities Corporation, upon obtaining the stock decided it did not want to operate the company.

Senator George Wharton Pepper charged that such an agreement existed in an argument on the motion by the Central Railroad of New Jersey, owner of the Lehigh & Wilkes-Barre stock, for the dismissal of the petition of Isaac T. and Mary T. W. Starr, that the sale of the stock to the Reynolds Syndicate be set aside. Senator Pepper, counsel for the Starrs, contended that the Franklin Securities Corporation's bid was better than that of the Reynolds syndicate.

The court reserved decision in the case with the announcement that if it was unable to reach a decision on the legal points raised by Senator Pepper a special master would be appointed to take testimony.

German Coal Prices Show Upward Tendency

THE *Information* publishes a table taken from the German journal *Werkshaft und Statistik* showing the average monthly prices of German and foreign coal for the first quarter of the year:

ORIGINAL PRICES

	German Rhine Westphalian Nuts, III, per Metric Ton	English Best Yorkshire per Gross Ton	French Washed Grains Flenus, 20-30 mm., per Metric Ton	Belgian Greusins, 20-30 mm., per Metric Ton	United States Pool 1, per Gross Ton f.o.b.
1913.....	14.25	17s. 6d.	23f.	22f.	$2.85
1921					
October....	340.50	30s. 3d.	111	121	....
November..	340.50	28s. 3d.	111	121	5 10
December..	545.50	28s. 8d.	111	121	4.87
1922					
January....	545.50	26s. 5d.	105	121	4 87
February...	630.90	29s. 0d.	105	121	4.75
March.....	809.30	28s. 0d.	105	121	4.65

PRICES IN MARKS PER TON

1921					
October....	340.50	868	1,205	1,296	....
November..	340.50	1,447	2,095	2,197	1,473
December..	545.50	1,121	1,668	1,737	1,027
1922					
January....	545.50	1,054	1,643	1,811	1,027
February...	630.90	1,243	1,778	1,961	1,064
March.....	809.30	1,617	2,509	2,834	1,169

NOTE—The *Information* has varied the American prices as they appeared in the German journal as they did not correspond to Pocahontas, the only quality recently exported by the U. S.

Coal Consumption by Utilities During May Shows Slight Upturn from April

PUBLIC-UTILITY plants consumed 2,484,500 net tons of coal during May, 1922, according to the report of the Geological Survey, just published. This was a slight increase as compared with 2,457,790 tons in April, but was less than the March consumption of 2,723,561 tons. These consumers used 2,593,259 tons in February and 2,953,540 tons in January. The average daily consumption of coal in March was 87,900 tons, in April 81,900 and in May, 80,100.

The coal strike may have affected the demand for electric power to some extent in the eight leading coal-producing states. Considering the mean daily output in these states during March as 100 per cent, the April figure was 94.5 per cent and May 94.7 per cent. The remaining states, excluding there on the Pacific Coast, show 97.7 per cent and 99.2 per cent, respectively. The average daily output for May was 122,600,000 kw.-hr., as compared with 120,100,000 kw.-hr. in April. The proportion of the total output produced by water power increased from 34.6 per cent in January to 42.8 per cent in May.

WITH THE BEGINNING of the new fiscal year the Department of Commerce has given coal a commodity division all its own. Heretofore coal and petroleum have been handled in a single division. This was necessary because of the lack of funds available for the commodity divisions, but with larger appropriations available for the current fiscal year the division has been effected. H. C. Morris, who has been handling the petroleum part of the work, continues as chief of the petroleum division, and F. R. Wadleigh continues handling coal matters.

AFTER A WHILE, perhaps, the leaders of certain unions will discover that wages cannot be hoisted with bombs. —*Columbia Record.*

Fourteenth Week of the Coal Strike

EDITORIAL REVIEW

MUCH mystery, secrecy and, withal, quiet, marked the fourteenth week of the strike. On Monday, the day before the holiday, the third meeting of union operators and miners was held in Washington under the auspices of the government. Previous meetings on Saturday and Sunday had developed a violent debate behind closed doors with no official record into which each delegate could feel obliged to establish his stand for future reference. The miners had offered their resolution to go into negotiations through the medium of the Central Competitive Field and the operators offered their resolution for district conferences, both of which were as promptly voted down. This much was made public after the meetings.

On Monday there was word that some proposal of new and striking significance had been made by the operators. It was reported that the story had leaked, that the Associated Press had it and had been induced to withhold it. President Harding's injunction of secrecy, with the suggestion that all would be told later, was carefully observed. The delegates disappeared from the scene the eve of the Fourth, to gather again on Monday morning July 10, prepared to hear what the President should have to tell them, after hearing their report of total lack of progress in previous conferences.

What transpired on Monday, July 10, is described elsewhere in this issue. Washington is still the center of strike interest with a meeting of the Policy Committee of the United Mine Workers set for Saturday, July 15, to consider the President's proposal.

In the fields production slumped greatly because of the holiday. The miners who have been working were tired, had plenty of money and were ready and anxious for a rest and good time. They pretty largely extended their celebrations over more than the one day and nearly every district shows the effect in decreased output. Fortunately the same is true with regard to consumers and the coal burned doubtless recorded a corresponding drop. The strike on the railroads has had but local and small effect on the movement of coal to date, but that is no assurance that it will not be a factor later in limiting production on some roads.

No disturbances have been reported this week in the wagon mine district in western Indiana. All the mines have resumed operation following the continuance of an injunction suit in federal court against the striking miners, officials of the United Mine Workers having promised Judge Anderson, June 29, that there would be no further interference with the operation of these mines.

Farrington Takes One More Step Toward Making Separate Wage Deal in Illinois

AS AN aftermath of the first futile conference in Washington of operators and miners, and as a forerunner of the second meeting on Monday, July 10, Frank Farrington, president of the Illinois miners, convened his executive board in Springfield Friday the 7th—minus certain members favorable to President Lewis of the International union—and got authority to call a state convention to determine a separate state wage scale in case nothing definite developed at Washington. The day of the executive board meeting Mr. Farrington emphatically denied that any move was being made toward a separate deal. But during the meeting he cleared the way for such a deal.

Illinois operators, in session at Chicago, disclaimed any previous knowledge of Mr. Farrington's plan and had no comment to make upon it except that the action seemed to be in line with Mr. Farrington's original promise to the operators to negotiate for a separate peace in case "an emergency should arise." During the first miner-operator conference at Washington, July 1, 2 and 3, the declaration was made that Illinois miners were going to stick it out with the International union, come what would.

Operators in that state, while strictly preserving their pledge of secrecy concerning the Washington conference, nevertheless went back to Washington Saturday night for the Monday conference with high hopes that a definite development would appear and that peace negotiations in the mine strike would soon be under way, with a resumption of mining operations.

In the meantime comparative peace appeared to reign in the mining fields of Illinois and Indiana. Union leaders have suppressed the program of threats with which many clerks and other company employees in wet mines such as those of the Madison Coal Corporation near Carterville were driven from the pumps two weeks ago to the detriment of the mining properties. By the end of last week it was reported that every pump necessary for the protection of a mine was working.

No Further Outbreaks in "Bloody" Region, But Situation There Is "Like Dynamite"

OUTSIDE of a little trouble at the McClintoch mine at Johnston City everything is quiet in the southern Illinois field following the slaughter at Herrin three weeks ago, although there is some undercurrent that may develop into trouble at different places. Union miners have been threatening the workers who are keeping the pumps going at the mines. This, however, is about at an end by order of Frank Farrington, Illinois miners' president.

The only difficulty reported during the week took place at the McClintoch mine near Johnston City, where the company, which is building a new tipple, offered the laborers $4 a day. The miners refused to take this, demanding a higher scale, whereupon the company imported labor. All of the work is outside of the jurisdiction of the United Mine Workers. That does not seem to worry the Williamson County gang, however, because apparently there is no law in the county.

Reports from southern Illinois indicate that miners from Williamson County have been going down to Kentucky in automobiles carrying moonshine whiskey and generally causing trouble, or trying to, at mines in the western Kentucky field. Several thousand miners are reported to have deserted the union ranks and gone to work in these districts and the miners justify their expeditions into the western Kentucky field by alleging that they are trying to ascertain whether the absentees from Illinois have gone to work there.

"There haven't been any further outbreaks," said an operator of the southern Illinois region, "but the situation here is like dynamite; there's no telling when something may go off."

Holiday Fervor Slows Up Operations In Connellsville Coke Region

JULY 4 seems to have had a slowing-up effect on the Connellsville coke region. The H. C. Frick Coke Co. lost about forty miners at the Leisenring No. 2 plant, but made this up in gains at other points, so that as a whole the company is holding its own. The Hillman Coal & Coke Co., W. J. Rainey, Inc.; American Coke Corporation and Pittsburgh Steel Co. also are about holding their own.

The Republic Iron & Steel Co. has recovered the ground lost a week ago at its Bowood plant. The Mather Collieries Co. has lost about 20 per cent and the Crucible Fuel Co. about 85 per cent as the result of a number of miners' mass meetings and picnics in that vicinity during the past week. Railroad shipments indicate a loss of about 10 per cent as compared with a week ago.

There have been a number of small scattered dynamitings throughout the region during the past week. No one of them has done much damage. The state police are still in charge of the towns of Brownsville and South Brownsville.

Garment Workers' Union Votes Gift of $100,000 to Striking Coal Miners

THE International Ladies' Garment Workers' Union has voted to give $100,000 to assist the coal miners on strike, according to the report of meeting of the union held in New York City July 6. Half of the sum will be available immediately. This is the first relief to be received by the striking coal miners.

The gift was voted after appeals made by Samuel Gompers, president of the American Federation of Labor, and John J. Lewis, president, and William Green, secretary, of the United Mine Workers.

In 1919 the Garment Workers' Union gave $60,000 to the steel workers.

Violence Reported in Hocking Field; Federal Judge Restores Injunction

COAL loaders, driven from a slack pile near New Straitsville, Ohio, appeared before Federal Judge Sater in Columbus June 5, seeking an injunction restraining union miners from interfering with their work. This was about the first notice of violence since the opening of the strike in the Hocking Valley field. A temporary injunction restraining the strikers from interfering with loading, which was lifted some time ago by Judge Sater, was immediately restored. Hearing on a permanent injunction will be held soon. The men appeared in overalls and working clothes and averred that they had only these clothes since their camp was burned. Several were nursing wounds as a result of shots fired into the camp. Thomas Marshall, of Altoona, Pa., was killed by the firing. The attacking party consisted of between 200 and 300 men.

Application for troops was made to Governor Harry L. Davis by operators of stripping operations in Harrison County. A representative of the Adjutant General's office was sent to investigate and reported that there was no necessity for troops. Threats had been made and at least two men were killed in that section.

Politics Mixed in Colorado Situation; No Violence Since Arrival of Troops

APPEARANCE of state troops in the field seems to have been welcomed by the majority of citizens in Colorado, but the radical element denounce the action of Governor Oliver H. Shoup in calling them out.

On July 2 Adjutant General P. J. Hamrock and Lieutenant Governor Earl Cooley, candidate for nomination for Governor on the Republican ticket, engaged in a verbal clash when the former charged that the acting Governor violated the order of Governor Shoup in addressing a meeting of union miners at Frederick, Col.

Guardsmen were ordered not to allow any mass meetings in the state. General Hamrock, it is said, told Governor Shoup that the Lieutenant Governor caused the strikers to be called together through James Barclay, president of Frederick Local of the United Mine Workers, despite the fact that he was informed by Captain John Campion, in command of the troops there, that no meetings were allowed. Governor Shoup has cancelled his vacation trip to the Pacific Coast as a result.

No violence among miners has been reported since the troops have been sent into the field along with the State Rangers, according to Adjutant General Hamrock.

All Quiet Now in Utah, Although Guardsmen Under Arms Stay on the Job

CONDITIONS are quiet in Utah. There is, however, no talk of recalling the guardsmen. The announcement that operators would not be permitted to recruit men and send them to the mines and that only persons who paid their own fare to the coal fields would be allowed to remain, has caused much dissatisfaction among mine owners. It is pointed out that in other lines no interference is made and that the recent decision in the present strike is only a sign of weakness on the part of the chief executive officers of the state. The leading newspaper of Price (Carbon County) has made a bitter attack on Governor Mabey, and sneers about his being only an executive in a $20,000 country bank before taking his present position. On the other hand men in high places have praised his stand regarding strike breakers.

Nova Scotia Miners Threaten to Strike If Wages Are Cut; Conciliators Named

MINERS employed at the collieries of the Inverness Coal Co., Inverness, N. S., have threatened to strike owing to a dispute over wages. The company has refused to consider the demands of the men that wages be not reduced. The federal Minister of Labor, James Murdock, has been appealed to for a special board of conciliation to adjust the dispute. He has agreed to sanction such a special board. Representing the Inverness Coal Co. will be G. McG. Mitchell, of Halifax, N. S., with L. D. Currie, of Glace Bay, N. S., representing the miners. I. D. McDougall, of Inverness, who represented the miners on the Scott board, which recently investigated the claims of the miners employed by the British Empire Steel Corporation (Dominion Coal Co.), also was appointed to represent the men of Inverness, but declined. He gave pressure of private business as a reason for not acting, but it is believed that dissatisfaction of the miners with his efforts in their behalf on the Scott board has been a factor in his refusal to act on the Inverness board.

Mr. Currie, the miners' representative on the Inverness board, recently was graduated from the Dalhousie University Law School.

Owing to the fact that Mr. Mitchell for the operators and Mr. Currie for the employees have not been able to agree on a chairman after several meetings, the Minister of Labor has been asked to appoint a chairman. This is a situation similar to that which existed at the formation of the Scott board.

J. B. McLachlan, district secretary-treasurer of the United Mine Workers, has refused to accept Robert Baxter's challenge to oppose him for the office of district president at the next annual election. In an interview, July 6, Mr. McLachlan made the following statement: "I have no intention of running for the office of president. If President Baxter wishes me to oppose him for the election, why doesn't he get some of the locals to nominate him for the office of secretary-treasurer? President Baxter knows perfectly well that no individual has the power to nominate himself for any office. According to the constitution that is a matter for the locals."

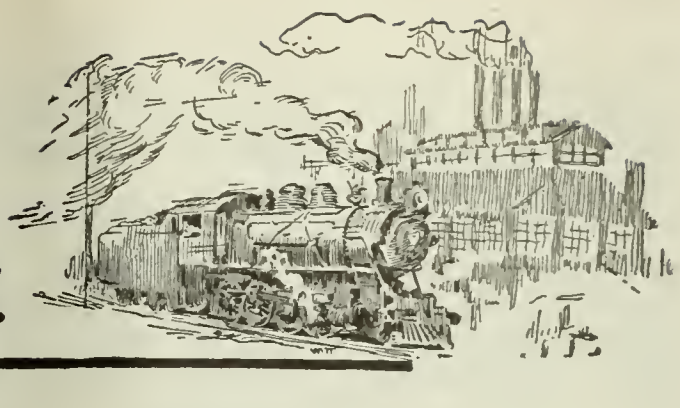
Going further, Mr. McLachlan said that he had received nominations already from four of the locals of the district and none of the lists contained the names of President Baxter, Vice-President Delaney, McCormick or Silby Barrett. The nominations which Mr. McLachlan has in his possession are Dan Livingstone for president, Alex S. McIntyre for vice-president, J. B. McLachlan for secretary treasurer, M. S. McNeil, of Dominion, for sub-district board member for District No. 1, and Alex Stewart, of Westville, for International board member.

Is Howat Merely Seeking Another Chance To Stir Up More Trouble for Somebody?

ALEXANDER HOWAT is ready to have his followers in Kansas return to work at once in the mines there. This decision was reached at a recent mass meeting of about 700 men favorable to the Kansas mine-union president deposed by international headquarters of the union last autumn with his entire entourage of officers. Louis Burnskill, chairman of the meeting, said that the men saw no other way for them to become reinstated in the union than to go to work. Naturally enough, many observers see in this action just another effort to embarass John Lewis and the other leaders of the United Mine Workers of America.



Production and the Market



Weekly Review

LAST week was a trying one for the coal buyer. Production was curtailed by the July 4 holiday and the available supply was further cut down by a serious congestion of loads in the non-union producing fields. The scarcity became so acute toward the end of the week that higher prices were inevitable.

The consumer who had delayed buying in order to obtain the lower freight rate after July 1 now finds that spot prices have more than wiped out the 10-per-cent reduction. In the meantime stocks have been reduced below the safety point and the procurement of immediate supplies is becoming imperative.

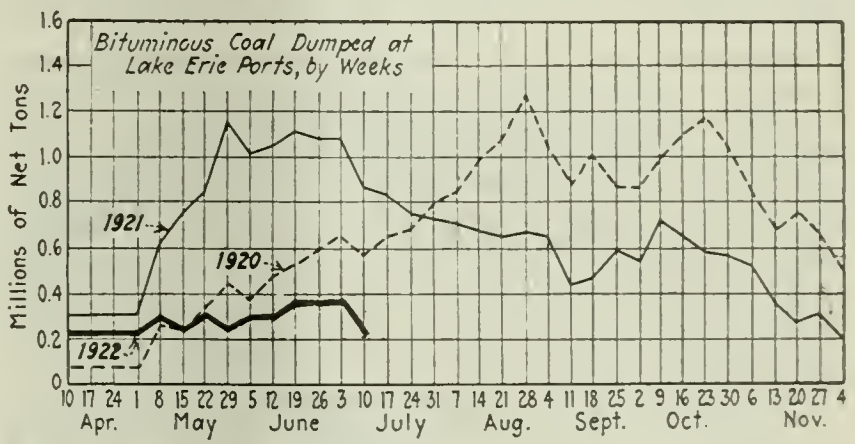
Quotations have definitely slipped out of the bounds suggested by Secretary Hoover. *Coal Age* Index of spot bituminous prices stands at 301 on July 10, an advance of 11 points as compared with 290 on July 3. This week's index represents an average spot price at the mines of $3.64, which is 13c. over the average for the previous week. The strengthened prices are most noticeable in western Kentucky, where no maximum price has been agreed upon. This coal is selling well over the $5 mark. Eastern Kentucky and the West Virginia high-volatiles are now using the Hoover figure of $3.50 as the minimum, with the top price strong at $4. Low-volatile prices are being held more firmly in check, but sales exceeding the Hoover maximum are becoming increasingly numerous.

Midwest Market Most Active; Price No Factor

The market is most active in the Middle West. Price seems to be no factor in that territory, the main desire being to get coal. Not only are the smaller consumers clamoring for tonnage but the railroads and large users are being forced to replenish their supplies on the spot market. The demand is so good that old piles of slack coal at Indiana mines, some of it on the ground for years, is being marketed around $2.50.

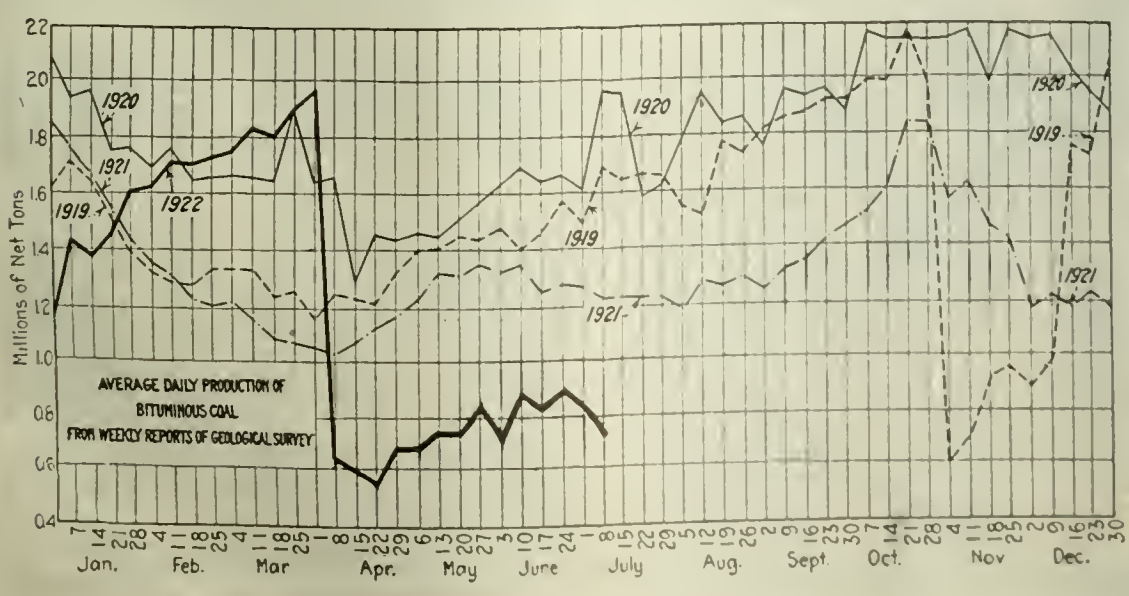
A panicky feeling now prevails throughout the Northwest. Commercial supplies at Duluth-Superior are less than 550,000 tons of bituminous coal and 250,000 tons of anthracite, the latter being of the less-wanted sizes. Total dock receipts this year were 288,000 tons to July 1, as compared with more than 4,000,000 tons in the corresponding period last year. Dock coal is being doled out to needy consumers and none else. It is now apparent that every day's delay in Lake coal traffic is adding to the Northwest's coming predicament next winter.

New England coal sales are increasing. Inquiry is only relatively better, however, as large consumers still have good supplies on hand. So many diversified de-



mands are being made on the fields supplying the Hampton Roads piers that prices are stronger, and coastwise freights reflect this condition, although there is no dearth of vessels.

So far the railroad shopmen's strike is not felt on the surface although it is hampering the movement of loads in the Kentucky fields. This trouble also is affecting the movement of coal South. The Erie has canceled 21 suburban trains on its New York City schedule, giving as a reason "shortage of coal." This is surprising news, coming atop the railroad strike, as it is the first intimation that railroad fuel supplies were near the danger mark. The outstanding feature of the coal strike last week was the preparation of



Estimates of Production

(Net Tons)

BITUMINOUS

Week ended:	1921	1922
June 17	7,551,000	5,013,000
June 24 (*b*)	7,704,000	5,363,000
July 1 (*a*)	7,658,000	5,207,000
Daily average	1,276,000	868,000
Calendar year	196,464,000	187,833,000
Dailjav. cal. yr	1,279,000	1,216,000

ANTHRACITE

June 17	1,941,000	22,000
June 24	1,847,000	24,000
July 1 (*a*)	1,868,000	25,000

COKE

June 24 (*b*)	50,000	110,000
July 1 (*a*)	47,000	114,000
Calendar year	3,398,000	3,216,000

(*a*) Subject to revision (*b*) Revised from last report

certain large Pittsburgh district producers to resume operations at once, under guard. Labor shortage is beginning to be felt in Alabama, where peak production is fast being approached.

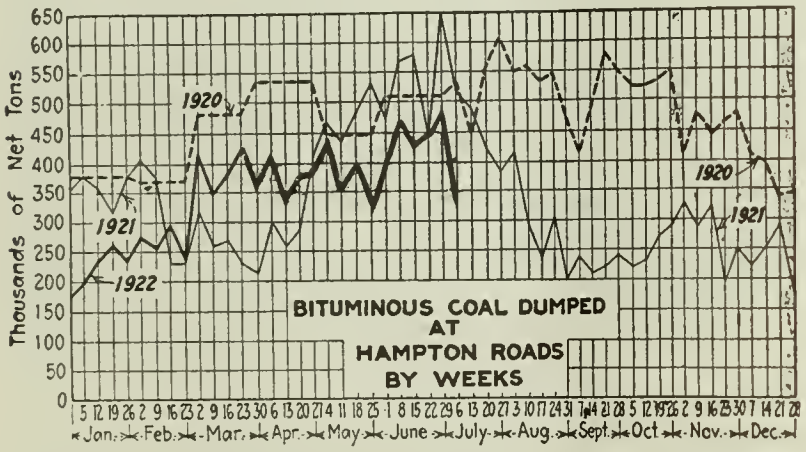
The anthracite supply is running down, despite the indifference of consumers. Retailers are listing increasing orders for delivery as soon as possible, conserving present meager supplies for hotels, hospitals, etc., which must have coal through the summer and autumn.

BITUMINOUS

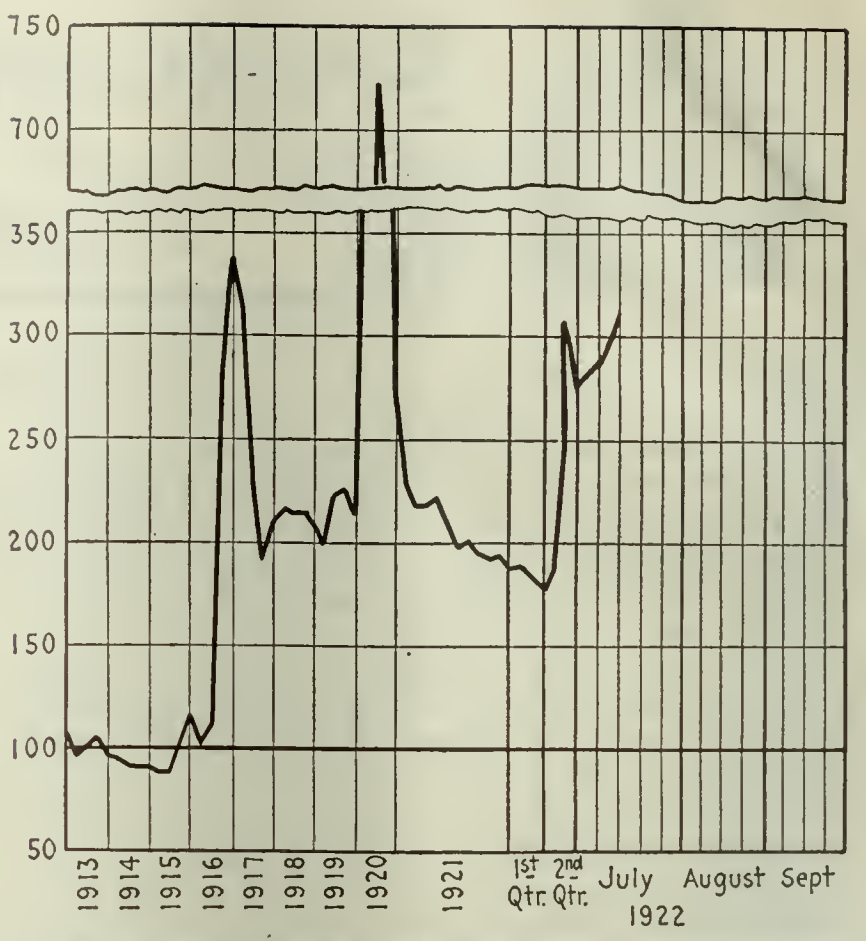
"Production during the fourteenth week of the strike was interrupted by the Independence Day holiday," says the Geological Survey. "The total output of bituminous coal probably will fall between 3,500,000 and 4,000,000 tons, and even the average production per working day will show a decrease. Production of anthracite remains practically zero.

Complete returns for the thirteenth week (June 26-July 1) indicate an output of 5,207,000 tons of bituminous coal and 25,000 tons of anthracite, a total of 5,232,000 tons, of all coal. In the corresponding week of 1921 bituminous mines produced 7,660,000 tons and the anthracite mines 1,870,000 tons, a total of 9,530,000 tons. In 1920, a year of active business, the total coal raised was 12,064,000 tons.

"The record of daily loadings of cars of bituminous coal shown in the following statement clearly discloses the effect of the Fourth of July holiday. On Saturday, July 1, 12,614



cars were loaded as against 13,993 cars on the preceding Saturday. On Monday only 11,165 cars were loaded. On Independence Day itself production ceased almost entirely, and the recovery thereafter was slow. By Thursday, July 6, loadings had reached 14,000 cars but were still running 2,000 cars below the level of the week preceding. Even



Coal Age Index 301, Week of July 10, 1922. Average spot price for same period $3.64. This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the total output of the United States, weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. (Pittsburgh District, Illinois, Indiana and eastern Ohio prices not included in figures for last week.)

allowing for full recovery on Friday and Saturday, it does not appear likely that the week's production can pass 3,900,000 tons."

DAILY LOADINGS DURING THE STRIKE

	1st Week	9th Week	10th Week	11th Week	12th Week	13th Week	14th Week
Monday	11,445	15,058	14,597	15,474	15,311	16,747	11,165
Tuesday	11,019	11,056	15,269	15,849	16,622	15,748	334
Wednesday	11,437	15,222	15,999	14,905	17,032	15,656	12,154
Thursday	11,090	13,790	16,325	14,884	16,432	16,402	14,112
Friday	11,296	14,523	15,864	13,933	16,073	15,980	.....
Saturday	8,888	12,545	13,991	13,465	13,993	12,614	.....

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

	Market Quoted	June 12 1922	June 26 1922	July 3 1922	July 10 1922†
Low-Volatile, Eastern					
Smokeless lump	Columbus	$3.75	$3.65	$3.65	$3.50@$3.75
Smokeless mine run	Columbus	3.50	3.45	3.45	3.35@ 3.50
Smokeless screenings	Columbus	3.20	3.35	3.25	3.25
Smokeless lump	Chicago	3.65	3.65	3.65	3.50@ 3.75
Smokeless mine run	Chicago	3.40	3.40	3.40	**3.35@ 3.50**
Smokeless lump	Cincinnati	3.65	3.65	3.75	3.75
Smokeless mine run	Cincinnati	3.40	3.45	3.45	3.50
Smokeless screenings	Cincinnati	3.00	3.15	3.25	3.25
*Smokeless mine run	Boston	6.65	6.10	6.20	**6.25@ 6.40**
Clearfield mine run	Boston	3.25	3.30	3.45	**3.25@ 3.75**
Cambria mine run	Boston	3.75	3.65	3.70	**3.75@ 4.25**
Somerset mine run	Boston	3.25	3.40	3.50	**3.50@ 3.75**
Pool 1 (Navy Standard)	New York	....	4.45	4.80	.....
Pool 1 (Navy Standard)	Baltimore	....	3.85	4.25	.....
Pool 9 (Super.Low Vol.)	New York	4.00	4.40	4.65	*4.25@ 4.50*
Pool 9 (Super.Low Vol.)	Philadelphia	4.05	4.30	4.55	**4.50@ 4.90**
Pool 9 (Super.Low Vol.)	Baltimore	4.25	3.75	4.00	**4.25@ 4.50**
Pool 10 (H.Gr.Low Vol)	New York	4.00	3.95	4.40	*4.10@ 4.40*
Pool 10 (H.Gr.Low Vol.)	Philadelphia	3.75	4.00	4.25	**4.25@ 4.60**
Pool 10 (H.Gr.Low Vol.)	Baltimore	3.75	3.75	4.00	**4.25@ 4.50**
Pool 11 (Low Vol.)	New York	4.00	3.75	4.15	*3.90@ 4.15*
Pool 11 (Low Vol.)	Philadelphia	3.50	3.75	3.90	**4.10@ 4.35**
Pool 11 (Low Vol.)	Baltimore	3.75	3.75	3.90	3.50@ 4.25
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	4.00	3.90	4.25	*3.75@ 4.00*
Pool 54-64 (Gas and St.)	Philadelphia	....	....	....	3.50@ 3.75
Pool 54-64 (Gas and St.)	Baltimore	3.80	3.75	3.90	3.50@ 4.25
Kanawha lump	Columbus	3.65	3.65	3.65	3.50@ 3.75
Kanawha mine run	Columbus	3.40	3.40	3.40	3.25@ 3.50
Kanawha screenings	Columbus	3.15	3.30	3.15	3.00@ 3.25
W. Va. Splint lump	Cincinnati	3.50	3.50	3.65	**3.75@ 4.00**
W. Va. Gas lump	Cincinnati	3.50	3.50	3.65	**3.75@ 4.00**
W. Va. mine run	Cincinnati	3.25	3.40	3.45	**3.50@ 4.00**
W. Va. screenings	Cincinnati	$3.15	$3.15	$3.25	**$3.25@$3.40**
Hocking lump	Columbus	3.65	3.65	3.65	3.50@ 3.75
Hocking mine run	Columbus	3.40	3.45	3.40	3.25@ 3.50
Hocking screenings	Columbus	3.15	3.45	3.10	**3.15@ 3.25**
Pitts. No. 8 lump	Cleveland	4.00	3.95	4.25	4.25
Pitts. No. 8 mine run	Cleveland	3.70	3.90	4.00	3.90@ 4.15
Pitts. No. 8 screenings	Cleveland	3.70	3.90	4.00	3.90@ 4.15
Midwest					
West Ky. lump	Louisville	3.75	4.10	4.40	**4.50@ 5.00**
West Ky. mine run	Louisville	3.75	4.10	4.40	**4.50@ 5.25**
West Ky. screenings	Louisville	3.75	4.10	4.40	**4.50@ 5.25**
West Ky. lump	Chicago	4.15	4.20	4.45	**4.85@ 5.25**
West Ky. mine run	Chicago	3.95	4.20	4.45	**4.75@ 5.25**
South and Southwest					
Big Seam lump	Birmingham	2.20	2.20	2.35	2.30@ 2.40
Big Seam mine run	Birmingham	1.85	1.95	2.15	2.00@ 2.30
Big Seam (washed)	Birmingham	1.85	1.85	2.15	**2.25@ 2.50**
S. E. Ky. lump	Chicago	3.75	3.65	3.65	3.75
S. E. Ky. mine run	Chicago	3.50	3.40	3.40	**3.50@ 3.75**
S. E. Ky. lump	Louisville	3.75	3.60	3.75	**3.75@ 4.00**
S. E. Ky. mine run	Louisville	3.50	3.40	3.50	**3.50@ 3.85**
S. E. Ky. screenings	Louisville	3.25	3.30	3.50	**3.30@ 3.65**
S. E. Ky. lump	Cincinnati	3.50	3.75	3.70	**3.75@ 4.00**
S. E. Ky. mine run	Cincinnati	3.40	3.35	3.50	**3.50@ 4.00**
S. E. Ky. screenings	Cincinnati	3.15	3.15	3.20	3.25
Kansas lump	Kansas City	5.00	5.00	5.00	5.00
Kansas mine run	Kansas City	4.25	4.25	4.25	3.75@ 4.75
Kansas screenings	Kansas City	2.85	3.05	3.05	**2.85@ 3.75**

*Gross tons, f. o. b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.
NOTE—Smokeless prices now include New River and Pocahontas.

Lake coal dumped during the week ended July 10 was 243,946 net tons—230,362 tons cargo and 13,584 bunker—as compared with 390,452 tons last week. The total movement to date is 4,061,173 tons, as compared with 11,907,210 tons in the corresponding period last year. During June 247,542 net tons of coal, all bituminous, passed through the "Soo" for upper ports.

RECEIPTS OF COAL AT DULUTH SUPERIOR HARBOR *a*

	Hard	Soft	Total
April	4,562	35,169	39,731
May	.....	93,971	93,971
June	.....	155,034	155,034
Total to June 30, 1922	4,562	284,174	288,736
Corresponding period, 1921	449,078	3,794,545	4,243,623
Corresponding period, 1920	423,280	964,737	1,388,017
Corresponding period, 1919	469,470	3,312,302	3,781,772

(*a*) As reported by U. S. Engineer Office, Duluth.

All-rail movement of bituminous coal to New England declined to 642 cars during the week ended July 1, as compared with 669 cars in the week preceding. Congestion of the roads supplying the West Virginia mines has curtailed the movement of water-borne coal and enabled all-rail shippers to obtain slightly higher prices for their fuel in the New England territory.

Hampton Roads dumpings for all accounts were 338,800 net tons during the week ended July 6, as compared with 494,182 tons in the previous week. Some labor trouble at the piers delayed the program somewhat and less coal is en route, as demand elsewhere is strong. Prices at the piers are up and coastwise freights reflect the better demand.

COKE

Beehive coke production continues to gain slowly. During the week ended July 1 the output was 114,000 net tons, as compared with 110,000 tons during the preceding week. The principal improvement was due to increased activity in the Connellsville region, although the first week of July saw some decline owing to fresh labor troubles and rail congestion. Coke consumers are more and more turning to West Virginia and Alabama cokes, as Connellsville offerings are very limited.

ANTHRACITE

Production of hard coal in the thirteenth week of the strike was approximately 25,000 net tons. Practically the same amount was produced during the preceding week, This represents steam sizes dredged from the rivers, which is about the only steam coal being offered. Storage stocks of anthracite are reduced to egg and pea coal, the latter moving much old tonnage.

Lower prices when mining is resumed are somewhat of a question, even with the reduced freight rates, as there is still the impending Pennsylvania coal tax to be considered. Domestic consumers, however, apparatently are not interested in prices, being more concerned with getting their orders on file for delivery after the strike at prices ruling when the order is filled.

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 Inclusive	April 3 to June 24, 1922 Inclusive	Week Ended June 24
U. S. Total	45.6	55.7	....	....
Non-Union				
Alabama	63.5	64 6	70.6	83.4
Somerset County	55.5	74.9	(no report)	..
Panhandle, W. Va.	55.3	51.3	42.6	53.0
Westmoreland	54.9	58.8	81.8	87.0
Virginia	54.8	59.9	80.1	88.5
Harlan	53.3	54.8	54.8	60.4
Hazard	51.7	58.4	61.8	58.8
Pocahontas	49.8	60.0	76.6	83.0
Tug River	48.1	63.7	83.0	88.4
Logan	47.6	61.1	77.4	84.2
Cumberland-Piedmont	46.6	50.6	15.6	18.2
Winding Gulf	45.7	64.3	71.4	74.7
Kenova-Thacker	38.2	54.3	79.4	80.8
N. E. Kentucky	32.9	47.7	62.1	64.7
New River‡	24.3	37.9	24.3	49.2
Union				
Oklahoma	63.9	59.6	14.3	15.9
Iowa	57 4	78.4	0.0	0.0
Ohio, Eastern	52.6	46.6	0.0	0.0
Missouri	50.7	66.8	1.5	4.1
Illinois	44.8	54.5	0.0	0.0
Kansas	42.0	54.9	13.6	21.6
Indiana	41.4	53.8	0.0	0.0
Pittsburgh†	41.2	39.8	0.0	0.0
Central Pennsylvania	39.1	50.2	11.6	12.3
Fairmont	35.3	44.0	..	..
Western Kentucky	32.5	37.7	60.3	71.1
Pittsburgh*	30.4	31.9	0.0	0.0
Kanawha	26.0	13.0	4.8	10.4
Ohio, southern	22.9	24.3	0.0	0.0

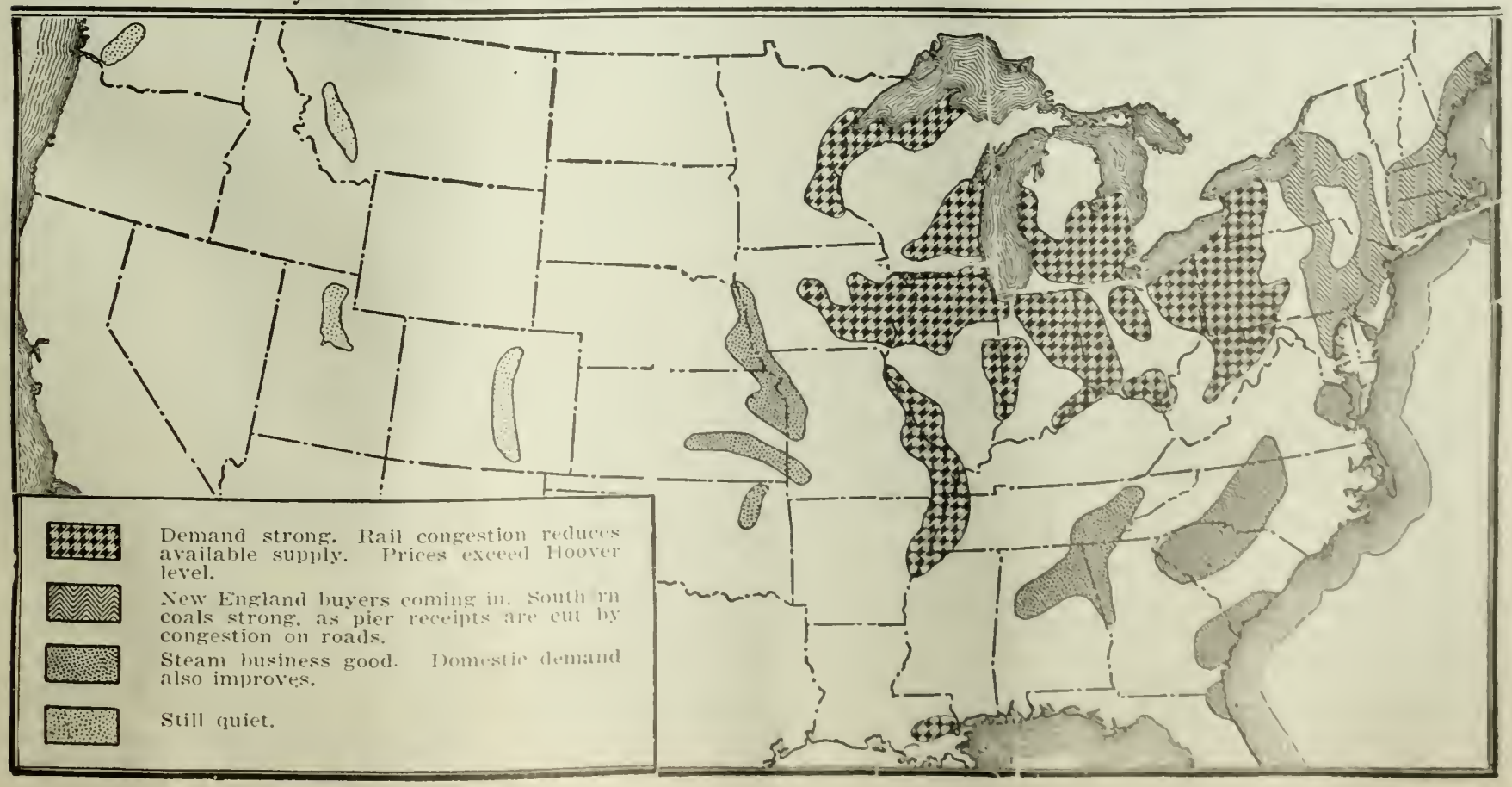
* Rail and river mines combined.
† Rail mines.
‡ Union in 1921, non-union in 1922.

Car Loadings and Surpluses

Cars Loaded:	All Cars	Coal Cars
Week ended June 24, 1922	877,856	96,960
Previous week	860,772	92,136
Same week a year ago	775,447	156,021
Surplus Cars:		
June 23, 1922	429,074*	160,733
June 15, 1922	442,252*	171,831
Same date a year ago	377,850*	165,000

* Includes "Bad Orders" in excess of normal number unfit for service.

Relative Activity of Markets for Bituminous Coal at End of Fourteenth Week of Strike



Foreign Market And Export News

Dull Market Hurts British Industry

Export quotations on British coals are at best hardly firm. There is a freer line of inquiry, however, and emergency shipments to the United States are continuing. South America, India and the Continent are asking for quotations. Production during the week ended June 24 was maintained at the level of the previous week, according to a cable to *Coal Age*. The output was 4,354,000 gross tons as compared with 4,350,000 tons the week before. The recent poor market has been followed by the closing of some operations.

There is a well-organized campaign among the miners to secure alteration of the wage standard, and to place the wages on a level with the cost of living.

United States May Exports, By Customs Districts

Customs Districts	Gross Tons Bituminous	Gross Tons Anthracite
Maine and New Hampshire	.....	294
Vermont	149	231
Connecticut	44	.....
St. Lawrence	11,579	21,989
Rochester	3,910	3,633
Buffalo	41,192	22,702
New York	234	6,994
Philadelphia	5,600	4,393
Virginia	123,711	.....
South Carolina	10,980	.....
Florida	6,000	.....
Mobile	212	.....
New Orleans	392	10
San Antonio	500	100
El Paso	5,063	88
San Diego and Los Angeles	29	2
Arizona	601	.....
San Francisco	985	4
Washington	1,114	.....
Alaska	13	.....
Dakota	3,986	33
Duluth and Superior	4,257	89
Michigan	87,617	298
Ohio	91,383	.....
Total	399,551	60,860

Labor Trouble Slows Roads' Tonnage

Strike of electrical operators at the three terminals at Hampton Roads failed to tie up the coal movement through this port. Although some delay was experienced in dumpings, the movement has gradually increased until it is considered about normal.

When the men left their work, office men, and officials of the three railways, went immediately to the terminals, taking their places and continuing the operation. Coastwise vessels are now receiving coal as fast as they can make the round trip to New York and New England points and the situation locally is considered satisfactory.

Export clearances from Hampton Roads during the week ended July 6 were but two, namely, Nor. S.S. Thorgerd, with a cargo of 3,824 tons for Havana, Cuba, and the Jap. S.S. Yeifuku Maru, with a cargo for Portoferrajo, of 7,476 tons.

Hampton Roads Pier Situation

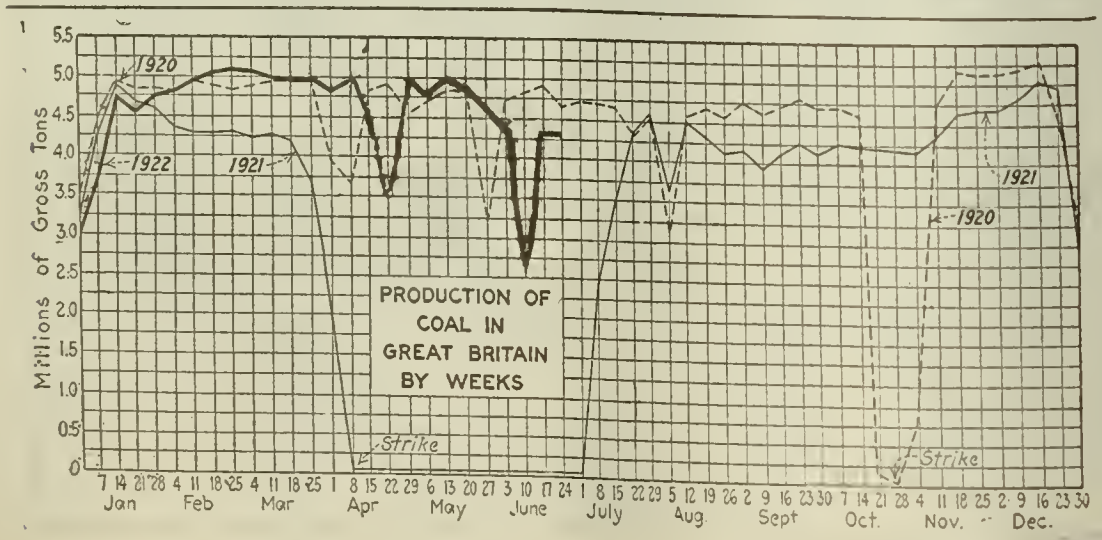
	Week Ended June 29	Week Ended July 6
N. & W. Piers, Lamberts Point:		
Cars on hand	2,644	2,481
Tons on hand	142,365	144,528
Tons dumped	197,797	137,209
Tonnage waiting	20,000	30,000
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	1,886	1,893
Tons on hand	101,400	122,000
Tons dumped	123,601	95,177
Tonnage waiting	8,800	25,000
C. & O. Piers, Newport News:		
Cars on hand	1,846	1,756
Tons on hand	87,400	94,000
Tons dumped	119,836	70,114
Tonnage waiting	.....	18,000

French Seek Way to Reduce Prices

The coal market is very quiet as regards house coal, but shows some activity in industrial fuel. Concessions for summer delivery of 3fr.@8fr. per ton on sized coals of the Nord and Pas-de-Calais, which were to be abolished on July 1, will be maintained up to the end of September. This is a proof of the downward trend of the market.

The French Ministers of Public Works and of Labor on June 24 received a delegation of miners, in view of a discussion of the questions raised by the operators of the Nord and Pas-de-Calais at Douai on June 7, and, particularly, on the threatened reductions of wages, which have already been accomplished in a few coal fields. Great stress was laid upon the difference between the respective prices of French and foreign coals, especially British, and particularly upon the fact that the wages now paid are much higher than those received by the British miners.

The ministers concluded by asking the delegates to see for themselves how this difference could be whittled down, and they suggested, as an alternative, an effort of the miners to materially increase the individual output. At the same time, the ministers assured the miners that it was the intention of the government to extend the measures already taken in view of a reduction in coal transportation rates on French railroads.



British Exports, May, 1920, 1921, 1922

Country	Gross Tons 1920	Gross Tons 1921	Gross Tons 1922
Russia	4,858	.....	32,994
Sweden	148,767	.....	214,210
Norway	88,729	.....	128,970
Denmark	76,466	264	225,230
Germany	.....	.....	601,473
Netherlands	.....	863	433,652
Belgium	114,511	.....	203,385
France	978,769	1,953	1,062,774
Portugal	7,888	1,561	95,765
Azores and Madeira	10,114	.....	3,709
Spain	11,058	.....	155,650
Canary Islands	55,917	.....	63,588
Italy	289,160	8,502	571,646
Austria	8,631	.....	3,373
Hungary	.....	.....	.....
Greece	.....	.....	34,604
Algeria	30,319	.....	77,158
French West Africa	.....	.....	23,433
Portuguese West Africa	27,915	.....	37,372
Chile	38	.....	3,704
Brazil	.....	.....	102,490
Uruguay	.....	.....	77,512
Argentine Republic	4,671	.....	208,227
Channel Islands	7,564	871	16,995
Gibraltar	81,994	.....	50,039
Malta	46,805	.....	24,455
Egypt	95,200	52	227,359
Anglo-Egypt. Sudan	151	.....	993
Aden and Depend.	.....	.....	30,089
British India	107	.....	95,725
Ceylon	.....	.....	12,794
Other countries	49,629	.....	237,862
Total	2,139,261	14,066	5,057,230

QUANTITY AND VALUE OF EXPORTS, MAY AND FIRST FIVE MONTHS

	Gross Tons May	Gross Tons 1st 5 Mos.
1920	2,139,261	12,500,925
1921	14,066	6,017,946
1922	5,057,230	22,390,312
	Value	
1920	£8,643,499	£46,967,652
1921	32,861	15,420,883
1922	5,790,288	25,455,817

Pier and Bunker Prices, Gross Tons

PIERS

	July 1	July 8†
Pool 10, New York	$7.25@ $7.60	**$7.75@ $8 10**
Pool 11, New York	.....	7.00@ 7.25
Pool 9, Philadelphia	7.60@ 8.20	7.60@ 8.20
Pool 10, Philadelphia	7.50@ 7.75	7.50@ 7.75
Pool 71, Philadelphia	8.50	8.50
Pool 1, Hamp. Rds	6.25	**6.25@ 6.40**
Pools 5-6-7 Hamp. Rds.	6.25	6.25
Pool 2, Hamp. Rds	6.10@ 6.15	**6 25**

BUNKERS

	July 1	July 8†
Pool 10, New York	$7.55@ $7.90	**$8.00@ $8.25**
Pool 11, New York	.....	7.30@ 7.60
Pool 9, Philadelphia	7.75@ 8.35	7.75@ 8.35
Pool 10, Philadelphia	7.60@ 8.15	7.60@ 8.15
Pool 1, Hamp. Rds	6.25	**6.25@ 6.40**
Pool 2, Hamp. Rds	6.15	**6 25**
Welsh, Gibraltar	43s. f.o.b.	43s. f.o.b.
Welsh, Rio de Janeiro	57s.6d.f.o b.	57s.6d.f.o.b.
Welsh, Lisbon	43s. f.o.b.	43s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	42s. t.i.b.
Welsh, Messina	39s. f.o.b.	39s. f.o.b.
Welsh, Algiers	38s.6d.f.o.b.	38s.6d.f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b.	65s. f.o.b.
Welsh, Madeira	42s.6d.f.a.s.	42s.6d.f.a.s.
Welsh, Teneriffe	40s.6d.f.a.s.	40s.6d.f.a.s.
Welsh, Malta	44s.6d.f.o.b.	44s.6d.f.o.b.
Welsh, Las Palmas	40s.6d.f.a.s.	40s.6d.f.a.s.
Welsh, Naples	38s.f.o.b.	38s.f.o.b.
Welsh, Rosario	52s.6d.f.o.b.	52s.6d.f.o.b.
Welsh, Singapore	55s. f.o.b.	55s. f.o.b.
Welsh, Algiers	38s.6d.f.o.b.	38s.6d.f.o.b.
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Port Said	49s. f.o.b.	49s. f.o.b.
Alexandria	43s. f.o.b.	43s. f.o.b.
Capetown	35s. 3d.	35s. 3d.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	July 1	July 8†
Admiralty, Large	25s.@ 25s.6d.	*24s.6d.@ 25s.*
Steam, Smalls	17s6d@ 18s6d.	*17s.6d.@ 18s.*
Newcastle:		
Best Steams	24s.	24s.
Best Gas	21s6d@ 22s6d	*21s.6d.@ 22s.*
Best Bunkers	18s.6d.@ 20s.	**20s.6d**

†Advances over previous week shown in **heavy type**: declines in *italics*.

North Atlantic

Consumers Seem Shy; More Inquiries for July Delivery

Much Interest Evinced in Spot Market —Orders Following Freight Cut Not Up to Expectations—Where Possible, Buyers Await Washington Developments.

CONSUMERS are still hesitant, but show considerable interest in the spot market. The freight reduction has not yet been productive of the volume of orders anticipated after July 1. The buyer who can do so is still delaying in the hope that the Washington conference will bring about an early resumption and lower coal prices. There is, however, a growing line of inquiry for July deliveries.

The rail trouble is not apparent on the surface but nevertheless it constitutes a disturbing factor in the situation for consumers, as their stocks are sadly in need of replenishment Demand at Tide is still below the line call and prices at the piers are held down by offerings of Southern coals.

NEW YORK

An offering of about 200 tons of Leeds (English) coal at $6.50, harbor, or about $7 alongside, was reported during the week. Those wholesale dealers who had been offered the coal were acting carefully before deciding the question of purchase. It was not thought likely that the English coals would be brought here in large quantities, at least not so long as the output of domestic coals continue on the present basis.

Inquiries are rapidly increasing, many prsopective buyers asking particularly about July deliveries. There were less than a thousand cars at the piers on July 7. Line demand was stronger, with equally more strength in quotations.

Southern coals are in steady demand, with quotations gaining strength. Considerable of these coals are coming forward, most of it, as heretofore noted, on consignments. Quotations to this harbor ranged $8@$8.50.

Quotations changed frequently during the week. Some unclassified coal said to be equal to Pool 9 was offered around $4.70 early in the week, while later straight Pool 9 was quoted $4.15 and Pool 10, $3.85.

PHILADELPHIA

Hesitant but anxious fully describes the consumers' attitude. There can be no question as to their need for coal as many are believed to be much lower on their reserves than has been their wont for many a day. Yet even with the freight reduction wiped off the boards as an excuse, they are more than hopeful that the President's conference is going to send the men back to work.

So far as surface conditions are discernible the railroads are going along as usual, but underneath there is no denying that rail movement is not all that it should be. The consumer would like to have more coal if the rail strike is going to be prolonged, but he does not want to pay too much for it. Production this week has been snapped up as soon as mined, although considerable shrinkage in tonnage was experienced on account of the two-day holiday.

Prices have further increased, with quotations barely being made except on the unclassified coals, as all other grades are quickly moved on previously entered orders. Inquiries have greatly increased of late and while a very large percentage of them can be placed in the curiosity class, quite a goodly number are productive of actual orders.

CENTRAL PENNSYLVANIA

Production reached the strike peak in June. Figures show 15,535 carloads, as compared with 11,915 in April and 12,622 in May; about a 15 per cent production in comparison with March, when the expectation of a strike led to an unusually high tonnage.

Prices have advanced slightly. Pool 1, the best grade, is selling at $4.50, while Pool 10 is $4.25. Other grades are around $4.

The strike situation is very quiet throughout the field. President John Brophy of District No. 2, U. M. W., attended the Washington conference. There was no disorder over the holiday season.

UPPER POTOMAC

After enjoying a period of peace for a few weeks, the Upper Potomac saw further strike demonstrations last week. This resulted in the arrest of at least a hundred miners and their wives. Notwithstanding the efforts of the union to prevent operations, production continues to grow. There are approximately 35 mines now producing. There is also a brisk demand for coal, which is commanding fancy prices.

BALTIMORE

As the rate cut of July 1 was just about offset by tighter prices due to the fact that shipments to this point let down considerably just prior to that date, the expected rush for fuel failed to develop. Local consumers are buying in strictly limited quantities and no effort at storage is noted. While some 70,000 tons of coal from Hampton Roads has recently been barged to this city, as a relief to the scant movement of B. & O., and particularly Pennsylvania coals, there is now a strong probability that this barge movement will be sharply curtailed. In coal circles it is felt that a move recently made through the C. & O. and B. & O. for a tariff from mines direct to Baltimore will allow delivery of New River coal at a price which will prevent as active water-borne competition as has been going on recently.

The all-rail tariff established to run from July 5 to Oct. 31, is $3.65. The barge-borne coal is also under an increasing handicap, as when this movement began charters were available at 50c.@60c., while at present the demand rate is between 80c.@90c.

There is a tight market evident, and little quibbling by purchasers when they actually need coal. While the export situation has been absolutely stagnant since April 10, there is now a steady growth of the use of bunkers.

FAIRMONT

Less mines were working during the last week of June than during the previous week and yet production was on just as high a level. With the approach of July there was much more violence and disturbance on the part of strikers than had been true at any time during the strike. It became necessary to swear in hundreds of deputy sheriffs for the protection of life and property. There is a ready market for all the coal produced. Wagon mines were increasing production.

South

BIRMINGHAM

The market was very active last week, and there was a strong demand for all the free steam coal available, the anticipated production for the next thirty days being sold up. Railroads were the principal purchasers, most of the coal going into sections where the supply of fuel has been cut off by the strike. No special attention was paid to grades or preparation, mine-run and washed coal bringing practically the same figures, the price basis being about $2.50. Some contracts have been closed for the remainder of the coal year with railroads that formerly used west Kentucky coal, and also some industrial contracts have been made in the Mississippi Valley. Inquiry from home territory is still comparatively light. Domestic demand has not improved materially.

Big Seam mine run is quoted at $2.20, washed $2.25@$2.50, the prices on all other grades of mine run being around $2.50@$2.60, washed $2.50@$2.75.

Quotations on lump and egg follow:

Carbon Hill	$2.30@$2.55
Cahaba	3.05@3.85
Black Creek	3.05@3.30
Corona	3.25@3.50
Montevallo	4.10@4.35

Production during the week of June 24 was the highest for any similar period since 1917, the record year, a total of 360,000 tons being reported. A number of mines which have been idle for the past twelve to eighteen months are now active again on full time.

VIRGINIA

Output is averaging 225,000 tons a week as against a potential capacity of 254,000 tons. In other words, production was averaging about 90 per cent of capacity and in some parts of the field was on even a larger scale. "No market" losses have been almost completely eliminated. A shortage of labor is the principal handicap.

Anthracite

Consumers Show No Concern As Domestic Stocks Dwindle

Buyers Ask Early Delivery, but Orders Are Small—Scarcity of Hard Coal Moves Storage Pea—Booking of All Steam Coal at Mines Brings River Barley to Forefront.

DOMESTIC supplies are running down, with little interest being shown by consumers. What orders the retailers do receive are being listed for delivery at the earliest possible moment, but the volume is not large. The impending State tax on coal looms as a factor which may offset the saving made possible by lowered freights. The freight reduction, of course, will not be applicable to coal now in storage, such tonnage being considered as in transit.

Storage pea is about all that is being offered now and the scarcity of hard coal is moving much old tonnage of this size. River barley is in the limelight, as practically all steam coals at the mines have been moved or booked on order.

NEW YORK

Most city dealers have nothing but pea and buckwheat in their yards. Buckwheat is fast disappearing and wholesale dealers predict that with the movement of pea coal continuing a few weeks longer on the present basis it too will soon be cleaned up.

The order books of producers are being rapidly filled, retail dealers following their usual custom of placing orders for their requirements. With three months' production already lost producers and wholesale dealers are realizing that the principal question to be decided when mining is resumed will be that of distribution.

Consumers are now looking at the situation differently than they did a few weeks back and many have placed their orders, knowing they must not expect deliveries in whole.

Coal moved prior to July 1 and now in storage is considered to be in transit and will carry the old freight rate of $2.61 for domestic sizes and $2.47 for pea and smaller coals until delivered to the purchaser. The new freight rates to this tidewater are $2.34 for the larger coals and $2.22 for pea and smaller.

PHILADELPHIA

The principal occupation of the retailers during the past few days has been to list their customers' requirements for delivery at such a time as fresh-mined coal may be available. For the present the greatest pressure of this kind comes from the fellow who in the spring was absolutely certain that retail prices would drop several dollars a ton.

A trip to the mining regions reveals that the miners are buoyed up by the hope that the Washington conference will be successful and are actually anxious to get back. In the matter of lower prices there are some who feel that even the advantage of lowered freights—which for P. & R. deliveries are $2.39 on prepared and $2.14 on pea and smaller—will be lost in the imposition of the state tax on coal. While no company has made any decision in the matter, it would not be unexpected if at least some of them add the tax as a separate item, pending a final decision by the highest court.

There is very little coal left in the city but pea, and this is selling fairly well. In the steam trade the only offering is in river barley, which is moving well, with the top price still at $2.75. Dredgers are seeking an outlet among local shippers and even yet the offerings are considerably heavier than the sales.

BOSTON

There is dearth of news here on hard coal. The retail dealers in the larger cities have practically stopped taking orders for spot delivery. Reserves are at a low point, and these are being kept for hotels, hospitals, and other necessary summer and early fall requirements. The only fill-up orders being taken at all are in the form of memoranda for delivery later on if and when the dealer has the coal and at the price current at time of delivery. This seems to satisfy a ramarkably large number of householders.

At wholesale the only merchandising now is in pea and buckwheat. A fair volume of pea is being shipped at prices that are practically the same as those ruling last month. A few of the producing companies still have a supply of this size, although big holes have been made in the reserve.

BALTIMORE

With New England and the Northwest growing more insistent for hard coal there looks to be scant prospect of any material receipts in this territory in the near future, even should the strike come to an abrupt end. Local yards are now almost without any stocks, but the public remains apparently without great fear of shortage. There are few inquiries for future deliveries.

BUFFALO

No coal is coming in, as all that was held at the mines appears to have been moved and sold. A few concerns still have a little coal, but the demand for it is small. It is estimated by dealers that there are from 80,000 to 90,000 families in the city that have little or no coal, yet they are making no effort to get any.

The general advice is to buy substitute fuel if it is to be had. It is expected that natural gas, including the byproduct gas from the local coke plants, will be more plentiful than it was last year.

ANTHRACITE FIELDS

All interest is now centered in Washington and everyone is anxiously awaiting some action to be taken there. The field was quiet last week. The main question on the lips of every one in the coal field is when will it be over. There is, however, a great deal of restlessness being displayed.

Coke

CONNELLSVILLE

The coke market has taken a stiff jump, being now quotable at $9, with higher prices talked of. There is usually no distinction between "furnace" and "foundry" grade. Most of the coke is in the ovens 72 hours or longer, and as to selection there seems to be little if any of that, so that operators offer their product merely as "coke."

The advance, however, is a sort of tempest in a teapot. The amount passing through the open market is hardly enough to operate a single blast furnace of moderate size. Occasionally a blast furnace may buy a little coke, but most of the sales are to foundries and miscellaneous users.

Consumers normally tributary to the Connellsville region are turning their attention still more to cokes from other districts, particularly West Virginia and Alabama. These cokes are at a freight disadvantage, but as one goes west from Pittsburgh the disadvantage, as compared with Connellsville, decreases, and the general freight reduction July 1 helps as well. The byproduct ovens are the mainstay of the furnaces now.

The *Courier* reports production during the week ended July 1 at 55,040 tons by the furnace ovens and 15,170 tons by the merchant ovens, a total of 70,210 tons, an increase of 2,160 tons.

UNIONTOWN

The shopmen's strike has affected fuel movement in the Connellsville region only on one road, that of the B. & O., and there are now indications after one week of the strike that the carrier is making some progress in reorganizing repair crews. So far the Pennsylvania has been able to supply maximum requirements for coal and coke loading and to move the fuel freight promptly.

While uncertain delivery due to the shopmen's strike has joined curtailed production to "bear" the coal market, prices have not yet commenced to soar. Steel interests are receiving deliveries on orders placed several weeks ago but are not placing new ones. The railroads today are the principal coal buyers. There is not enough free coke being produced for blast furnace requirements and the odd lots offered are being grabbed at sky-high prices.

BUFFALO

The demand has suddenly improved, on account of the discovery that something was needed to take the place of anthracite for use in the canning factories and evaporators, which cannot use ordinary bituminous. Besides the city experts are advising consumers of anthracite to buy coke. The local ovens have a supply and will sell it about on a par with hard coal. The regular furnace demand is still small.

Chicago and Midwest

Shortage of Coal Rules Market in Middle West

It is Now a Case of "Anything Black" Instead of "What's Your Price?"—Disabled Transportation Plays Main Role—Market Freaks Common.

COAL trade in the Midwest region has reached a point where price is not the controlling factor. Nowadays the main struggle is to get the coal. During the past few days this region has been almost cut off from eastern Kentucky and other Eastern fields by transportation failures of one sort or another and in western Kentucky, the other principal producer, the situation was not much better. Concerns which have been jobbing coal since the strike began are now actually turning away business, informing customers that car jams and locomotive failures on the L. & N. and C. & O. have reduced the eastern Kentucky fields to 25 per cent production and western Kentucky to about 50 per cent. With stocks everywhere running low and railroads beginning to suffer, everything salable is selling, freaks of the market are common, and prices are pushing steadily upward.

"Coal men might as well take theirs now while they can get it," commented one of them who has weathered many such years as this, "because this condition is absolutely unstable. Just let some definite plan for possible resumption of mining come out of Washington and these prices will flop to the bottom overnight." However, there is no unanimity of opinion on this point. The country's reserve is so short today that even if every mine in the land were to open up tomorrow, the chances are there would be good business for them all at least until the first of the year. Transportation ills would be the main obstacle.

The shortage is such that within the past two weeks railroads in Chicago have bought screenings from retail yards by the wagon load and since "anything black" will sell, slack piles in Indiana have been opened up and their contents loaded and sold at $2.50 and even $2.75. In one case a pile at a mine which was closed down years ago was selling day by day at that figure.

CHICAGO

Demand is keen, supply short and the general upward trend of prices continues. At the end of the week just closed, western Kentucky had reached $5.25 and operators in eastern Kentucky were giving distinct evidence of getting ready to break over the Hoover maximums which most of them have been observing. Reports have been current of lesser companies selling at figures past $4. Unless the Washington conference produces some definite effect upon the strike at once, eastern Kentucky will get out of hand and bound upward.

The greatest difficulty is getting deliveries. The car jams and motive power shortages around the working fields materially reduced the flow of coal to a point where, at the end of last week, the arrival of 25 cars here was enough to stir up quite a good deal of activity. A number of railroads are getting so hard put for fuel that the fuel committee of the Western lines has fallen far short of supplying the demand and practically every road is buying whatever it can get, wherever it can get it.

Practically no smokeless is reaching here for the open market, although contract customers are getting small deliveries. Dealer demand is freshening fast. There is a strong tendency to boost the price, although it has not crossed the $3.75-mark yet.

SOUTHERN ILLINOIS

The last 12 or 15 cars of storage coal held since March in southern Illinois moved out last week and brought $5.50@$5.75 on the market for lump, egg and nut. Nearly all mine fields are now entirely free of members of the United Mine Workers, most of the work being done is by mine foremen who are not union members.

Nothing unusual transpires in Doquoin or Jackson. Storage coal in the Mt. Olive field is pretty well cleaned out and nothing is left in the Standard field except a little held on the southern Ry., which is now being loaded out.

INDIANAPOLIS

Retail prices of Pocahontas have advanced 50c., prices ranging $8@$8.50. The higher retail prices have followed the advances at the mines. The decreased freight rates will lower prices on West Virginia coal about 20c. per ton, but local dealers in the last increase say they anticipated this slight cut in fixing the new prices.

Coal stocks in Indianapolis are getting toward bottom, but evidently there is sufficient of the non-union mined coal being offered to prevent any serious shortage for a time. Local jobbers say that from now on coal will be more difficult to obtain in view of the constantly decreasing reserve supply, which is creating an extra demand.

WESTERN KENTUCKY

Demand is now so heavy that the railroads are having much trouble in supplying cars. With industrial concerns as well as railroads steadily increasing their requirements as old stocks are reduced, the demand is increasing and carrying prices with it. Many buyers are in the field, grabbing available production.

During the past few days retail inquiry has been heavier and some business has been placed. Consumers who have available cash are beginning to think about their winter needs. Prices on all coals are jumping.

In view of the fact that at the Hoover conference the request of western Kentucky operators for a maximum of $4.25 was refused, it left the field under no agreement as to price, and it looks as if it were operating on an open basis of accepting the highest bid for its production.

ST. LOUIS

As a result of the storage piles being nearly wiped out, in a great many instances, Kentucky coal is in fairly good demand, for steam only. It takes from 10 to 20 days for coal to come through on the L. & N., and while the Illinois Central service is better, the mines on that railroad cannot ship promptly.

Lump, egg, mine run and screenings from Kentucky are quoted $4.50@$5, depending upon the quality, the promptness of shipment and the preparation.

Dealers, however, still refuse to buy Kentucky coal for domestic and even the steam buyers are going slow for fear that the Illinois mines may resume while they have a big tonnage of high-priced Kentucky in transit.

The western Kentucky rate is reported to be $1.57 to East St. Louis and $1.87 to St. Louis until Aug. 1st, when the 10 per cent reduction will be effective.

Some Alabama coal has been moving in, but part of it has proven unsatisfactory. Some West Virginia smokeless is moving in for domestic.

LOUISVILLE

General demand continues strong, with railroad consumption steadily increasing. Retailer buying is heavier. Prices in western Kentucky are shooting up, and are now $4.25@$4.50 for all sizes. Eastern Kentucky is making an effort to stay with the $3.50 maximum, but in so doing is beginning to object to paying brokerage.

As predicted, with the lower freight rate in effect, more inquiries are being received, and indications are that higher markets will result, and that some mines that have not been operating will be in the swim again.

The shopmen's strike is threatening production as a result of further congestion of already overloaded terminals and shop tracks, with cars to be repaired, and shortage of motive power to move cars.

Canada

TORONTO

Demand for anthracite is increasing and dealers find it impossible to fill orders. The call for bituminous continues light, with sufficient on hand and coming forward to meet all demands. In addition to shipments from the non-union mines, some consignments from Nova Scotia are being received by water. Prices for bituminous are showing an upward tendency.

Quotations are as follows:

Retail	
Anthracite egg, stove and nut	$15 50
Pea	14 00
Bituminous steam	9 25@ 9 75
Domestic lump	11 25
Cannel	16 00
Wholesale, f.o.b. cars destination	
3-in lump	9 25@10 00
Slack	8 00@ 8 75

Northwest

Panicky Feelings Run Through North Region

Country Cries "Coal! Coal!" When There Is No Coal—Industries Have Not Yet Suffered — Anti-Hoarding Move Is on—Prices Tend Upward.

PRACTICALLY all of the Northwest is enjoying the same nightmare: Will there be enough coal for next winter? A panicky sensation fills most breasts, for the dock storage is about gone, little coal is coming in, and wholesalers are carefully portioning out contract coal to the most needy and turning away practically everybody else. A rush of orders is swamping the coal trade, especially since the drop in freight rates failed to have any effect on coal prices. In some sections, notably around Milwaukee, an effort is being made to prevent hoarding of anthracite.

Industries thus far have been able to get just enough coal to run on but none for storage. The feeling is that they will not suffer if a strike settlement comes soon. However it will have to come very soon if the Northwest as a whole is to have coal this winter at a reasonable price.

MINNEAPOLIS

The coal market in this section of the Northwest is getting panicky. Consumers are piling in orders upon coal men who can fill but a small percentage of them because the dock surplus, which once this summer loomed so large, has been absorbed by contracts until free coal available is now gone and little is arriving. A number of wholesalers are refusing to accept business for the future because of the uncertainty. The July 1 reduction in freight rates, upon which some consumers banked for a drop in coal costs, came like a paper dividend—it is practically valueless because there is no coal.

The Washington conference between operators, miners, and the government has come plenty late enough for the Northwest's comfort of mind. It is generally feared here that the negotiations there will lead to some sort of compromise instead of a clear cut settlement and that no marked reduction in coal prices will result in this region.

MILWAUKEE

Milwaukee is worried about coal. Dealers have plenty of orders but little with which to fill them. The situation is particularly acute in the case of hard coal. There is a small supply of egg, pea and buckwheat on hand, but most consumers want stove and chestnut sizes. At a public meeting of representatives of coal companies and civic organizations on July 5, a member of the trade held that if the strike is settled by Aug. 1, enough coal can be mined to supply the needs of the winter. Steps were taken to prevent hoarding of hard coal.

Manufacturers have been able to get enough soft coal thus far. Dealers think there will be no great inconvenience to industries.

Hard-coal prices remain unchanged. Following is the schedule of prices on soft coal and coke, established July 1:

Pitts., Hocking & Yough. screened	$9.75
Pile run	7.75
Screenings	6.75
West Virginia screened	8.00
Pile run	7.50
Screenings	7.00
Pocahontas screened	10.75
Mine run	9.25
Screenings	6.50
Smithing	10.25
Kanawha Gas mine run	7.50
Ill. & Ind. screened	8.00
Pile run	7.50
Screenings	6.50
Coke, large sizes	14.00
Pea and nut	10,00

Receipts of coal by Lake up to July 1 aggregate 700 tons of anthracite (screenings) and 606,261 tons of soft coal, against 392,200 tons of the former and 1,167,170 tons of the latter during the same period last year.

DULUTH

Shortage in coal has developed at the Head of the Lakes, and it is authoritatively stated that there are not more than 550,000 tons of bituminous coal and 250,000 tons of anthracite free on the docks. Matters are not yet at what might be termed a crisis, but the general outlook is far from encouraging.

One of the greatest contributing causes to the present situation are the unusual calls which have been made on the supplies here. Normal markets have taken but a small portion of the coal which has been shipped from here. Much has been sent by boat to Lake Michigan points, and even more has gone by rail to out-of-territory points.

Since last week two cargoes have been shipped to Lake Michigan ports and one has arrived here from Lake Erie. One more is reported as on the way. This will bring the total arrivals to 30.

Dock men have adopted the two or three car policy here. They will not take orders for more than this amount and are endeavoring to allocate the free coal evenly among needy customers of long standing.

The anthracite situation is even more stringent. Forty per cent of all hard coal is egg size. A large portion of the remainder is pea. Local dealers are known to be well taken care of, but country dealers are far below their requirements.

Prices on all coals are firm with some dealers showing a disposition to raise 50c.

New England

Unlooked For Improvement Noted in Market Conditions

Mild Reaction Surprises Trade in General—As Shipments from Some Quarters Rise, Others Shrink—Quotations f.o.b. Norfolk Up 20c@25c.

A MILD reaction has set in and the market shows a degree of improvement that was hardly looked for by the trade in general. While a few of the larger non-union operations are shipping coal in somewhat larger quantities, there are a good many others where local labor troubles have cropped out again. Production in the New River field, for instance, is now nearly 50 per cent, but in Somerset and other sections of Pennsylvania there is enough interruption to make output quite undependable. Apprehension of railroad troubles also has been a factor during the past week, and taking everything together the range of quotations f.o.b. Norfolk and Newport News is up 20c. @ 25c.

At Hampton Roads on July 5 the tonnage actually available for dumping was about 100,000 tons less than on June 26. The holiday would account for some of the difference, but on the other hand more sales were made and the 28c. reduction in tolls had already been discounted.

At rehandling points inquiry is only relatively better, for the tonnage in request is by no means large, but buyers who waited for the freight reduction and to see if coal would not sell for less are now obliged to enter the market for current requirements. The railroads and large mills still have comfortable reserves when slack operation and reduced traffic are considered, and it is still hard to see where any broad market can develop during the summer.

Coastwise freights share the improvement that is noted in the demand for coal. On large vessels for spot loading there is a small premium being paid, a few having been chartered at 95c.@$1 to Boston or Portland.

There is little change in the Pennsylvania grades, at least with respect to the amount of coal offering. Fair grades, when available, are quoted rather higher, due without doubt to improved demand at Hampton Roads and higher prices in consequence on the smokeless grades for delivery in New York harbor. With Pocahontas and New River being shipped from Tidewater re-handling points as far inland as Springfield and Holyoke, however, there is little outlet here for Pennsylvania grades on any high range of price, even though the smokeless factors are now asking $8@$8.25 on cars at Providence, Boston, and Portland.

Eastern Inland

Supply Inadequate to Meet Enormous Demand for Coal

Car Jams and Shortage Harass Working Mines—Hoover Top Price Now Market Bottom—Offerings Eagerly Taken—Reserves Need Immediate Replenishing—Lake Buyers Anxious.

DEMAND is enormous and the supply inadequate. Producing mines are handicapped by car jams and shortage. Prices have advanced above the Hoover level and $3.50 now represents the low of the range. Consumers eagerly take any tonnage that can be obtained. Reserves have been allowed to run down to such an extent, awaiting lower freights and the possibility of union resumption of mining, that immediate replenishment is necessary. The shortage will be serious if production cannot be increased at an early date.

Lake buyers are growing very anxious. The local demand is so if production cannot be increased at disadvantage. Much Lake tonnage must be crammed into the remainder of the season if a troublesome scarcity is to be avoided.

BUFFALO

The holiday set a slow pace for the week. Prices are a little stronger week by week. While consumers declare that they are not able to pay big prices they at the same time allow them to go up slowly. All the while the supply is rather in excess of the demand, though probably not greater than consumption. Everybody feels that the crisis is near and yet nobody is ready to express an opinion as to what is likely to be done. Consumers as a rule have coal enough for the present. Some of them report that they are offered more coal than they want and some have bought little or none yet. Others have looked for bargains and so have kept up their stocks. Prices are strong on the basis of $4.25 @$4.50 for ¾-in. and $4@$4.25 for mine run and slack, with slack most in demand. Add to this $2.09 for Allegheny Valley and $2.24 for Pittsburgh and No. 8, with various intermediate amounts for Bessemer, to cover new freights.

Receipts by water have run pretty uniform for the past few weeks. For the last week they were 54,980 tons; for June, 266,500 tons and for the season, 775,750 tons.

CLEVELAND

The long expected famine conditions have arrived. Demand in the last few days has been enormous and insistent, but unavailing. The railroad shopmen's strike has been a factor of importance in cutting down mining operations. Car shortages have developed and coal which was taken from the mines in the latter half of June has not passed the scales yet in many cases.

Consumption continues at an undiminished pace, despite the summer weather which usually causes a lull in business operations. As a result dealers are being bombarded with inquiries, in sharp contrast with the indifferent attitude of buyers a few weeks ago when hopes ran high for a settlement of the strike before July 1. The present condition bears out the prognostication that when the country's total stocks fell below 20,000,000 tons the danger point would be reached. Consumers are no longer pinning any hope for immediate relief in strike settlement, believing that no resumption of production is probable within the next few weeks, in any event. In the meantime they need coal urgently. Prices are rising, the range being $4@$4.50.

The Lake situation is beginning to look serious. This year's record is below the 1920 showing, when shipments were restricted early in the season by the outlaw railroad strike. A pooling plan for Lake shipments similar to that employed to meet the needs of the Northwest in 1920 is possible this fall.

COLUMBUS

A stronger demand has developed since July 1, when freight rates were reduced. The movement is heavier. All classes of purchasers are now coming into the market. Prices have advanced to the Hoover levels with some quotations made slightly above to cover jobbers' commissions.

The best buyers at this time are the utilities which are running rather low on their reserves. Railroads are buying rather briskly. Retailers are also placing orders. One of the features is the demand for threshing coal.

Lake trade is progressing as well as could be expected. The H. V. Docks at Toledo loaded 170,160 tons during the week ended July 5, making a total of 1,301,650 tons for the season.

EASTERN OHIO

Consumers appear to be in imminent danger of facing a coal shortage. Due to traffic congestion on originating railroads and to intimidation and other interference with stripping mine operations in eastern Ohio, the quantity of coal available in the spot market during the current week has diminished to a point where the supply is having difficulty in meeting the demand.

Inquiries are noticeably more numerous and not a few industrial plants will be in dire need of coal within 30 days.

Along with a more widespread demand for coal, prices have stiffened. Hoover prices now prevail as minimum, with steam coal quoted up to $4.15.

There has been quite a let up in receipts at the lower Lake docks during the past few days as the demand in other trades is increasing. It is quite evident that the bulk of cargo coal will have to be sent up the Lakes during the last 3½ months of the regular shipping season in view of the fact that for the current season up to July 4, including 816,080 tons sent to Buffalo and other Lake Erie ports, shipments were only 3,684,465 tons. Movement for the same period last season was 9,953,780 tons.

Receipts of bituminous coal at Cleveland during the week ended July 1 show a slight increase over the preceding week, the total being 1,145 cars, 1,026 to industries and 119 to retail yards.

PITTSBURGH

A policy of silence is maintained by coal operators as to the details of conferences at Washington. There is a partial admission that there was something in the rumors prevalent before the President called the conference that certain Pittsburgh coal operators intended to attempt resumption at some of the mines, on an open shop basis.

Nothing came of the proposal of the Pennsylvania state department of conciliation that a conference be held July 6 between operators of No. 2 and No. 5 districts, in Pennsylvania, of the U. M. W. and officials of the district organizations. The operators appeared at the appointed time and place and the miners' representatives did not.

Trading is still confined almost wholly to Connellsville steam coal, which has strengthened again, being now nearer $4 than the $3.75 quoted a week ago. The market is still well below the $4.50 maximum the Connellsville operators wished Secretary Hoover to countenance. There is a larger number of buyers in the market, while the big consumers are hardly as active as formerly, so that the total of demand is not materially changed. One large consumer has refrained from buying spot coal for a fortnight or more, being in the market only for 30, 60 or 90 day contracts, indicating a continuance of the belief, that after the strike coal will be far from plentiful.

On the whole, the non-union strikes in the Connellsville region have not waned any in the past fortnight, as they had been doing previously.

DETROIT

Prior to July 1, it was supposed that consumers were witholding orders to be in position to take advantage of whatever saving might be possible with the application of the reduction in railroad freight rates. With the new rates in operation for nearly two weeks, the buyers are still delaying action.

Despite the apparent adequacy of present supplies, the situation is viewed by the jobbers and wholesalers as extremely dangerous. Emphasis is placed on the assertion that even should the miners resume work with wages reduced, the operation of the law of supply and demand would prevent any substantial lowering of the cost of coal to buyers, owing to the depletion of reserves and the probable general demand to replace stocks now being consumed.

NORTHERN PANHANDLE

Steady gains are being made in output during the last week of June and at the outset of July. Nearly all the mines are in operation, the effort of the United Mine Workers to interfere with production having proved to be a flat failure. Mines find a ready market for their output, a large proportion of which is being utilized by transportation companies.

Cincinnati Gateway

Events Combine to Force Prices Above Hoover Limit

Holidays, Strike of Shopmen and Deluge of Buying Orders Create Excitement—Disappointment at Producing End Due to Transportation Troubles.

PAY day and holidays, shopmen's strike and a deluge of buying orders keyed up the Cincinnati gateway to a high pitch of excitement during the past week. Lake buyers and country dealers shot in letters and telegrams seeking any or all free coal that could be offered, while from the producing end there were disappointments because of the new angle that has been created through transportation difficulties.

Prices naturally slipped out of the Hoover bounds. Most of the wholesalers and jobbers were quoting these figures and declaring them as a basis of business, but with the buying pressure as strong as it is premiums and even direct advances over the set price are known to have been recorded.

CINCINNATI

Smokeless dealers report that they are holding to the Hoover prices and most of the Pocahontas coal seems to be held there, sales agents and direct sellers of coal declaring that those to whom they sell must be bona fide buyers or they threaten to cut off supplies to those found jobbing. Some New River producers selling through local jobbers were understood to be taking a premium on lump and egg which seems strongest in the demand.

High-volatile sales are also reported out of the set government range and Wednesday it was reported there was no good gas mine run, spot, that could be touched under $4. This state of affairs relates only to the "free" coal movement, for otherwise the avenues of trade hold to the established values.

The Louisville & Nashville announced that their maintenance men's strike had cut into their transportation affairs woefully. Some mines in Hazard, Harlan and Bell Counties had received no empties and were doubtful of getting loads away before the end of the week. The C. & O. also flew the flag of distress, though not so severe as the Kentucky coal roads. The N. & W. at this writing had been able to proceed fairly well.

Retailers took cognizance of the stringency created by the latest disturbance to the market and raised the price of smokeless lump and egg to $8.50 and the mine run to $7. Bituminous lump was quoted at $7 and the slack, $6. This is a full dollar advance over the current figures.

LOW-VOLATILE FIELDS

New River and the Gulf

The strike is no longer having any material effect in curtailing New River production, which is now ranging above 135,000 tons a week, with all mines working on a basis approaching normal, although some are without full crews. Some loss of production is due in part at least to a car shortage. Coal has accumulated at the Tidewater piers and there has been a slow movement of empties back to the mines.

Production in the Gulf region was forced down during the closing days of June owing to the inability of the mines to secure empties as promptly as needed. Under the circumstances the mines were not producing much more than 160,000 tons a week. Inasmuch as the bulk of the coal goes to Tidewater, the sluggish demand there had its effect until July 1 in the marketing of coal. Since the first of the month, however, there has been a better call, and prices have stiffened.

Pocahontas and Tug River

The same factors which have been responsible for retarding production to some extent in other smokeless fields have also handicapped Pocahontas producers, although the output toward the close of June was about 450,000 tons per week, which represented the peak of production for the month. The advent of July, with lower freight rates, has brought heavier batches of orders and more inquiries.

Tug River mines slipped a cog or two during the latter part of June but were still producing in the aggregate more than 110,000 tons, not all of which however was available for commercial purposes, since a large proportion of this output was going to industrial concerns, including steel mills who control a number of the mines in this region. The movement to Western markets was particularly heavy.

HIGH-VOLATILE FIELDS

Kanawha

The field at the outset of July began to feel a quickening of demand as a result of the lowering of freight rates. There is a ready market for what tonnage is available, further gains having been made in the output toward the close of the month despite threatened trouble on Paint and Cabin creeks which necessitated calling out two companies of militia.

Logan and Thacker

All previous production records in the Logan field were smashed during June, the output reaching nearly 400,000 tons a week during the last fortnight of the month. Much of the fuel produced is going to steel centers and the Lakes, with railroads also securing a large tonnage. At the beginning of July there was a better demand for domestic.

In the Kenova-Thacker field mining activity is marked as a result of the excellent demand. This field is now producing in excess of 200,000 tons a week with nothing to curtail production except the difficulty of securing more men and congestion on railroads, owing to the heavy movement.

Northeastern Kentucky

After holding back on account of the reduction in freight rates consumers were more conspicuous when the lower rate did become effective. This tended to increase production insofar as was possible in view of the difficulty in securing empties. There was also a better demand for domestic fuel than had been observed during the greater part of June. With buying on a heavier scale, prices stiffened somewhat.

West

KANSAS CITY

The one thing that stood out prominently last week was the decision by vote of the Howat followers to return to work. As they were expelled by the miners' union and are no longer members of the U. M. W., it is not clear how the mine operator's can employ them, and as Kansas industries want coal, what will the Industrial Court Law of Kansas do if the operators do not open their mines and give the men who apply for work, their old jobs back? It looks like a shrewd move on the part of Howat to check the matter up to the operators and at the same time get back at Lewis.

One of the companies that opened two of its mines by leasing them to the miners and selling the coal on a cooperative plan, is getting out about 25 cars per day and is considering putting all of its mines on the same basis. It is said that all the men necessary to operate, have applied for work, but what they will do after the other mines open up and pay on a regular agreed basis remains to be seen. Will they continue to work for a unknown wage (which depends on the price received for the coal) or will they desert and go to the mines where a stated wage is paid?

Prices are getting very ragged. Some mine run from the Kansas field is selling as low as $3.75 and as high as $4.75 and what little slack there is available is selling for as high as $3.75, while the list is $2.85. Lump coal is bringing $5 and there is very little demand.

SALT LAKE CITY

Pacific Coast buyers are again looking to Utah for their supplies as a result of the reduction in freight rates. It is many months since local operators did much business with the Coast. The local market has not changed much. Domestic consumers are not buying, except a little for immediate needs, with here and there a storage order. Some of those who are in touch with strike conditions are getting a little anxious. Coal is being mined today at about one-third the rate that is necessary if there is to be a good supply in consumers' bins next winter, according to one prominent operating official.

Some weeks ago the operators made a slight reduction to the retailers of 25c.@50c., according to grade. This was a sort of unofficial reduction and old prices—which include $4.50 for lump—are in effect again.

News Items From Field and Trade

CONNECTICUT

The Kurm Terminal Co., Bridgeport, will soon let the contract for a 1,500-ton capacity heavy timber and concrete constructed coal pocket at the yards along the Pequonnock River. The cost will be about $25,000. Conveying machinery and the usual equipment will be installed.

COLORADO

John J. Roche has been chosen president and general manager of the Rocky Mountain Fuel Co., at Denver, to succeed the late **D. W. Brown**, who died during June. Mr. Roche formerly was vice-president and secretary-treasurer of the company. **W. J. Brown**, of New York City, has moved to Denver and is now vice-president of the company and member of the board.

Fred Whiteside, chief engineer for the Victor-American Fuel Co., was seriously sick at his home in Denver late in June, following exposure during a mine inspection tour.

The Colorado Fuel & Iron Co. reports all of its mines in the Trinidad and Walsenburg districts to be normal in production. Mines in operation now in the Trinidad district are the Morley, Sopris, Primero, Frederick, Tabasco, Berwind, Toller. In the Walsenburg district: Lester, Ideal, Cameron, Walsen, Robinson No. 1, Robinson No. 2, Jobal, Kebler No. 2.

The Victor American Fuel Co. is operating its mines in Routt County, but is having difficulty getting miners in the Cañon City district.

It is expected that the tunnel blockade on the Moffat road will soon be cleared and transportation to mines in Routt County resumed.

INDIANA

As a result of complaints that farmers in a number of sections of the state do not have sufficient coal for threshing purposes, Governor Warren T. McCray, of Indiana, recently sent letters to sheriffs in sixteen mining counties of Indiana, directing the officers to give ample protection to mines which are operating in order to assure a coal supply for agricultural purposes. The Governor also made it plain that the state institutions were to be provided with adequate coal supplies.

The McClellan mine, south of Terre Haute, now in the hands of a receiver, will be operated at capacity at the ending of the coal strike, as a result of a court order issued recently authorizing Edward Shirkie, receiver, to borrow $35,000 for the purpose of developing the mine and placing it in running condition. **The Bickett Coal & Coke Co.**, creditor of the McClellan Coal Co., and plaintiffs in the petition for a receiver, filed with the court approval of the loan to the receiver. Mr. Shirkie will place a force of men at work immediately getting the mine in readiness for operation when the strike is concluded.

KENTUCKY

Development of coal, oil and gas properties will be undertaken on a large scale by the **Associated Coal & Gas Co.**, which has just been organized under the laws of West Virginia with an authorized capital stock of $500,000. This concern has secured a lease on 40,000 acres of coal land. Headquarters of the company will be at Welch, W. Va.

Interests connected with the **Kentucky Fuel Co.**, of Cincinnati, have purchased large holdings in the **Clay County Coal Co.**, operating in that county in southeastern Kentucky. A reorganization has been effected, with John Hoffman as president, J. H. Buchannon as vice-president, and L. F. Korning as secretary-treasurer.

MARYLAND

The J. C. Taylor Coal Co., of Cumberland, which operates the Taylor coal mining plant on the Astor branch of the Baltimore & Ohio, will take advantage of the lull in business because of the strike and erect fifty new miners' houses at the plant. Other improvements are being planned, including enlargements of the plant and the construction of a half mile of railroad siding.

MEXICO

Expenditures by the **American Smelting & Refining Co.** of a sum of $7,000,000 in the opening up of a new coal mine, the building of a byproduct coke plant, and the erection of a model village in the Coahuila district of Mexico, has been announced by William Loeb, Jr., vice-president of the company.

MINNESOTA

R. H. Salter, for many years head of the Western Weighing & Inspection Bureau, at Duluth, has resigned to go into the general store business for himself at Victoria, Minn. Mr. Salter is prominent in coal circles, as he has lived and worked in Duluth for many years.

MONTANA

More exhaustive determinations with regard to the flow of air in restricted passages and the flow of air through pipes, than ever before have been undertaken, are to begin at once under the **Bureau of Mines** auspices at Butte. For several years **Daniel Harrington** of the Bureau of Mines staff has been conducting studies in mine ventilation in the Butte area. A large amount of work in the same field has been done by the Safety Department of the Anaconda Company. During the next fiscal year, the Bureau of Mines expects to do more intensive work on these problems. Mr. Harrington will have the assistance of **George E. McElroy** and **K. T. Sparks**, mining engineers, who have had extended experience with the problems involved. The Montana School of Mines has provided headquarters from which the work will be conducted.

NEW YORK

Wesley Lieb, who was associated with W. A. Marshall & Co. for some time, has joined the forces of the F. J. Kerner Coal Co., 1 Broadway, and will be line sales manager. Mr. Lieb left on July 10 for a tour of the coal regions.

Members of the Buffalo coal trade have been approached by agents of the **Chelmsford Anthracite Coal Co., Limited**, of Toronto, soliciting purchases of stock. The prospectus declares that the company has "anthracite of very good quality," near Chelmsford in the district east of Lake Superior in Canada. An opinion has been obtained from the deputy minister of mines, Ontario, that such deposits are **"extremely doubtful"** as to commercial value.

OHIO

Eight coal companies in Ohio will lose the money for coal sold the state institutions under illegal contracts about a year ago or must be reimbursed by special act of the legislature. This is the substance of a decision rendered by Judge Sowers in Common Pleas Court in which it is held that none can collect through suits in the courts even if it is shown that they were innocent in the matter. The companies involved and the sums are: **H. W. Jenkins Coal Co.**, Columbus, $21,861; **Kinwood Coal Co.**, Columbus, $3,171; **Roberts Coal & Supply Co.**, Columbus, $2,453; **Sunday Creek Coal Co.**, Columbus, $3,843; **Castner, Curran & Bullitt**, Cincinnati, $8,120; **McVicker Coal Co.**, Cleveland, $16,329; **H. S. Odbert**, Cleveland, $15,439; **F. F. Taggart**, Massillon, $3,086.

The Kinwood Coal Co., Orton, is making extensive improvements at its local mine during the strike. Seam No. 3 is being opened and a number of entries prepared. The loading is done by chute on the main line of the Hocking Valley and a new cement bottom has been installed. G. E. Woodward, of Columbus, is at the head of the company, which controls about 1,000 acres of coal lands at Orton.

PENNSYLVANIA

An appeal has been taken by the **Lehigh Valley Coal Co.**, a heavy owner of coal lands in Northumberland County. The county commissioners placed an assessed valuation on the property of the company of $6,746,439, an increase of $1,908,641 over the previous three years. The original assessment was $4,837,825.

Stockholders of the **Brier Hill Coke Co.** at their annual meeting, held at Brier Hill, elected the following officers to serve during the coming year: **Thomas McCaffrey**, president; **James H. Grose**, vice-president; **N. B. Folsom**, treasurer; **W. B. Phelan**, secretary. The following were elected to the board of directors: **James B. Kennedy**, of Youngstown; **James H. Grose**, of Youngstown; **George F. Alderice**, of Youngstown; **J. G. Butler, Jr.**, of Youngstown; **Thomas McCaffrey**, of Brier Hill, and **W. B. Phelan**, of Brier Hill.

The United States District Court in Philadelphia late in June received the mandate of the Supreme Court issued upon the rehearing of the **Reading segregation case** before the latter body, and in harmony with that mandate the lower court has ordered that the Reading, the Philadelphia & Reading Coal & Iron Co. and the general mortgage-bondholders' committee confer, and on or before Oct. 30 submit to the court a plan for the modification of the segregation decree to conform to the Supreme Court's recent ruling. The modified plan is to provide for the apportionment of the liability of the Reading and the Coal & Iron company on the outstanding general mortgage bonds, and to apportion the lien of the general mortgage upon the property of those two obligors.

The Burrell methane indicator, developed by Col. G. A. Burrell in 1915, was modified during 1918 to the insulated type Burrell indicator. Though this instrument has been used in mines since its first introduction, it was not formally approved as safe and efficient for use in gaseous mines until March, 1922. The indicator is built by the Mine Safety Appliances Co., Pittsburgh. Approval No. 800 has been assigned to this company covering the device in the form approved.

In a final cleanup, old coal mines of Allegheny County are being reopened with the aim of salvaging coal acreage left untouched beneath farm buildings, removing the bottom foot of the Pittsburgh vein and taking out slack from the entries. The revival of the old diggings is noted near Carnegie, Walkers Mills, Rennerdale, Oakdale, Chartiers Creek, in the South Hills and Mt. Lebanon district, and in the Turtle Creek Valley, and along the lower Monongahela.

VIRGINIA

An official has authorized the statement that the Virginian Railway will build a **new coal pier at Sewall's Point**, more than doubling the capacity of the plant to dump coal. The expenditure involved will be about $3,000,000. Plans are now in preparation. Construction of the new pier will add about one-fourth to the coaling facilities of the port. According to present plans, the new pier will be devoted almost exclusively to dumping cargo coal, leaving bunkers and other coal to the pier now in use.

WASHINGTON

Senator Myers, Montana, in a second speech on the Herrin coal riots, scored the Illinois authorities for failure to prosecute those guilty of the outrages. He declared that unless Illinois punished the guilty parties the state would be disgraced and would not be fit to remain in the Union.

WEST VIRGINIA

An injunction has been granted, restraining the United Mine Workers from committing unlawful acts or from interfering in any way with the operations of the **Shamrock Fuel Co.**, at Houlf. The injunction is patterned after that in the Coronado case and is minute in detail. The Shamrock company applied for and obtained the injunction after several attempts had been made by strikers to close down the mine. About the same time the **New England Fuel & Transportation Co.** instituted eviction proceedings against a number of the 150 miners who continue to occupy company houses. The company obtained an injunction several weeks ago and since its former employees started to make trouble, it has initiated the effort to get rid of them.

Resumption of operations at the No. 3 Minden mine of the **New River & Pocahontas Consolidation Coal Co.**, in the New River field, completes the list of large companies whose mines have resumed production. The Minden mine has not been running for several months, but it now has a working crew of about 300 men, all of whom are old employees. The company declined to re-employ some of its former employees who have been active in creating trouble and disturbances and expects to get rid of that class of employees, whom it has invited to vacate its houses. Although the No. 3 mine is the only one now operating, other mines of the same company will be on an operating basis in the near future, it is stated.

The tipple at the Luella mine of the **H. M. Crawford Coal Co.**, of Philippi, was recently completely destroyed and the tipple of the **Radcliffe-Summerville Coal Co.**, was put out of commission, near Arden in Barbour County, by two explosions, the theory being that it was the work of union sympathizers in an effort to stop the operation of coal mines in Barbour County. Threats had been made that if these mines continued operations they would be destroyed.

The demand for men in Logan County has become such that some of the larger companies which have increased their working forces have found it necessary to house the additional miners temporarily in tents, pending the erection of more houses. **The Main Island Creek Coal Co.** has established three tent colonies at or near Omar, West Virginia.

West Virginia Department of Mines examinations for mine foremen and fire-bosses: Morgantown, July 21; Thomas, July 25; Charleston, Aug. 3; Beckley, Aug. 3; Wheeling, Aug. 14; Welch, Aug. 28; Logan, Aug. 31. Examinations will last two days.

Under the protection of an injunction issued by Judge Haymond Maxwell, of the Harrison County Circuit Court, work has been resumed at the Lewis mine of the **Hudson Coal Co.**, near Clarksburg.

ONTARIO

In the County Judge's Criminal Court, Judge Coatsworth sentenced **Hiram F. Slater** to two years' imprisonment and **Leslie P. Thompson** to eighteen months on charges of conspiracy to defraud the shareholders of the defunct **Nukol Fuel Company** and of the theft from the company of $400,000. They will serve their time not in the penitentiary, but in provincial institutions. Both men were promoters of the company, the failure of which caused losses to hundreds of shareholders throughout Ontario. They were found guilty recently after a trial lasting seventeen days.

WASHINGTON, D. C.

For the fiscal year which began July 1, the **Bureau of Mines** has at its disposition appropriations totaling $1,580,900. A portion of this amount is reserved for contingencies and certain allotments still are to be made, but the principal distributions of the year's fund as relating to the coal industry will be as follows:

Technical work at the Pittsburgh Experiment station in connection with mine explosions	$53,154
Investigations as to causes of mine explosions	64,490
Mine rescue stations	50,004
Tests of explosives	50,737
Tests of coal-mine dusts and gases.	31,655
Investigations of accident prevention appliances	10,400
Use of electricity in mine operations	16,240
Investigations of sanitary and health conditions in mines	29,400
Collection of mine accident statistics	18,840
Other technical investigations pertinent to mining industries	53,080
Operation of mine rescue cars	211,000
Equipment of mine rescue cars	75,000

C. E. Van Orstrand, of the Geological Survey, will make temperature tests in some of the oil fields of Ohio, Indiana, Illinois, Wyoming, Montana, California and Oklahoma.

George M. Hall, of the Geological Survey, has left for Billings, Mont., for a few months of field work in Fergus County.

In the deficiency bill now before Congress provision is made to pay coal compensation claims growing out of war prices to two companies. The claims are those of the **New River Coal Co.** for $27,834, and of **C. G. Blake**, for $43,559 for additional compensation for coal which was requisitioned by the Navy.

Traffic News

By a judgment just issued by the **Dominion Board of Railway Commissioners**, freight rates on coal, other than anthracite and coal moving westward from the head of the Lakes, are reduced to the basis which prevailed before September, 1920. This will be beneficial to the coal mining industry in the Maritime Provinces and also in the Western Provinces. The board orders that Schedule A rates, which means the general rate basis throughout Ontario and Quebec, be extended to include the territory between North Bay and Sault Ste. Marie.

Asserting in effect that it has full power to determine whether a community's railroad facilities were adequate, and therefore forbid the construction of a competing line, the I. C. C. has announced the **Harriman system of railroads** would not be permitted with its consent to enter the Spring Canyon part of the Utah coal fields to compete with the **Denver & Rio Grande Western.** It did that because in its estimation the last mentioned railroad now furnishes adequate transportation facilities for the mines. It therefore denied the application of the **Utah Railway Co.**, controlled by the United States Smelting, Refining & Mining Co., to acquire and to operate the **Utah Terminal Railway.**

Judge F. A. Geiger of the Federal Court at Milwaukee, Wis., dismissed the petition for an injunction restricting railroads operating in Wisconsin from putting into effect a 20 per cent reduction in intrastate freight rates on coal. The judge held that jurisdiction in the matter does not pass to the Federal Courts until the I. C. C. has ruled against an order by the state rate body. The I. C. C. alone has the authority to decide whether the reduced intrastate rates are discriminatory against the interstate rates. **The Chamber of Commerce of Menominee, Mich.**, which brought the action, declared that fully one-third of the coal shipped by Menominee dealers would have to pay rates 20 per cent higher than those paid by Wisconsin dealers on shipments to points in the state.

The Dewey Brothers Co., of Blanchester, Ohio, have requested the I. C. C. to declare that a rate of $2.24 a ton was reasonable after Aug. 26, 1920, and that $1.60 a ton was reasonable prior to that time, on coal from points in Kentucky and West Virginia to Blanchester, Leesburg, and Lynchburg, Ohio.

The appeal of the **Wasatch Coal Co.** to the State Supreme Court of Utah in the long- and short-haul controversy was lost. The coal company sought to recover damages alleged to have been suffered two years ago by certain alleged discriminatory charges in hauling coal from the company's mines in Carbon County to Salt Lake City. The court's opinion said that the Utah statute was rendered inoperative by the Federal act and upheld the constitutionality of the latter act under war power.

The I. C. C. has denied the application of the railroads and the **Northwestern Coal Dock Operators' Association**, to reconsider the case of the **Roundup Coal Mining Co.**, in which it recently held that the rates on coal from Roundup and Geneva, Mont., to points in North and South Dakota are unreasonable. The new rates will go into effect Aug. 2.

The D. & R. G. R. R. announces an additional reduction in slack coal rates from Utah to northern California points. The new rate is $5.15.

Criticisms, comment and suggestions on the system of car distribution now in vogue for mines in West Virginia has been invited in letters sent by the **Public Service Commission of West Virginia** to the various coal operators' associations in West Virginia. This inquiry is being made in connection with the investigation being conducted by the I. C. C. into the reasonableness and justness of regulations governing the distribution or allotment of cars to the mines of the country, and as to the rating of mines. A hearing is to be held in Washington July 17 in connection with the investigation, and public service commissions have been asked to co-operate to the end that the states interested may be represented.

Oral argument in the complaint of the **Clay County Coal Operators' Association**, scheduled for Washington July 13, has been postponed by the I. C. C. to a date to be fixed later.

Argument scheduled for Kansas City on July 21 in the complaint of the **McGrew Coal Co.** has been postponed.

Obituary

John H. McEwan, Provo, Utah, who was associated with the late Jesse Knight in the development of the Spring Canyon coal mining properties and later a prominent retailer in Provo, is dead at the age of 68.

Albert Bettinger, who spent more than thirty years of his life in work tending to the improvement of the Ohio River and who has done a great deal toward a 9-ft. stage from Pittsburgh to Cairo, died in Cincinnati recently. Mr. Bettinger was a firm believer that with the canalization of the Ohio River from Pittsburgh to Cairo it would pay its costs in coal transportation alone. He was also attorney for a large number of coal companies and transportation companies connected with the movement of river coal.

Association Activities

Colorado and New Mexico Coal Operators' Association

The board of directors of the association elected at the annual meeting in Denver were: W. D. Brennan, Phelps-Dodge corporations, Dawson, N. M.; Frank Bulkley, Baldwin and Crested Butte coal companies, Denver; L. A. Hayden, Hayden Coal Co., Denver; W. H. Huff, president, Victor American Fuel Co., Denver; Wm. B. McDonald, Rocky Mountain Fuel Co., Denver; S. S. Murphy, Huerfano Coal Co., Denver; H. F. Nash, Oakdale Coal Co., Denver; S. M. Perry, Moffat Coal Co., Denver; J. Van Houten, Rocky Mt. & Pacific Coal Co., Raton, N. M.; J. F. Welborn, president, Colorado Fuel & Iron Co., Denver, and F. R. Wood, Temple Fuel Co., Trinidad.

At the regular meeting of the board of directors the annual election of officers took place. F. R. Wood, Temple Fuel Co., Trinidad, was elected president; H. F. Nash, Oakdale Coal Co., Denver, vice-president, and F. O. Sandstrom, secretary and traffic manager of the association, secretary and treasurer.

Coming Meetings

American Chemical Society's annual fall meeting will be held Sept. 4-9 at Pittsburgh, Pa.; divisional meetings will be held at Carnegie Institute of Technology and general meetings at Carnegie Music Hall.

American Mining Congress. Twenty-fifth annual convention and exposition of mines and mine equipment will be held at Public Hall, Cleveland, Ohio, Oct. 9-14. Executive offices, the Hollenden Hotel; E. C. Porter, convention manager.

The Rocky Mountain Coal Mining Institute will hold its next meeting at Glenwood Springs, Col., Sept. 5-7. Secretary, F. W. Whiteside, Denver, Col.

New York State Coal Merchants' Association will hold its annual meeting at Richfield Springs, N. Y., Sept. 7-9. Executive secretary, G. W. F. Woodside, Arkay Bldg., Albany, N. Y.

National Safety Council. Eleventh annual Safety Congress at Detroit, Mich., Aug. 28 to Sept. 1. Executive secretary, W. H. Cameron, North Michigan Ave., Chicago, Ill.

Mine Inspectors' Institute of the United States of America is holding its annual meeting July 11, 12 and 13 at Chicago, Ill. Secretary, J. W. Paul, 4800 Forbes St., Pittsburgh, Pa. Headquarters Hotel Sherman, Chicago, Ill.

Coal and Industrial Exposition under the auspices of the Huntington Chamber of Commerce will be held Sept. 18-23 in the Chamber of Commerce Bldg., Huntington, W. Va. **The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers** will again hold its annual meeting in the same building during the exposition.

National Exposition of Chemical Industries will hold its eighth national exposition at the Grand Central Palace, New York City, Sept. 11-16. Manager, Charles F. Roth, Grand Central Palace, New York City.

The annual convention of the **American Mining Congress** will be held in Cleveland, Ohio, Oct. 9 to 14.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

Volume 22 NEW YORK, THURSDAY, JULY 20, 1922 Number 3

Tiding Over a Crisis

BITUMINOUS-COAL operators meeting in Washington this week were able after twenty-four hours of spirited debate to unite on only a partial acceptance of the President's proposal looking to the adjustment of the strike. On but one broad phase of the plan submitted to them, that of willingness to arbitrate and to participate in an investigation of the bituminous-coal industry, were they able to make unanimous report to the President. Three important areas, embracing all of the unionized fields of Pennsylvania, save a few individuals, and the State of Indiana told the President they could not agree with his proposal. Some thirteen other districts, from the Rocky Mountain region east to Ohio made unqualified acceptance, as already had the anthracite interests. Those taking such affirmative position represent a majority of the districts involved and a majority of the tonnage.

The split in the ranks of the bituminous-coal operators is serious and extremely unfortunate. The President had placed the operators in a serious predicament, not only in his original proposal but by the terms of his subsequent interpretations of that statement. To all intents he asked them to return in every respect to a position of *status quo* as of March 31. They were asked to pay the peak wage scale, grant the check-off and, it is unofficially reported, reinstate the four-state agreement until such time as a commission could investigate and make recommendations and awards. In other words it was asked in the interest of national welfare that practically every point and principle for which the operators had held forth against the miners' union be subverted. On this general statement there is and was no apparent disagreement.

Where the councils of the operators divided was on a matter of policy—whether to go along with the President regardless of personal opinion as to the propriety or adequacy of his plan or to refuse. So deep is the feeling engendered by the division that all hope of unity on labor matters in the bituminous-coal industry is for the time being lost. The mine owners have proven no match for the mine workers.

The time for recrimination is past. The incomplete acceptance by the operators of the President's plan and its tentative rejection by the United Mine Workers as it were wipes the slate clean. As the President says, the point has been reached where the "good offices of the government in seeking a voluntary adjustment of the dispute between the operators and mine workers are without avail." It is now in order to put forth some other plan of action to get new coal production.

It is quite clear now that the uncompromising attitude of the Pittsburgh operators as set forth in their letter to the President and the equally unbending attitude of John L. Lewis absolutely precluded and still precludes all hope of getting both sides together unanimously. Pittsburgh and those like minded among the operators intend to carry to a conclusion at once the issues joined in the strike of 1922.

There are left the anthracite region and a substantial portion of the soft-coal areas where the President has a prospect for resumption of production on a normal basis. It is in these areas also where the issues must again be brought to focus and settled in 1923.

The Import of the Union's Position

THE United Mine Workers on July 15 declined in principle the proposal of President Harding looking to the termination of the coal strike. Hidden in much language, evidently written for home consumption, one finds that two reasons are definitely assigned for this refusal. One is that the union is opposed to arbitration of wages in any form whatsoever and the other is that, every other consideration aside, the fact that not all union and non-union areas on strike are to be included in the arbitration is a bar to their participation.

The position of the union on the second point is decidedly weak. "The only effective way," they say, to settle the strike and to get the men back in the mines is "by meeting with our representatives in interstate conference." In other words they profess to be ready to follow the deep-rutted path of a Central Competitive Field conference and settlement, which must carry with it, as in the past, subsequent working agreements in the outlying fields based on the results of the larger conference. Yet they refuse to consider a proposal for arbitration that is not national in scope. "The mine workers cannot," they say, "'lightly consider the utter abandonment of more than 200,000 of their members to the whims and caprices of hostile employing interests who are publicly committed to the policy of destruction of collective bargaining in the industry."

The real import of the miners' contention here is a thinly veiled challenge to the President to force certain fields into negotiations with them—fields that otherwise are now or are seeking to be free from their yoke. In the bituminous areas there are three separate and distinct strike situations. One, and the most important from a tonnage standpoint, includes the old-established organized areas, as Ohio and Illinois. A second is represented by Kanawha, which is in the process of throwing out the union, and the third embraces districts, as the Connellsville in Pennsylvania, that were non-union before April of this year but where the union has recruited large numbers of the men and greatly curtailed production.

The union leaders are quite well aware that once they resume work on any basis in the older and more important fields their fight for recognition in New River, Kanawha and Fairmont in West Virginia and in the non-union areas of central Pennsylvania will cease to be a matter of national concern and will become instead a local irritation holding for them slim, if any, chance of victory.

What Is Americanism?

WELL aware that what we term Americanism neither is nor can be restricted to America we may be assured that what we have regarded as a most cherished possession in America is the right of the American to work when he will and for whom he will without fear of intimidation, to render service to none but to the American Government and to those to whom he is under contract under the terms of that contract, to run his factory, his shop, his mill or his mine subject only to the laws of the country to which he owes allegiance, to be protected by the laws in performing such acts as the government does not proscribe, and not to be browbeaten, insulted, assaulted or robbed by any person or by any body of persons.

Since the strike of April 1 the operators of mines in union districts and the workmen they would employ have been prevented under threats of violence from performing such acts as the law approves, and this restriction has been imposed by an irresponsible body of men known as the United Mine Workers of America.

It is true no great number of acts of violence have been committed. The Herrin massacre and destruction of property is an outstanding example. There have been others which the newspapers quite generally omitted to mention, feeling that disorder was so inevitable around the mines that the violent acts committed were not worthy of notice. Dynamiting, fires, murders, violence and threats have been frequent. That they have not been more numerous is due to the fact that operators and their workers have assented by inaction to this domination—one entirely adverse to the Constitution and not contemplated by the founders of the Republic.

Meantime what has the Government of the United States, and especially of the individual states, done? A few governors like Allen, of Kansas, and Morrow, of Kentucky, have done well. The others have done nothing, and they have asked nothing of President Harding. Wherever there has been intimidation and consequent idleness this should be said to their everlasting condemnation.

In Pennsylvania the work of keeping order has fallen to the state police. The governor knows that this force is inadequate. This has been abundantly proved. Under the intimidation which that official organization has been unable to restrain, men have been afraid to work, operators have been ill-disposed to open their mines. Here and throughout the union mining regions a greater power than the state governments and the United States has arisen—the United Mine Workers of America.

President Harding has been hampered by states' rights. He is restrained by the Constitution. Thus he might be excused for taking no action. But is he disposed to remain silent and to recognize constitutional restrictions? Not at all; if indications are to be believed he prefers rather to take action still less lawful than that from which he has refrained. He is said to propose the conscription of labor and to be preparing to seize and use private property—two things utterly alien to the spirit of the Constitution.

For him to maintain order may be unconstitutional in the absence of invitation by the governors, though many authorities on constitutional law do not believe so. They hold that the lack of order by preventing the free use of labor and the free operation of the mines has jeopardized the social life of the

raised up a power which usurps the authority of our nation and its parliament, which upsets democracy and which gives to a minority a control over the Republic. The nation therefore is in danger, they contend, and action by the President is justifiable.

President Harding's alleged preference for the seizure of properties may be popular with certain noisy voters, but if consummated such a sequestration would be an utter abridgment of individual rights. It is socialism rather than democracy or Americanism, but no one will condemn the President if he tries to restart the mines by enforcing order.

Conscription to work if adopted will be much more difficult to enforce than prevention of interference with those who would work. If conscription is merely a device to give the worker a chance to deny he is a "scab," if it is merely a permissive conscription, then it is weakening to the Republic, for he who would break faith with one kind of conscription is emboldened to defy another. Having done it in peace, it will look less heinous in war.

We are short some three or four millions of tons of bituminous coal per week. Perhaps we should have five million more than we are now getting to feel perfectly safe. A small proportion of the men now idle could supply that quantity. With assurance of safety many workers—probably more than are required—would return to the mines. Even in the anthracite region many would take up their duties if duly protected; not enough at first, it is true, to furnish the coal we need but probably enough to bring the strike—a combination in restraint of trade and openly designed as a means to increase wages above that for which men are offering to work—to an end. Even if it failed of that end, the keeping of order is an action well worthy of the Executive. The first duty of this or any other government is to maintain the peace and to defend the constitutional rights of its citizens.

President Harding has failed to exercise the boldness that is expected from one in so responsible a position—except in regard to capital. When the railroads were failing to earn the interest provided by law, when the Interstate Commerce Commission showed a disposition to maintain the freight schedule in order to produce at least part of the interest which Congress has permitted, he boldly enough called for a reduction in freight rates, declaring they were too high and an impediment to commerce. He was not afraid to announce without any prior elaborate inquiry that freight rates must be reduced.

But after almost all wages had come down, after the Railroad Labor Board had reduced the wages of most of its workmen, after costs of living had been lowered, President Harding declared that he did not know whether the wages of mine workers should stay up or come down. Surely he knew that they had been fixed by a prior government commission with full knowledge and consideration of the cost of living. Undoubtedly he knew that the day workers had struck against the award and had obtained a further increase. Unquestionably he knew that the living cost was lower than when the government commission made its award and that the contract period having ended another contract recognizing the change in the cost of living was imperative. But, nevertheless, when the time came to discuss matters with the mine workers and operators he tried to make it appear that he knew none of these

Plan for Shaft Mine Giving Large Capacity and Saving In Stoppings, Overcasts, Doors and Air Costs*

Intakes and Returns Are Driven as Such to a Predetermined Point and Then Both Are Made to Carry Air in the Same Direction, So That Temporary Stoppings May Be Broken Down

BY O. J. PLESCHNER†
Westville, Ill.

SAID to have originated in the coal field around Westville, Ill., the plan accompanying this article has been used for the laying out and planning of new mines in that field for many years. The general layout has a double-track storage road for loads and two single-track storage roads for empties, one being placed on each side of the main bottom. The loads pass to the bottom from each main haulage road by curves of large radius. The empty cars are pushed off the cage by the loads and from this point until they come to rest in their appropriate storage track they are moved by gravity.

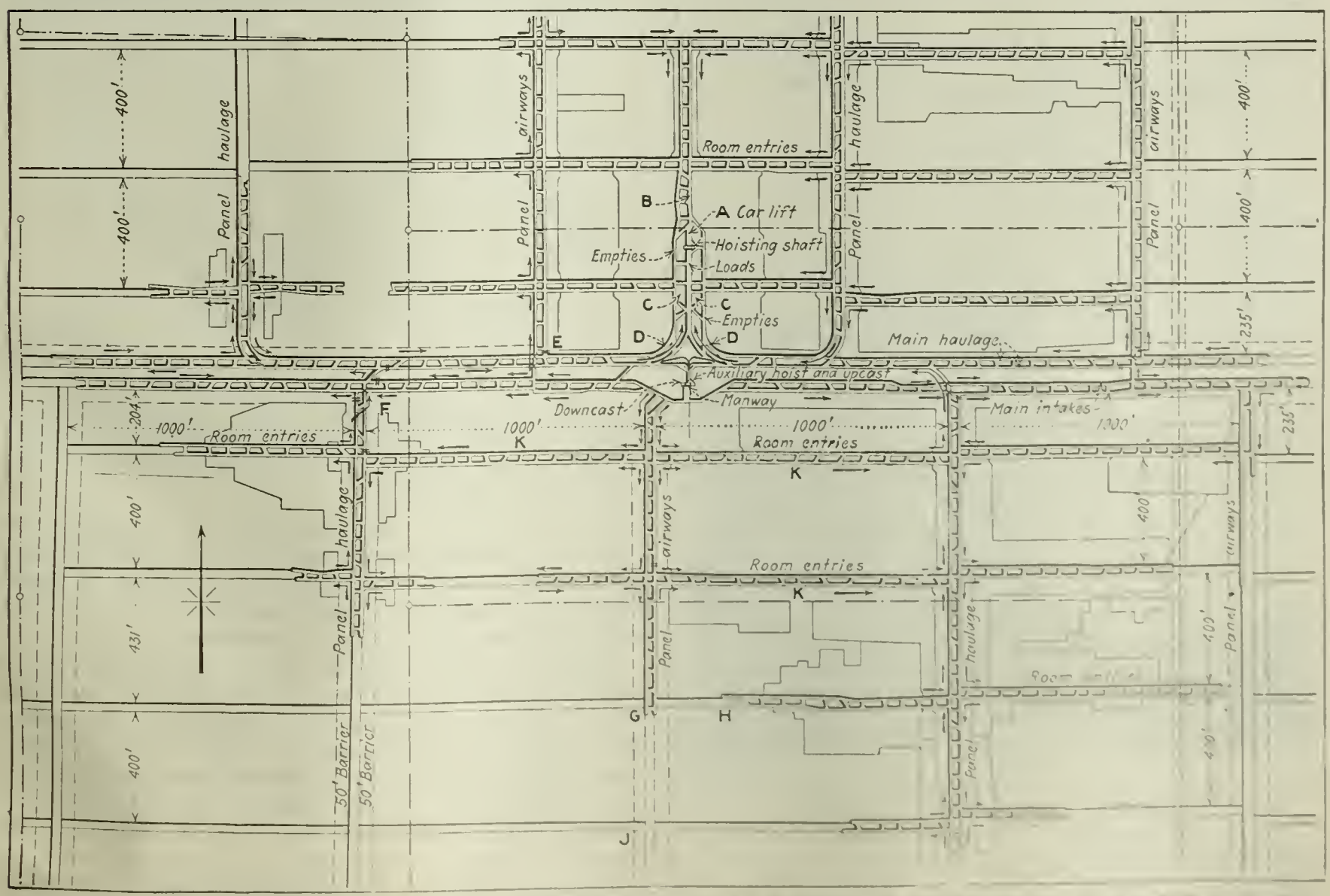
Rolling from the cage to the car lift at *A* they are automatically raised to such a level that they will run through a spring switch into a kickback at *B*. The main purpose of this kickback is to give the cars the requisite speed. It handles the cars much better at this point than an "upgrade" would. This kickback can be raised sufficiently to allow a car needing repairs or oil to pass through into the car-repair shop beyond.

The empties are coupled together on the storage track, and the locomotives bringing in the loads pass from the loaded to the empty tracks either through cutoff *C* or *D*, the loads continuing toward the shaft by gravity over variable grades from one to three per cent, the latter being the grade provided at the cages.

The four main entries are driven in two pairs, a pillar 50 ft. thick being provided between the two inside entries. This plan affords several advantages both in haulage and ventilation; the first of these latter is the saving of all stoppings between main intakes and returns, except at points where panel entries are broken

*Article entitled "Description of Shaft Layout and Four-Entry System for Large Tonnage Production," read at meeting of Illinois Mining Institute on board "Golden Eagle" during a trip on the Mississippi, June 9, 1922.

† Mining Engineer, United States Fuel Co.



STANDARD MINE LAYOUT WITH FOUR-ENTRY SYSTEM, IN USE AT WESTVILLE MINES OF UNITED STATES FUEL CO.

One striking feature is the almost unbroken pillar between the intake and the return airways. This prevents the loss of air at stoppings. Another feature is the change from temporary ventilation to permanent. With temporary ventilation one entry is the return airway for the other. When the ventilation is made permanent, instead of the stoppings being tightened and made durable they are removed and the current goes in the same direction in both entries.

off, and there only two overcasts and one stopping on the haulage side or two stoppings and one overcast on the aircourse side, as at *E* and *F*, are required.

The addition of the second entry doubles the area of the intake and making the two returns the main haulage roads gives double tracks for empties and loads. The double-track main haulage is becoming more and more necessary as larger outputs are obtained and greater territories worked out from one hoisting shaft.

The panel haulageways are turned off each side of the mains at intervals of approximately 2,000 ft., with panel airways at intermediate points, making the blocks of room entries 1,000 ft. long each side of the panel haulageways. This distance of 1,000 ft. has been found to be most satisfactory for this field and may be varied to suit other mining conditions. The advantage of the system described in the ventilation of the mines is that it makes all the haulage roads return airways, few, if any, doors being required except near the faces where development progresses in advance of the permanent ventilation, and it must be remembered that everywhere the permanent ventilation carries the fresh air to points not far from the faces.

On none of the intake airways is haulage permanently maintained, and panel airways are driven ahead from the last room entry, which has broken through as at *G*, viz.: When the face of the entry *H* is driven to the airway at *G*, the airway is driven forward to *J* through this entry, then stopped and track taken out until the next room entries are driven through. At this time the ventilation in these room entries is reversed and passes out as it does through entries *K*, this then being the permanent ventilation for these entries. This usually occurs at about the time the temporary stoppings on this and the haulage entries up to this point are beginning to settle and leak.

The absence of practically all crosscuts and stoppings between the main intakes and main haulageways, or returns, fills a long-felt want and should save much of the labor and materials expended in the building and maintenance of permanent stoppings. Furthermore it should provide for a more satisfactory distribution of the air at the face of the workings. Experience has shown that these benefits greatly offset the additional expense of driving the fourth entry.

This system has a further distinct advantage in the ventilation of the mine if the crosscuts between the two entries forming intakes and returns are opened up after the permanent ventilation has been arranged. In case of a heavy roof fall in the intakes the crosscuts and intake airways will provide a detour around the fall until the rock can be cleared up. The system also prevents the air in the return from being baffled by the passage back and forth of the trips of cars. It may readily be seen how the air can circulate around a trip if the crosscuts are open.

This baffling of the air is extremely noticeable also at the hoisting shaft, which is used as an upcast in the ventilating system. In the accompanying plan provision is made to correct this baffling by having an auxiliary upcast adjacent to the downcast and separated by a concrete wall. This upcast is used also as an auxiliary hoisting shaft for the raising and lowering of men, materials, etc.

In mines giving off gas, which would make it dangerous for electric haulage to be on the return, the system can be reversed, using an exhaust instead of a force fan.

In Idaho Tests Are Being Made of Certain Small Semibituminous Coal Beds

By Henry M. Payne*
New York City

WHERE the freight rates on coal are high all indications of coal are regarded as of great importance. Consequently much interest has been exhibited in some thin beds, or bands, of coal recently found in Idaho, despite their irregularity of thickness, their contorted character, the presence of faults and igneous rock. The coal, though found above rock of the lower Miocene period and therefore in measures quite recent, has been converted by heat into a semibituminous coal containing about 26 per cent of volatile matter in the pure coal substance.



FIG. 1. COULEE, OR DRY VALLEY, NEAR COBB, IDAHO, IN WHICH COAL HAS BEEN FOUND

On the right or northeast side, high on the hill, is a small basalt cliff, an igneous intrusion through the measures. On the left is a low hill of badly contorted sedimentary rock in which coal is found.

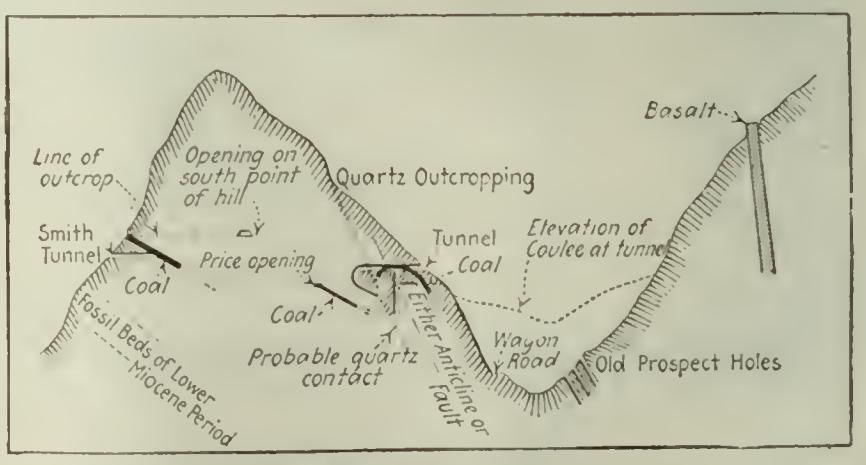


FIG. 2. DIAGRAMMATIC CROSS-SECTION OF COULEE AND HILLS

Note the basalt dyke on the right which forms the small cliffs in Fig. 1, the quartz dyke on the left and the line of a sharp anticline or possibly a fault which causes the coal to be either bent over or sheared, lying between the right face of the left hill and the quartz intrusion.

The high cost of fuel in southern Idaho has led to extensive prospecting along the Snake River and the organization of at least one coal company to develop the islands of sedimentation which occur in the basaltic formations along the north bank of that river near Cobb, on the Union Pacific Ry. Cobb is in Washington County near the line of the State of Oregon.

A general idea of the topography may be obtained from Fig. 1, which is a view looking up the coulee. A

*Consulting engineer, 300 Madison Ave., New York City.

basalt cliff is seen high on the hill to the right, and across the coulee from the wagon road are a number of old prospect holes. In none of these, however, is there any evidence of more than carboniferous shale badly interstratified with fireclay, dipping from 30 to 45 deg. northeast toward the basalt cliff. In the roof rock of one opening a partly carbonized stump is seen.

About a half mile farther up, a tunnel was driven in the left or west side of the coulee for about 750 ft., bearing around to the right and dropping on an incline, like a letter "J." The reason for this will be seen in the cross-section, Fig. 2. The "coal" bed when encountered, was rising rapidly, with the roof rock varying from draw slate to rotten sandstone. This formation suddenly appears as a violent anticline, but from surface examination probably is a fault extending along a general north-south line.

A crosscut was made at this point. The coal in this cut is shown in Fig. 3. It consists of irregular layers of coal, slate, shale, fireclay and other extraneous matter, the broadest coal bands being about 6 in. thick,

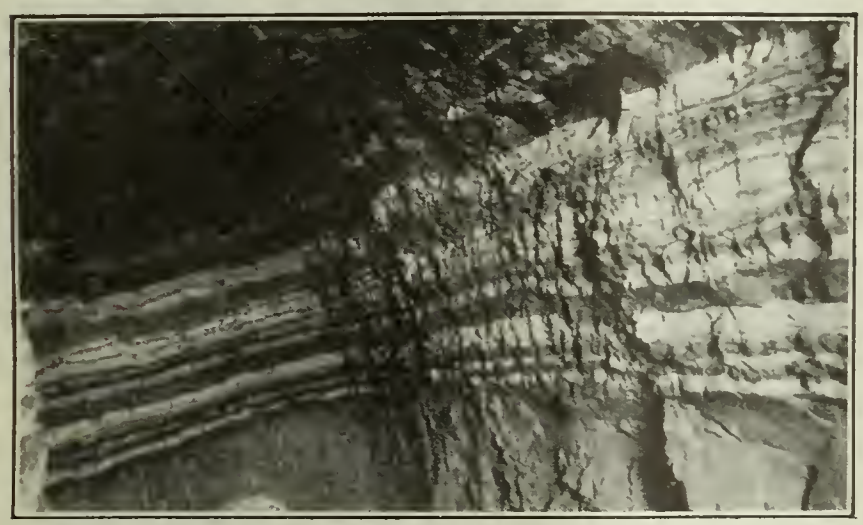


FIG. 3. IN THE CROSSCUT COAL, SLATE, SHALE AND FIRECLAY OCCUR IN NEARLY HORIZONTAL BANDS

Here the broadest bands of coal are only 6 in. thick, but they are irregular and never wholly clean. The horizontality of these beds is not maintained. They are nearly vertical where first met and afterward turn down till they double over like a fish hook.

but irregular and never wholly clean. About 400 ft. from the mouth of the tunnel a winze has been sunk to a depth of about 120 ft., at the bottom of which was found a rhyolitic sandstone with white quartz contacts. The general dip of the strata and a quartz outcropping on the hill above the tunnel would indicate the intrusion of the quartz at this point.

About 30 ft. below the level of the tunnel a crosscut was turned off the winze for a distance of 60 ft. to the north. Here the lesser laminations appear to have combined, but only one of them is worthy of note, being 8 to 12 in. thick and wavy, dipping to the northeast.

Frequent masses of fireclay intervene, the roof rock is badly broken, and all development at this point has been stopped. The workings are ventilated, as seen in Fig. 4, by a furnace fed from a pipe extending into the tunnel and down the winze a distance of approximately 450 ft., thus drawing out the air by ascensional ventilation and leaving the whole entry as an intake.

At the left of the wagon road in Fig. 1 may be seen an outcrop opening which is reproduced in Fig. 5. At this point slightly below the level of the tunnel mouth the coal bloom appears about 3 ft. thick, but was not driven to roof rock at the time of the examination. This seam dips to the northeast and probably is the same one encountered in the tunnel, extending to the fault indicated in Fig. 2.

On the south point of the hill, overlooking Snake River, is an old prospect hole showing 7 ft. of badly broken coal interstratified with fireclay and volcanic ash and dipping, like all the other exposures, to the northeast. From this point on around the hill to the west, a clearly defined bench is found, and on the west side, directly opposite the tunnel, is an abandoned prospect hole extending horizontally for about 100 ft. to an intersection with a coal seam said to have shown 18 in. of coal and dipping 45 deg. northeast. This incline is now filled with water, but the formation evidently is the same as that shown on the south hill. Below this formation occurs a stratum rich in fossils of the lower Miocene period.



FIG. 4. OPENING WITH VENTILATING FURNACE

The opening is an intake. A pipe from the furnace goes into the mine, along the drift and down a blind shaft. A fire in the sheet-iron furnace causes the air current.

Analyses of the coal taken in the tunnel crosscuts and various other exposures show volatile matter from about 11 to 20 per cent; moisture from 1.3 to 1.5 per cent; fixed carbon, 52 to 57.8 per cent, and ash, 22.8 to 33.6 per cent. The entire hill appears to contain irregular pockets or lenses corresponding to islands of sedimentation, upon which the effect of igneous contact is shown in the low moisture and volatile content of the coal. Interspersed among these are beds of ashy shales, coarse clays, coarse sandstones and lava.

The owners of the property, in their desire to exhaust all the possibilities of obtaining coal for domestic purposes, are considering core drilling. Tests also are being made of the various clays on the property for industrial uses. Inasmuch as all tertiary coals of importance have been formed in the presence of extensive sedimentation, and free from igneous metamorphic action, such deposits as exist under the conditions enumerated must necessarily be subject to irregularity in occurrence and paucity of vol-



FIG. 5. COAL AT CROP

Here the coal is about 3 ft. thick, but, as the opening was not driven in to the point where roof rock forms, judgment as to its value must be suspended.

atile matter. The coal, though of comparatively recent deposition, cannot be classed as sub-bituminous, but is rather a semibituminous, owing to the ripening effect of heat and pressure.

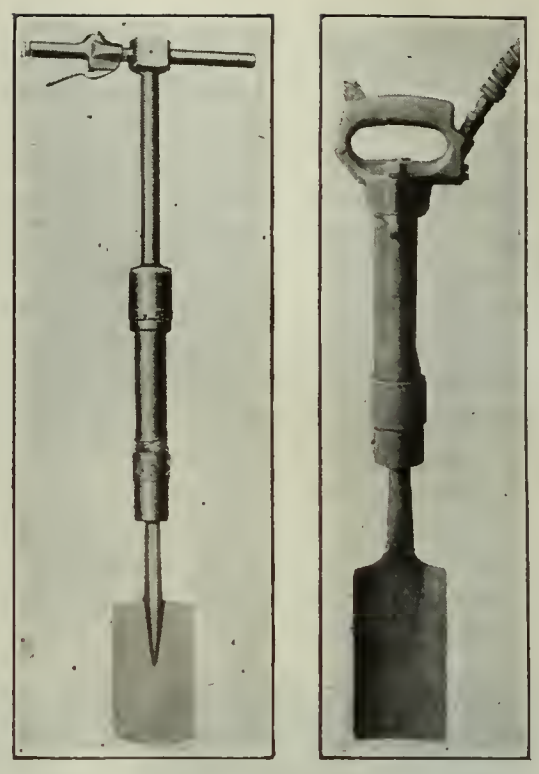
Pneumatic Tools Replace Pick and Shovel

IN MANY jobs involving the removal of earth the material encountered is too soft to render drilling and blasting necessary yet is too hard to permit penetration of spade or shovel. Such ground heretofore has required picking. This, as everyone knows who has ever attempted it, is hard, laborious and fatiguing work.

Mechanical picking methods now appear about to supplement manual operations, as an air-operated digger, with which one man can loosen as much soil as five men with picks, has been perfected and placed on the market. The rate at which soil can be dug with this equipment will in most instances exceed this. With this tool a man maintains a more uniform rate of work than does one equipped with a hand pick and stops much less frequently to rest, as his work is far less fatiguing.

Furthermore, danger of accident resulting from careless handling or swinging of the pick is entirely eliminated. Men are thus enabled to work closer together in trench, tunnel or shaft. This new device and its manipulation are shown in Fig. 1. The machine itself weighs only 23 lb., and a man will handle it standing upright. Essentially this device consists of an air hammer with a heavy spade at one end and a cross handle containing the throttle at the other. The over-all length is 34 in. The spade or digging blade is held in the end of the hammer mechanism by a suitable retaining device. Blows delivered in rapid succession to the upper end of the spade drive it rapidly into the earth, which may then be readily pried loose.

For work in clay the blades measure approximately 6 x 8 in. and are slightly concaved. For use in dirt they are made 5 x 9 in. and rectangular in cross-section. The face is thus flat, the thickness being $\frac{5}{8}$ in. at the top and $\frac{5}{16}$ in. at the point, the cutting edge being beveled from the back. Conveniently located in the handle the throttle lever may be readily pressed or released as the tool is pushed down or lifted. A buffer is provided to take the blow of the hammer if air is not shut off while the tool is being raised. An operator, however, soon learns to shut off the air automatically as he begins pulling up on the handle. This tool, known as the No. 56-H Little David clay digger, is manufactured by the Ingersoll-Rand Co., 11 Broadway, New York. As the name implies, it is a development of the tools already extensively used for tunneling through clay. These tools have in some instances reduced the cost of such operations in clay as much as 40 per cent. It is only natural that they should now be applied to the closely allied operations of trenching and shaft sinking.



TWO COMPRESSED-AIR DIGGING TOOLS

The first is the Little David and weighs 23 lb. Its over-all length is 34 in. The blades are 6 x 8 in. and 5 x 9 in. The other is the Sullivan which weighs 16 lb., is 17 in. long and its blades are 4, 5 and 6 in. wide.



DIGGING CLAY WITH A COMPRESSED-AIR PICK

This mechanism, which looks like a shovel, really is a loosening agent like a pick, but the blade of the pick is wide to match the great power of the compressed air, which will loosen a greater width and depth of clay than an ordinary pick could possibly do.

A somewhat similar spader, known as DE-361 compressed-air spader or pneumatic clay-digging tool, but somewhat lighter, weighing only 16 lb. and 17 in. long, is being manufactured by the Sullivan Machinery Co. It requires a $\frac{1}{2}$-in. air hose. This is recommended for the excavation of stiff clay in trenches, open cuts, caissons and tunnels where the ground is not sufficiently hard to be drilled and shot and yet is too hard to be handled readily by pick and shovel. It, like the tool just described, takes the place of the hand pick as well as of the hand spade or shovel.

In tunneling in blue glacial clay, very dry and hard, in the Chicago district these spades increased the output per man from 3 to 4 cu.yd. per eight-hour shift to from 8 to 10 cu.yd., the work being limited by the ability to get rid of the muck instead of by the rate of digging, as formerly. Any air pressure from 45 to 100 lb. can be used. The spades are made 4, 5 and 6 in. in width.

In this connection may be mentioned the Boyer clay digger, a modification of the clipping hammer of the same name, manufactured by the Chicago Pneumatic Tool Co. This spader makes 1,100 blows per minute and uses 20 cu.ft. of free air per minute at 80 lb. and 25 cu.ft. at 100 lb. pressure. The blade of the digger is 5 x 9 in. and with the shank is 14 in. long. Its weight complete is 16 lb., half that weight being accounted for by the blade. The over-all height is 34 in.

None of these spaders is electrical. They would have a broader field around the coal mine if they were. It is not at all impossible that such machines as these would be invaluable in lifting clay bottom or bottom coal left by undercutting machines as well as in surface excavation of all kinds, of which the mines have much to perform in the course of a year.

Laying Out Mine for Coal-Loading Shovel Operations

By Using Sixty-Degree Turns in Place of Right Angles Twenty-Foot Radius Curves Can Be Installed Though Curves of Twelve-Foot Radius Can Be Negotiated by the Shovel

By William Whaley
Knoxville, Tenn.

SHOVELING machines can be used with the usual system of mining coal, but to get the best results the work should be developed and transportation arranged so as to keep the machine employed to the fullest possible extent. This means concentrating the transportation so that in every working place the empty cars will be supplied to the machine and loads removed therefrom with promptitude. A system or methodical plan of working is therefore desirable. Fewer rooms are required for given tonnage, and they, therefore, can be better equipped at the same or less cost. Track should be standardized; curves, rails, turnouts, etc., should be supplied to the underground force ready to lay.

The following suggestions are advanced as a practicable method of standardizing the work: The radius for curves should be not less than 20 ft. The shoveling machine will negotiate curves as short as 12 ft., but a 20-ft. radius is an easy curve for the machine and for the locomotive and cars and makes derailment less likely. Moreover, the shovel can load on such a curve with satisfaction.

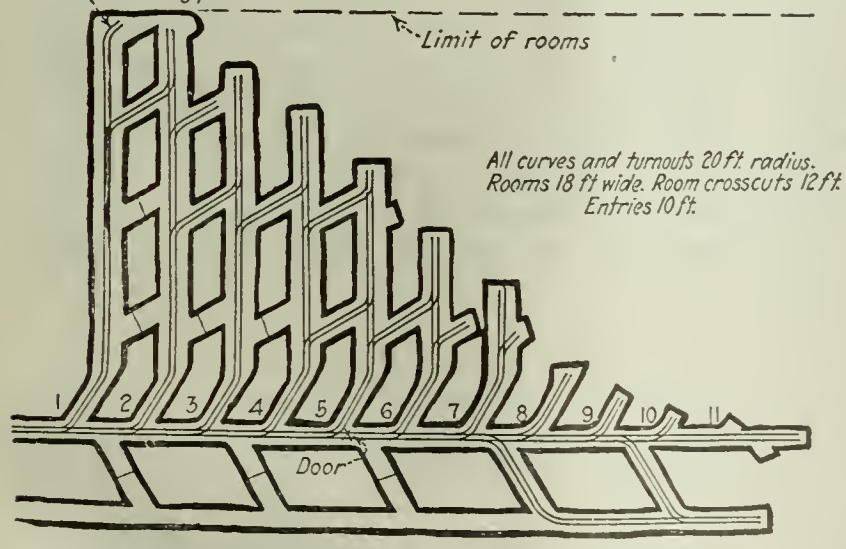


PLATE I. ADVANCING SECTION OF MINE. PREFERRED PLAN

The rooms are not opened at right angles to the roadway but 30 deg. therefrom. This makes it easier to negotiate the turns, though it is not absolutely necessary to put in a crooked neck of the kind shown, for machines can, if needful, make the right-angled turn. Crosscuts in rooms and entries have a similar slant.

The room necks and crosscuts should be turned off the entries at an angle of 60 deg. Room crosscuts should be turned at a similar angle, thus making it possible to lay easier curves and enabling the machine to reach all the coal that is to be loaded at any time in the room necks as well as in the rooms, crosscuts and entries, practically eliminating all hand loading.

Plate I shows a general layout of an advancing section of a mine using single-track rooms and shows standard turnouts of 20-ft. radius. Plate II illustrates the method of driving a pair of entries. The crosscuts are turned at 60 deg. and the track is connected through in such a way as to form a run-around for cars, the empty cars coming in through one crosscut and going out through the other. When the machine is loading in the haulageway the empties would be stored in the first crosscut as shown and shifted one at a time back of the machine for loading, and then dropped past the switch point for storing until a trip has been made up. This sketch is self-explanatory.

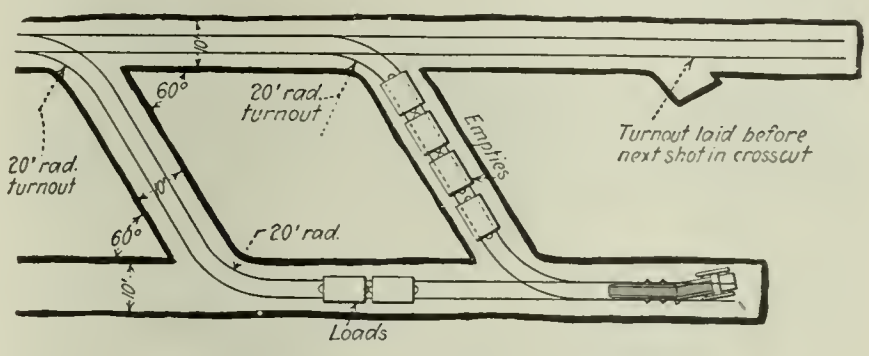


PLATE II. TRACK LAYOUT FOR ENTRY DRIVING

Tracks are laid in two last crosscuts and one acts as run-around to the other. With this plan shifting of cars is unusually rapid.

Plate III shows the arrangement of single-track rooms with track through crosscut, all curves being of 20-ft. radius and the angles of the tracks being 30 or 60 deg. Plate IV shows method of loading coal when robbing and Plate V illustrates how the shoveling machine is enabled to reach all of the coal at every shot from the first shot off of the entry, as shown in Fig. 1 of this plate, until the machine is entirely straightened out in the room neck, as shown in Fig. 3. Fig. 4 illustrates the machine passing around the curves of the crosscut and Fig. 5 illustrates the practicability of operating the machine through a 90-deg. crosscut with 12-ft. radius curves. While such sharp turns in the track are

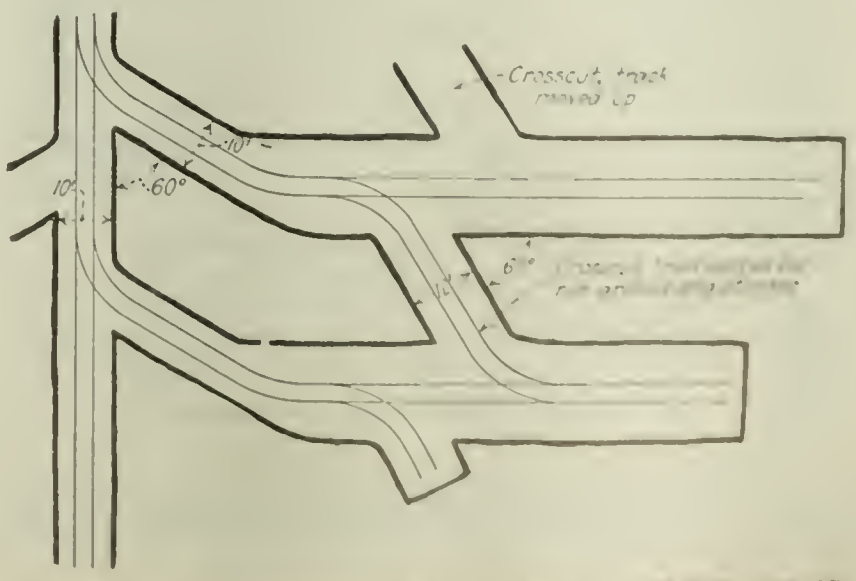


PLATE III. SUGGESTED LAYOUT FOR NARROW ROOMS

Rooms are connected in pairs by track through crosscut, facilitating storage and shifting of cars. Turnouts and curves should be standardized to facilitate quick laying of good track

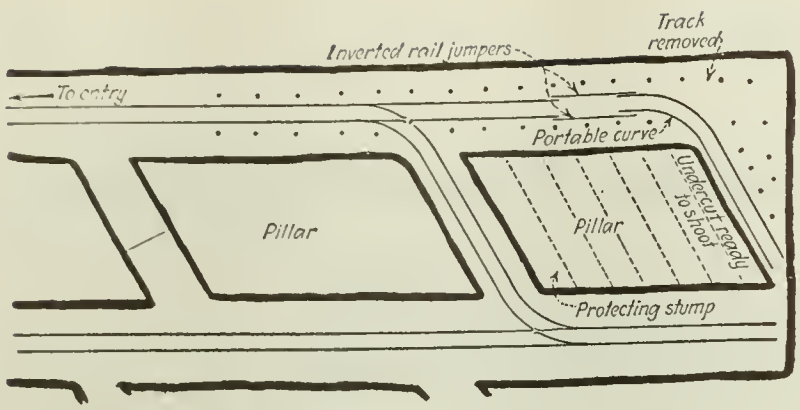


PLATE IV. METHOD OF LOADING PILLAR COAL

Track across end of pillar is moved up after each shot. Connection to room track is by means of inverted rails in maintenance-of-way chairs.

not recommended the illustration shows that the machine can be used and moved around in an old mine with crosscuts and tracks laid in this manner.

Plate VI illustrates proposed arrangement for double-track rooms, the system of operation being similar to that previously described. Plate VII illustrates the flexibility of the shoveling machine, showing how the rear conveyor and shovel can be shifted into different positions, enabling the machine to reach into curves, across the face of a room, to discharge upon a parallel track and to pass around short curves in the mine.

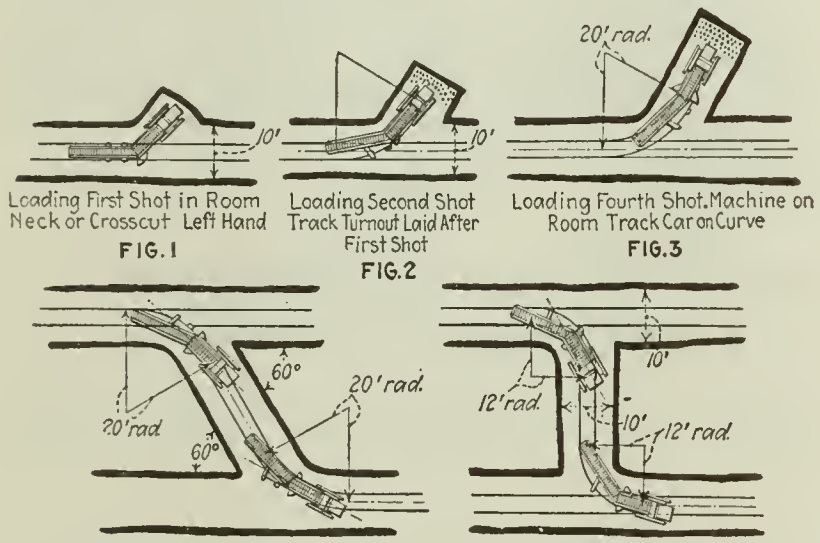


PLATE V. MACHINE NEGOTIATING CURVES

In Figs. 1-3 the machine is loading in a 60-deg. turn, showing three successive points in its progress. In Figs. 4 and 5 it is shown traveling in and out of two crosscuts, two curves being on a 60-deg. turn with 20-ft. radius and two on a 90-deg. turn with 12-ft. radius.

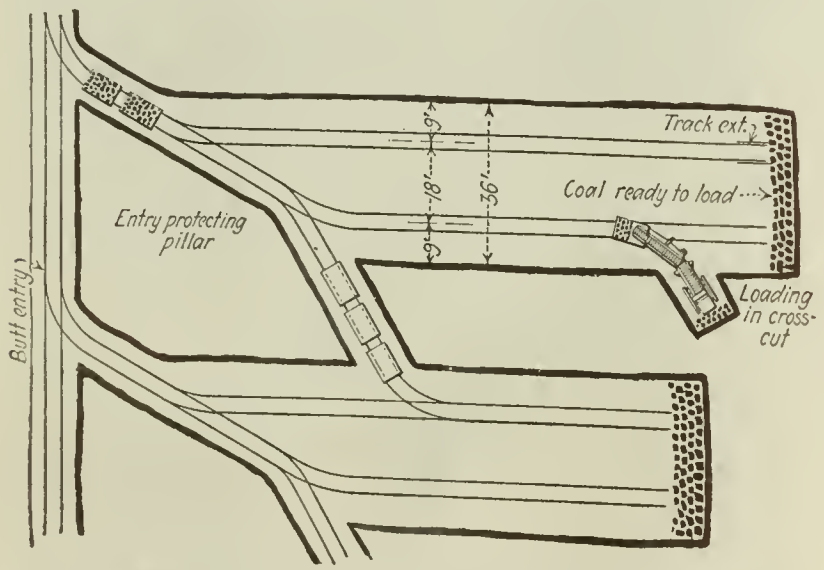


PLATE VI. LAYOUT WITH DOUBLE-TRACK ROOM

In this plan also the crosscut is used to facilitate storage and shifting of cars. Crosscuts, usually an inconvenience in this instance, merely furnish an additional loading place and therefore more coal for each long move.

In reference to Plate I, as soon as a crosscut between rooms is completed the track is connected, as shown, between rooms 5 and 6. This track forms a run-around for cars when the machine is loading in room 6, the empty cars being stored in the crosscut, as shown on Plate III, which is an enlarged detail of development as it has progressed in rooms 5 and 6. When the rooms have advanced to the stage shown in rooms 3 and 4 of Plate I, the track through the first crosscut is removed and the track in the second crosscut connected up. This brings the switching point for cars within a short distance of the face at all times and eliminates delay in removing the loaded car and bringing in the empty. This crosscut track also is well laid and entirely sufficient for moving the shoveling machine from one room to another. Therefore in moving from room 3 to 4, for instance, the machine has to run back only to the nearest crosscut and through it to the face of the adjoining rooms.

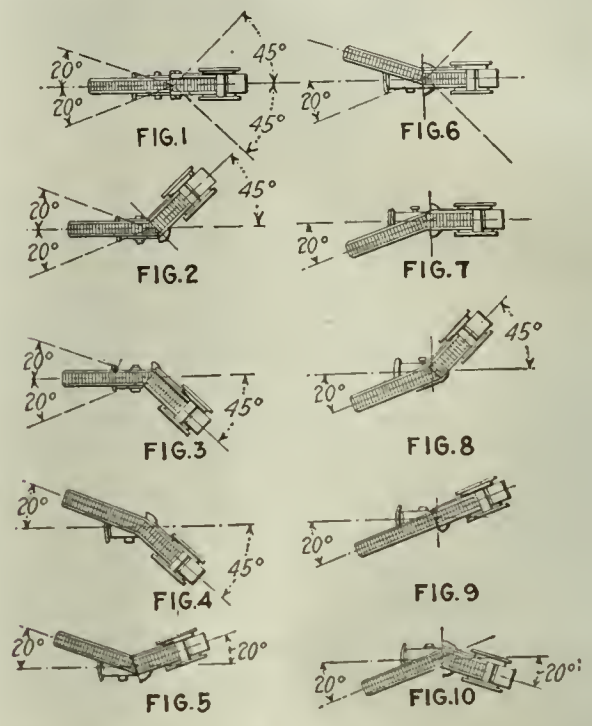


PLATE VII. DIAGRAM SHOWING FLEXIBILITY OF SHOVEL

Though somewhat long from the point of the shovel to the point of delivery of the conveyor it is possible to work round sharp corners as shown in illustration.

In Plate I room 1 has reached its limit and a crosscut has been driven at the end of the room. The track end is fitted with a curve and brought across the face of the pillar. The pillar is drawn back, as shown in Plate IV, the curve and track across the pillar are moved up after each cut, the curve being connected with the room track by means of inverted rail jumpers. The distance between crosscuts should be made such that the entire pillar can be taken out in this way with the exception of a protecting stump, as shown on this sketch. This protecting stump is the only part of the coal that will have to be drawn by hand.

ARRANGEMENTS HAVE BEEN MADE for the shipment of two 1,000-lb. samples from the Deep River coal field of North Carolina to the central experiment station of the Bureau of Mines at Urbana, Ill., for coal washing tests.

A SPECIAL STUDY is being made by the Bureau of Mines at Pittsburgh, Pa., looking to the development of grates and furnaces to utilize lignite char, to be used in heating and cooking stoves. James Neil, fuel engineer, and M. L. Orr, assistant mechanical engineer, have been assigned to the investigation.

Self-Dumping Gable-Bottom Mine-Refuse Car Builds Its Own Inclined Track

By Alphonse F. Brosky*
Pittsburgh, Pa.

IN DUMPING the slate, sandrock and clay that come from a mine the topographic features of the surface have a direct bearing on the choice of method. Many schemes are in successful operation for the disposal of such refuse, each working to advantage under the particular conditions that the location imposes. The problem is simplest where the surface is broken by gullies or ravines that are near enough to the tipple to make it practical to haul the slate to that point and large enough to insure dumping capacity sufficient for the life of the mine. In such cases an electric slate larry is desirable.

Slate disposal becomes more difficult, however, where the ground is level. Either of two methods may be chosen under that condition. Where a large expanse of level ground is available for dumping, an electric larry may be used here also, the slate bank rising on a slight grade. When the dump area is limited, however, it may be wise to make the inclination steeper than the use of a larry will permit and radiate dump piles away from the tipple structure.

Under these circumstances each dump somewhat resembles a miniature mountain, its height rising rapidly in the direction of its major axis. To dispose of slate in the fashion noted it is necessary to raise the car by a rope hoist.

Several of the larger companies have adopted the aërial cableway for the disposal of mine refuse on level ground. An inclined cable rises from the rock bin to a lofty tower. A rock carrier, or bucket, suspended from a pulley travels along this cable and is raised by means of a rope passing over a sheave located on the tower and leading thence to a hoist conveniently placed on the ground. When the dumping point is reached the contents of the carrier are discharged by the action of a trigger. The great disadvantage in this device lies in the erection of the tower, the weight of which is appreciable. After a slate dump of this kind has been completed the tower must be moved, and this is difficult because of its height and weight.

The H. C. Frick Coke Co. has adopted a method of slate disposal that builds a pile comparable to that constructed by the aërial cableway. The principle indeed is by no means new. The idea in fact came from the Illinois field, but since its adoption the method has been improved. It has now been accepted as standard by the company.

A self-dumping car is drawn up the steeply graded slate dump which it has gradually accumulated. At the top of the dump is an open-rail platform from which the slate is discharged. This dock is supported at its rear end by the slate pile and at the forward end by a single trestle bent.

The car is saddle-backed, or gable-bottomed. It is of a composite steel-and-wood construction. It has a capacity of 75 cu.ft. and opens and closes automatically, so that no attendant other than the hoistman is needed. The general plan of this car is shown in Fig. 1, while Fig. 2 is a photograph of the same piece of equipment. The side gates are hinged at the top and secured in place by latches. When these are released the doors fall from an inwardly inclined to a vertical hanging position. The first position, which is that assumed when traveling, is shown in the left-hand elevation of Fig. 1. The arms of the latches are end-pivoted in the center of the car. Suspended from the midway point of these arms are vertical push rods bearing rollers on their lower ends which on passing over lifter tracks release the latches. The doors then swing out into the vertical position and the slate discharges onto the dump.

If conditions are such that dumping from one side only is advisable a single lifter track is placed between the rails. In that case a large sheet-iron floor plate may be inserted on the side opposite that where dumping takes place, thus making the car bottom or floor one plane. This arrangement is not shown in the drawing but has been adopted at one of the company's mines. One disadvantage entailed in discharging from

*Bituminous editor, *Coal Age*.

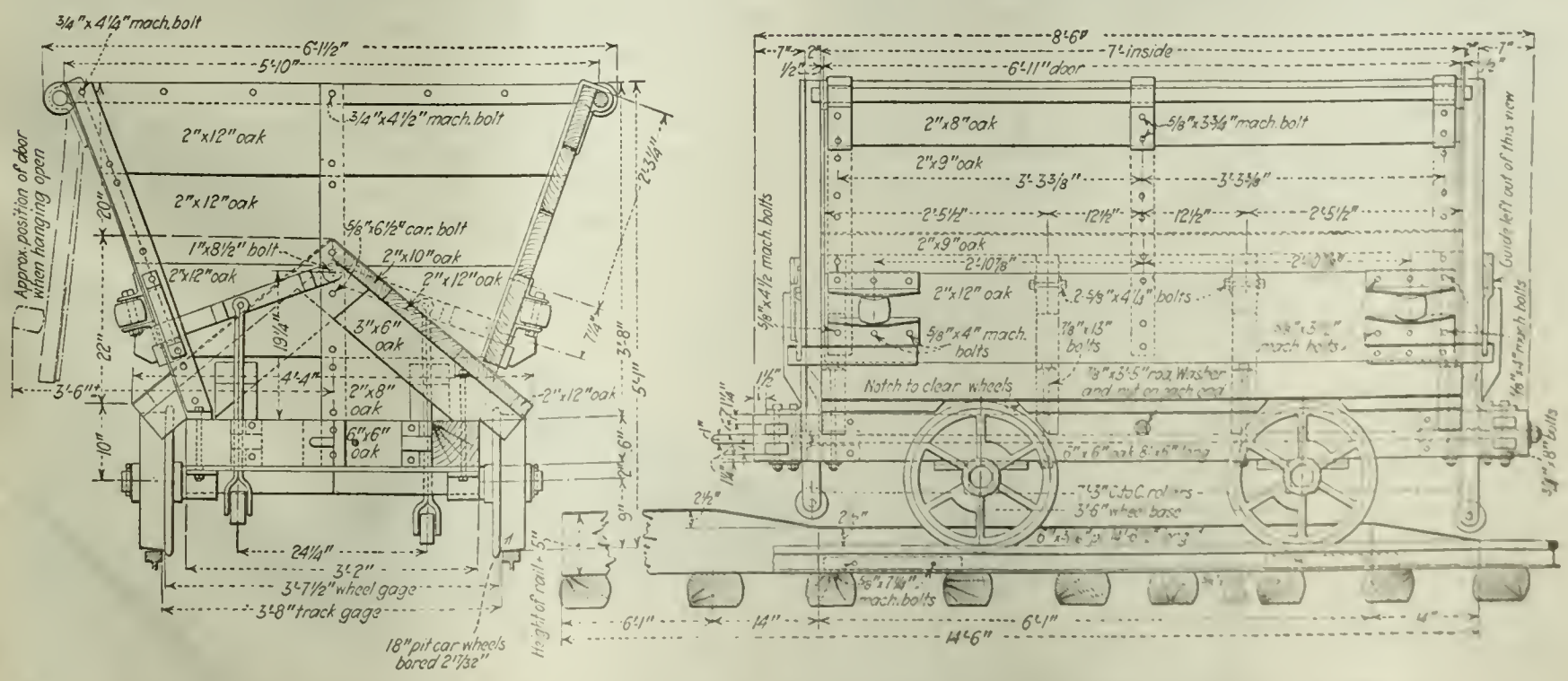


FIG. 1. MINE-REFUSE CAR WITH PUSH RODS TO OPEN LATCHES AND RELEASE DOORS
The front push-rod rollers are made higher than the rear ones so that they can pass over the first part of the lifter tracks, only to come in contact with the second part at the time when the rear push-rod rollers begin to rub on the lifter track. Thus the side gates are released at both ends at the same time. The rollers at the sides of the car engage two converging cam guides which force the doors to close. The latches, being free, fall and hold the doors in place.



FIG. 2. MINE CAR AND FORWARD BENT
Doors are shown hanging vertically. Note the lifter tracks for raising the push rods, and the hinges which attach the bent to the rails.

one side only is that the capacity of the car is much decreased.

When the car passes between two converging cam guides they force the doors to the closed position. These guides are firmly mounted on masonry piers or posts set in the ground between the bottom of the dump and the tipple. The gates are provided with contact rollers placed level with the cam guides.

It will be noted that the truck is not of standard mine-car design, being rather proportioned to suit the requirements of the body. Standard loose wheels and fixed axles are used. The inner axle collars are shrunk on and the axles are fastened to the longitudinal members of the 6 x 6-in. truck frame by means of $\frac{5}{8}$-in. bar-iron brackets. The design and attachment of the drawbar is such as is adaptable only to a car that operates alone. As the drawbar always is subjected to a pull, the bar is rigidly fastened and has no buffer. It consists solely of a hook bar 1 in. in diameter that passes down the center of the car and pierces the two end members of the frame. Thus there is no danger that the truck will be sundered by the pull of the drawbar. The car bottom is supported by four 3 x 6-in. oak rafters which are notched and bolted together at the peak. Insets are cut in the lower ends of these members, which rest on the truck frame and are through bolted to it.

Little difficulty should be experienced in building such a car. The one here shown is well designed and will indefinitely withstand the work for which it is intended. Through use, weak points have been overcome, and a superintendent need not hesitate in adopting the general design shown, if the conditions for its operation are favorable. It will readily handle 200 tons or more in 8 hours.

Heavy, well-joined rails are requisite where slate is dumped on the ascent. From the rock bin to the edge or the discharge dock the Frick company uses a 70-lb. rail spiked to wood ties on the roadbed. The dumping platform consists of a pair of 30-ft. 85-lb. rails tied together by heavy angle irons bolted to the rail bases. The journal boxes of a 24-in. sheave at the outer extremity of the dock are securely bolted to an angle-iron anchorage. The farther end of the platform rests on an oak bent 16 ft. in height which is hinged to the rails. The legs of this bent are of 6 x 6-in. oak, diverging to a 9-ft. base, where they are bolted to an oak sill of similar dimensions. Tie bands of $\frac{1}{2}$ x 2-in. strap iron add rigidity to the bent.

The bent is substantial and compact and rests on a footing in the slate pile lower than the crest. When the slate reaches the level of the platform the track may be moved outward with ease. The slate is first removed from around the bent, it being thrown forward along the line of the dump. In this way a mound is formed the crest of which is at a greater elevation than the base level of the bent. The rise is such as to correspond with the predetermined grade. The bent is jacked up and its foot moved out to the new position, the frame itself being thus held obliquely. The fish-plates are removed at the joint where the 70- and 80-lb. rails meet, a rope is attached to the heavier section and the frame is pulled out over the dump until it again forces the bent to a vertical position. In accomplishing this shift the rope is carried forward parallel to the rails and passed through a snatch block, from which it returns.

Four men do the track shifting, each move advancing the dumping point 10 ft. Three pairs of 70-lb. rails, respectively 10, 20 and 30 ft. in length, are kept on hand. At the first move beyond a 30-ft. rail a 10-ft. length is inserted. On the second move this is taken out and a 20-ft. rail length put in its place. On the third move the 20-ft. rails are replaced by 30-ft. pieces, which remain permanently. The cycle is then repeated.

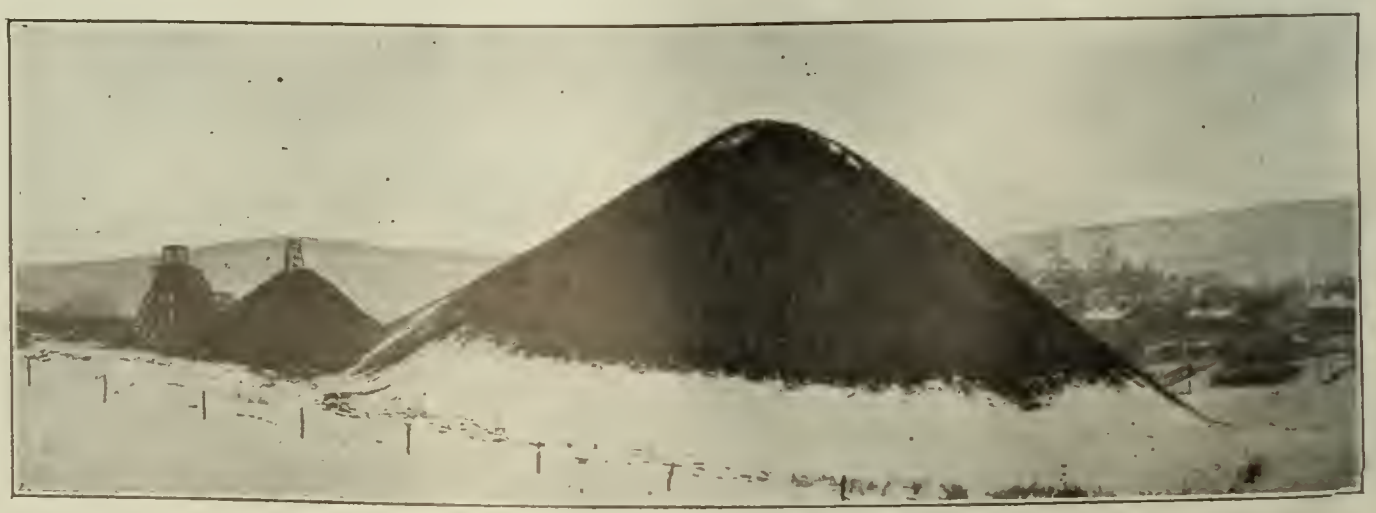
The four men who are employed in this work can make a shift in five hours. At an elevation of 45 ft. it is estimated that 1,200 tons of slate may be dumped from a single set-up.

A $\frac{1}{2}$-in. steel-wire rope is utilized for hoisting the slate car. The size of the engine needed at a dump of this kind will depend entirely upon existing conditions, particularly on the space available for dumping. The horsepower requisite for a hoist used on any par-

FIG. 3

Two of the Dump Piles

At Hecla No. 1, Southwest, Pa., of the H. C. Frick Coke Co. It is difficult to obtain height so long as the grade by which the dump grows is that up which an electric larry can climb. For this reason a ropeway is used at Southwest.



ticular slope may be determined by means of the following simple formula:

$$H.P. = \frac{Vf(W_l + W_r)}{33{,}000} + \frac{(W_l + W_r)V \sin\theta}{33{,}000}$$

where V = the speed of car travel per minute and must be assumed,

f = frictional resistance, the value usually assumed being 0.025,

W_l = weight of loaded car,

W_r = weight of rope,

and θ = slope in degrees.

An electrically driven hoist is the most desirable type for this class of work, a shunt-wound, direct-current motor being best suited for the purpose. In the building up of the dump care should be exercised to maintain a uniform slope. A lessening of the degree of inclination at any point will result in the formation of a hump which will impose undue wear on the rope. If the degree of slope is increased at any point there is danger of placing too great a load on the hoist and possibly of burning out the motor.

Speedy, Safe and Economical Entry Driving Attained by Use of Self-Acting Pipes

By F. C. Cornet
New York, N. Y.

PIPES are so little suited to the economical transportation of large volumes of air and so liable to accidents of many kinds that it is inadvisable to use them in regular coal-mine ventilation where, as a general rule, a cheap and superabundant air supply must be provided.

For temporary and local ventilation within reasonable limits of distance and volume, however, air pipes have advantages the possibilities which do not seem to be fully appreciated by coal-mine engineers. Instances where pipe ventilation is resorted to in coal mines undoubtedly are numerous, but in practically every case a special fan is employed to force or draw air through the pipe, when the desired result could be automatically accomplished by taking advantage of the pressure exerted on the atmosphere of the mine by the outside fan. How this is done in the simplest possible way I explained in *Coal Age* many years ago.* I now desire to treat the subject more fully, showing the possibilities of the air pipe as a practical, cheap and most efficient means of ventilation, one permitting headings and single places of comparatively great length to be driven through the most gaseous of seams with a safety and a rapidity made possible by no other known method of ventilation.

Fig. 1 shows the most efficient way of ventilating automatically by means of pipes the several faces of a heading. A temporary stopping, A, built across the aircourse is provided with two openings in which are tightly fitted the ends, B and C, of pipes 1 and 2, the other ends of which are D, near the aircourse face, and E, near the haulway face, respectively.

If the air current set in motion by the fan travels in the direction indicated by the single-point arrows, pipes 1 and 2 will discharge air toward the faces they are intended to ventilate, the tubes in this case being termed "blowpipes." If the ventilating current moves in the direction indicated by the double-point arrows, air is drawn into both pipes through their mouths

*Dec. 14, 1912; Vol. 2, p. 825.

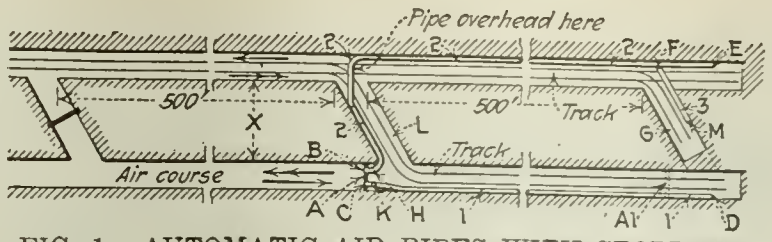


FIG. 1. AUTOMATIC AIR PIPES WITH STOPPING ON AIRWAY

This will work with exhaust or pressure methods, the double-point arrow showing the exhaust system where the air is drawn into the pipes and the single-point arrow the pressure system where the air is forced into the pipes.

D and E, the tubes then being called "exhaust pipes."

In the former case, where the air enters the face through the pipes, if the total distance from B to E does not exceed 600 ft. and if the water gage at A is not less than a half inch, and if, moreover, 16-in. round galvanized-iron pipes are used with discharge ends D and E within 15 or 16 ft. from the faces, the air will be discharged from the pipes with such a velocity and in so great an abundance that every square inch of face will be completely swept by fresh air. Thus explosive mixtures cannot be formed, and the use of naked lights at all times will be permissible.

The pipe generally is laid on the floor against one of the ribs, the last joint being deflected a little toward the center of the place. To increase the velocity of the outflowing air without reducing its volume a conical cap 4 to 6 ft. long is placed at its extremity, one end fitting the main pipe and the other being of a diameter 12 in. less. Thanks to this cap the velocity of discharge in general is so much increased that the pipe orifice can safely be kept so far from the face that the pipe will not be injured when blasting.

In limiting, as I have done above, the ultimate length of pipe 2 to 600 ft. I have taken into account the necessity of tapping pipe 2 at F for the purpose of ventilating crosscut G by means of a secondary pipe, 3. So long as the width, X, does not exceed 50 or 60 ft., pipe 3 will be of ample size if of 12 in. diameter. Butterfly regulators, made like ordinary stove-pipe dampers, are placed in the air pipes at H and K. Moderately open at first, these regulators are gradually opened wider as the air pipes grow longer. In the case illustrated in Fig. 1 and with the length of heading, diameter of pipe and water gage given, regulator H would not require to be opened in full until after pipe 3 had been installed and put in commission. The driving of crosscut G will not retard the extension of the haulageway, for there is plenty of air for both of them. But after the new crosscut, G, is through and rail communication with the aircourse is established in that manner, stopping A is transferred to A_1, the base of the pipe system is advanced 500 ft. and all unnecessary steel is removed from the aircourse and crosscut L. The latter is then stopped tightly by a cement wall, thus clearing the ground for another continuous advance of 500 ft. Were it not for the necessity of placing a tee at F to ventilate

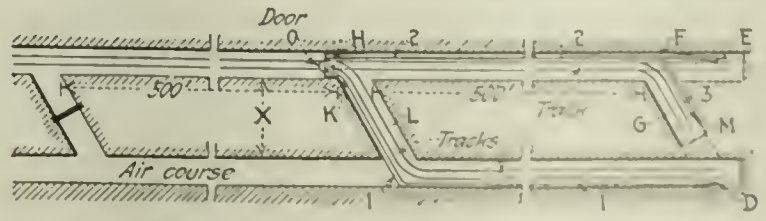


FIG. 2. SAME PIPES WITH DOOR ON MAIN ROADWAY

Air enters in this case by the main roadway and returns by the aircourse. As a result the stopping must be on the roadway and a door must be used to pass cars. Only by this method can really gassy mines be satisfactorily ventilated where the air enters by the roadway.

crosscut *G*, the haulageway could be driven in perfect safety through gaseous coal at least until the length of pipe 2 became 800 ft.

Besides providing for safety to an extent unapproachable in any other way, the ventilation system just described necessitates the driving of only one crosscut through the pillar, whereas if the ordinary method is followed, eight must be cut through. Thus the cost of laying and taking up switches and building stoppings is reduced in the proportion of eight to one. The cost of installing and maintaining good pipe systems is less than that of erecting and keeping up wood and canvas air-conveying contraptions, not, it is true, those of the flimsy, cheap, make-believe kind too often seen even in so-called big mines but the more substantial and effective sort that is obligatory if the headings in gaseous seams are to be driven in comparative safety and with any degree of rapidity.

Continuous, never-failing safety, the kind miners soon learn to trust without question, in itself makes for rapid driving. Speed is further accelerated considerably by doing away with the delays and lost motion that would accompany the driving of numerous crosscuts and the never-ending laying of switches and building of stoppings.

In nine mines out of every ten the men who drive the two straight places of a heading insist also on driving the crosscuts, thus stopping work in the former while busy in the latter. How can headings be driven fast under these conditions, if a new crosscut has to be made every 60 ft.? No immediate profit is derived from driving headings. The longer it takes to complete them the longer the capital they absorb remains unproductive. Hence all means leading to their rapid completion and utilization will save money.

Exhaust Pipes Unsuited to Gas Removal

Referring again to Fig. 1 and assuming that the ventilating current travels in the direction indicated by the double-point arrows, suggesting that the mine is ventilated by an exhaust fan, it will be easily understood that, before entering the pipes at their mouths, *D*, *E* and *M*, the air travels through places of comparatively large cross-section. Hence it moves slowly—too slowly to have enough energy to sweep away the gas instantly as it comes out of the coal.

Even if the mouth of a pipe is kept only a few inches from the face, which cannot be done in actual practice, the suction will be insufficient to remove the gas fast enough to make the place safe for operation with naked lights. Only the gas coming out of the seam in the immediate neighborhood of the mouth of the pipe goes promptly into the latter. It is unnecessary to say that no conical cap of the kind just mentioned is used with exhaust pipes.

In mines ventilated by exhaust fans the arrangement shown in Fig. 2 is used. The operation of this system requires no lengthy explanation. That it works in all particulars as efficiently as the blowpipe arrangement fully described above is easily understood from a comparative study of Figs. 1 and 2. The door, *O*, constitutes a drawback, but it is inevitable when the blowpipe system is used in combination with exhaust ventilation.

Ventilation of the kind herein described is not used as extensively in this country as in Europe. I have installed with great success automatic blowpipes in a viciously gaseous West Virginia mine where work had been suspended and where serious contemplation was given to abandoning the mine, the time-honored brattice system of conveying air having proved a costly failure, practically all the men having left, being rendered apprehensive by reason of the frequency of explosions.

I have employed the same method, also in West Virginia, to drive a single heading to the outside, a distance of 1,440 ft., using without restraint the worst kind of smoky, ill-smelling dynamite and cleaning three 5½-ft. cuts daily.

In Belgium a single place driven in the coal between workings in preparation at a new low level and old workings in the level immediately above is termed a "montage." In such places blowpipes with exhaust ventilation are the recognized means whereby air is supplied to the men at work. Places are driven by this means often on extremely steep pitches between levels having a difference in elevation seldom less than a thousand feet.

Weight Saved and Stiffness Added to Cars By Use of Pressed Steel Units

STAMPING or pressing a tin pan or other kitchen utensil from a single piece of metal, giving the finished top a rolled edge, is an old process the product of which is familiar to everyone. The accompanying illustration shows the result of applying the same or at least an analogous process to the manufacture of mine cars.

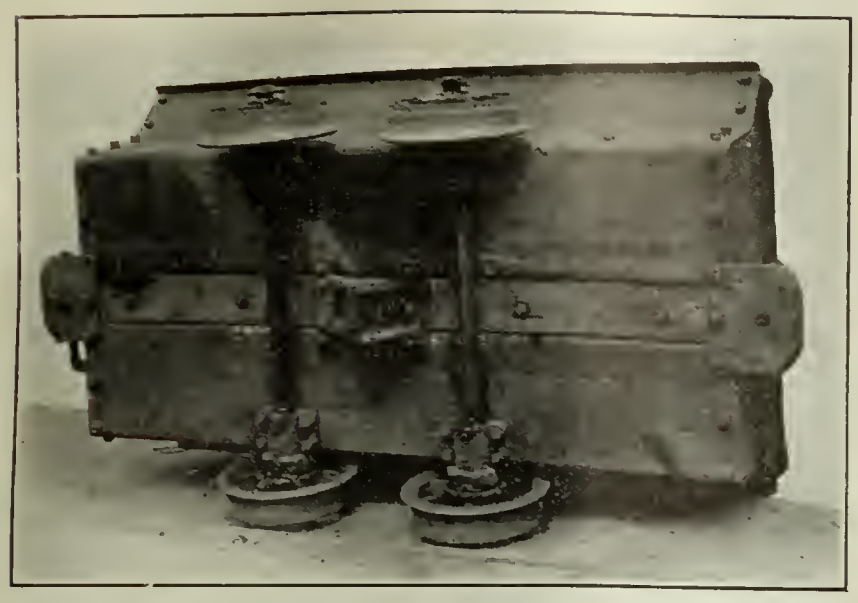
The body of this car, which is of the "solid" type, consists of three pieces—the bed and the two ends. These are bolted together, the ends being flanged for that purpose. In the center of the bottom an inverted longitudinal groove is pressed which receives a wooden stringer that forms the bumpers at either end. These, of course, are covered and protected with a suitable forged steel plate. A through drawbar bolted to the stringer and car bottom furnishes an efficient means of coupling. The top of both the bed and ends is flanged over to afford stiffness.

Trucks of any desired type may be applied, also any of several attachments such as the car-haul lug shown in one of the accompanying illustrations or other variations which may happen to suit local conditions. In



STEEL CAR BODY BUILT UP OF ONLY THREE PARTS

Where would we have arrived if automobile bodies had been made of stiffening bars and a covering of plates bolted into place? The mine car is going to be shaped after a while in the same manner as an automobile. We have already attained to a three-piece car body bolted together with rolled edges to stiffen the plates.



UNDERSIDE OF PRESSED STEEL CAR

An inverted longitudinal groove is pressed in along the center line of the car bottom. A wooden stringer is set in this channel and it forms the bumper at each end.

this respect, as in all others except details of construction, this car is exactly like any other of similar shape and capacity.

Although the dies for making these cars are somewhat expensive, once these are made a car can be turned out at small cost and with great rapidity. Cars of this type may be shipped knocked down, to be assembled at the mine. When thus shipped the space required is small, as the various pieces will nest readily. Should a car be disabled in a wreck the various pieces can be returned to the factory, where they can be passed through the forming press and restored to their original shape. This car will soon be manufactured to such shape and dimensions as the customer may specify by the Johnstown Steel Car & Supply Co., of Johnstown, Pa.

Wood Pipe vs. Cast-Iron for Large Lines

SO MANY large water mains are laid to mines for domestic uses and for quenching coke, as well as for draining away mine water, that a paper by J. W. Ledoux, consulting engineer of Philadelphia, Pa., read at the annual convention of the American Water Works Association will be of interest. It will be remembered that he is talking of permanent pipe, whereas mining engineers usually regard 25 years as looking far enough into the future. He says, among other things: For all water main of ordinary size, cast-iron pipe generally is regarded as standard. More cast-iron pipe is used for the carriage of water than all other pipes combined, the reason being that cast-iron pipe can be made absolutely tight under all circumstances and will remain so under all variations of pressure. For very large sizes, however, it is too costly as compared with wood or steel, and under many situations the reduction in capacity due to tuberculation is so serious that engineers will prefer a reinforced-concrete or wood pipe.

Undoubtedly wood pipe comes next to cast iron in the generality of its use. It may be conservatively stated that cast-iron pipe will last one hundred years. Although there are many modern wood pipes that have been giving good service longer than 25 years, when we compare wood with cast iron it is best to assume a short life for the wood pipe.

As an example, let us take 24-in. continuous redwood pipe and assume a life of 25 years. Say the wood pipe will have to be renewed four times in 100 years and

TABLE I—SAVING BY USING WOOD RATHER THAN CAST-IRON PIPE

	Wood	Cast Iron
Initial cost of 24-in. pipe	$41,900	$67,600
Increase in cost of cast-iron pipe to obtain 20% increased capacity	.....	6,450
Initial cost for equal average capacity	$41,900	$74,050
Annual Charges:		
Wood pipe—repairs 1%, taxes 0.6%	$670	.....
Cast-Iron pipe, repairs 0.25%, taxes..6%	.....	630
Present worth of $41,900 at 5% for renewal in 25 years	$12,373	.....
Present worth of $41,900 at 5% for renewal again in 50 years	3,654	.....
Present worth of $41,900 at 5% for renewal again in 75 years	1,079	.....
Present worth of $41,900 at 5% for renewal again in 100 years	319	.....
Present worth of $670 per year for 100 years at 5%	13,400	.....
Present worth of $630 per year for 100 years at 5%	.....	12,600
Initial cost for equal average capacity	41,900	74,050
Total present worths	$72,725	$86,650
Saving (about 20%)	14,488	.....

cast-iron pipe will last indefinitely. Let us take the average discharging capacity for the wood pipe as 20 per cent greater than that of cast iron. Table I shows the details and results of a cost comparison, computed on the basis of present worth.

For machine-banded Eastern pine (also 24 in.) the initial cost would be $28,900 as against $41,900, but after making the same calculations as are shown in Table I the present worth figures obtained for wood pipe would be $50,125 and for cast-iron pipe $86,650, a saving of $36,525.

Wood Pipe Declared Cheapest Now and in End

For 12-in. machine-banded Eastern pine pipe the initial cost would be $14,900 for the wood pipe and $26,900 for the cast-iron pipe. Making the same calculations as before, the present worth of the total cost of the wood pipe would be $25,847, and of the cast-iron pipe $34,027, or a saving of $8,180, 28 per cent of the initial cost of the cast-iron pipe.

When a financial comparison on a rational basis shows such a material advantage of wood over cast-iron pipe, the question naturally arises, why is cast iron so universally preferred by most of the leading engineers? It is, no doubt, because there have been so many unfortunate experiences with wood pipe.

From our knowledge of water pipe, it may be said that the best pipe that could be obtained for any purpose would be cast iron with some sort of non-corrosive and indestructible inner lining, but in ten years from now this statement may be obsolete, and Mr. Ledoux is of the opinion that we are on the eve of great and fundamental improvements in water-pipe manufacture. However, it is believed that it will be many a decade before the use of wood pipe will be unwarranted.

TABLE II—COMPARATIVE COST PER FOOT INSTALLED OF WOOD AND CAST-IRON PIPE FOR 65-LB. PRESSURE

Nominal Diameter In.	Machine-Banded Wood Pipe			Continuous Wood Pipe		Cast-Iron Pipe at $44 Per Ton
	Pine	Redwood	Fir	Redwood	Fir	
6	$0.96	....	....	....	....	$1.26
12	1.49	....	....	....	....	2.69
20	2.29	$3.70	$3.27	$3.43	$2.92	5.21
24	2.89	4.84	4.31	4.19	3.58	6.71
30	4.13	....	....	5.27	....	9.13
36	....	....	....	6.35	....	12.02
48	....	....	....	9.50	....	8.90

Trenching is for all kinds of pipe taken as follows:

6-In.	12-In.	20-In.	24-In.	30-In.	36-In.	48-In.
$0.37	0.52	0.76	1.00	1.15	1.40	2.00

The following weights of pipe are taken in pounds per lineal feet:

	6-In.	12-In.	20-In.	24-In.	30-In.	36-In.	48-In.
Machine banded pine	15	22	38	49	85	...	...
Machine banded fir	..	..	37	40	..	..	..
Continuous redwood	..	..	35	44	60	76	115
Continuous fir	..	..	38	48	66	83	125
Cast iron	31	76	160	210	300	407	660

Hauling taken at $2 per Ton.

Advantage of Electric Hand Lamp, One Type Of Which Contains Solid Electrolyte

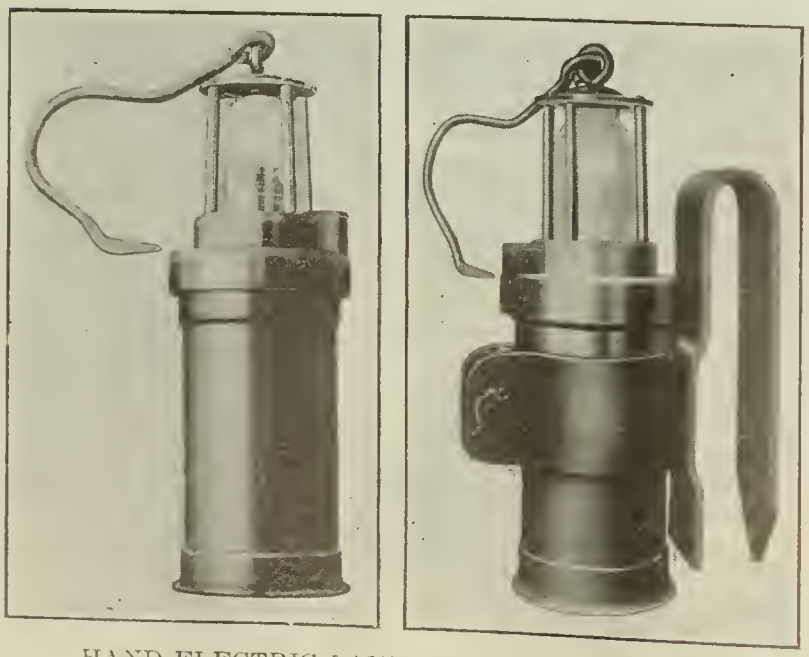
ALTHOUGH the utility of the electric cap lamp in mine illumination is well recognized and it fills a need that has long existed, the hand lamp possesses advantages found in no other type of illuminator. Among these might be mentioned the equal diffusion of light in all directions rather than its concentration on one point or a comparatively small area, and a light flux of at least twice the volume of that emitted by the cap lamp. Furthermore, the hand lamp is hung upon a rib or timber, leaving the miner free to work unencumbered by any harness, battery or lamp. In addition to this the hand lamp is less delicate in construction and consequently less liable to derangement or injury than the cap lamp.

A new electric hand lamp, known as the Ceag R M C and embodying many innovations and advantages hitherto not employed, has recently been placed on the market by the Concordia Electric Co., of Pittsburgh, Pa. Two of these lamps, one fitted with a white dome and designed for miners' or foremen's use and one fitted with a red dome and a detachable bracket for attaching to the end gate of a car and intended to be used as a tail light, are shown in the accompanying illustration.

These lamps are, as usual, made in two parts—a lower and an upper. The lower portion consists of the battery, its container and the necessary contacts. The battery container is of pressed steel heavily tinned and fitted with an extra bottom cap welded in place. The negative battery element is placed directly inside the case, which is lead-lined, while the positive element, which is a hollow cylinder, is placed concentrically within it. Both elements are held in position at the bottom by means of celluloid crosses and rubber washers.

Probably the greatest innovation embodied in this lamp is the electrolyte employed. This is neither acid nor alkali; in fact is not a liquid. Solidifying the electrolyte results in many advantages, chief of which is that all possibility of leakage is obviated and that turning the lamp in any position whatsoever in no wise affects the amount or brilliancy of the light emitted. Thus the lamp may be turned completely upside down without either spillage or diminution of light. The upper portion of the lamp is made of brass, which assures freedom from corrosion. It is joined to the battery case by means of a square thread and a magnetic lock. This latter will operate only when in proper contact with the magnetic unlocking device, and it thus is impossible for any unauthorized person to separate the two portions of the lamp. The light bulb is held in place within a heavy glass protecting dome by means of springs. Upon fracture of the globe these springs immediately break the electrical connections without the formation of a spark.

Specifications for this lamp are as follows: Average discharge voltage, 2; mean candlepower, 2½; rated capacity in ampere-hours, 11; burning hours per charge, 12 to 13; normal charging rate, amperes, 1½; length of charge period, hours, 7 to 8; total weight of complete lamp, about 5 lb. This lamp has been tested and approved by the Bureau of Mines. In addition to its applicability to underground operations it is being used in powder plants, arsenals, on battleships, submarines, in lighthouses, by municipal fire departments, in gas works, oil refineries and the like.



HAND ELECTRIC LAMPS OF 2½ CANDLEPOWER

The lamp on the left has a white dome and is designed for the use of miners and foremen; that on the right has a red dome and a detachable bracket by which the lamp can be attached to the end gate of a car as a tail light.

MINE SAMPLES OF COAL from the Chickaloon field in Alaska, submitted by the Naval Alaskan Coal Commission, have been analyzed at the Pittsburgh (Pa.) experiment station of the U. S. Bureau of Mines. The analyses show a high ash, low volatile coal, but it is hoped that washing will greatly reduce the amount of ash. The Department of the Interior recently took charge for the navy of the Chickaloon mine, the Coal Creek mine, and other prospects on government reservations. Operations were placed in charge of the Alaskan Engineering Commission, the inspection, however, remaining under the Bureau of Mines. The Naval Alaskan Coal Commission mined during the month of April from the Chickaloon mine 2,352 tons and from the Coal Creek mine 33 tons. This coal was mined for the purpose of obtaining a large sample for naval testing. The Alaskan Engineering Commission is prospecting for coal with a diamond drill at Chickaloon.

IN ANSWER TO QUESTIONS by members of Parliament as to the coal supply of the Canadian railways, information was given by the government that the Canadian National Railway management has a contract with the Youghiogheny & Ohio Coal Co., of Cleveland, for approximately 1,000,000 tons per annum, which expires Dec. 31, 1923. This tonnage covers railway requirements for western and northern Ontario and lines to Winnipeg and East, the basis of the price per ton, including duty, being substantially lower than the price at which Canadian coal can be obtained within the area mentioned. Preference is given to Canadian coal and more Canadian than American fuel always is bought by the management, but where American coal, including duty, can be delivered at Canadian points more cheaply than the domestic product, the management will continue to buy to the best advantage. The Canadian National Railways purchased 1,000,000 tons from Nova Scotian collieries between April 1, 1921, and April 1, 1922, E. C. Vaughan, vice-president of the lines, told the Public Accounts Committee of the House of Commons recently. Mr. Vaughan declared that it was hardly fair to ask the National Railways to purchase coal in Nova Scotia for Ontario lines when American coal could be delivered at Cobourg, Ont., cheaper than Nova Scotia operators were charging at the mine mouth.

AT BENBUSH, W. VA., a 16-year-old boy who had just started to work in the mines was trained in first aid by the crew of U. S. Bureau of Mines Car No. 8. The local mine superintendent reported that a few days later this boy found drowning in a spring a three-year-old child. The boy rescued the child and performed artificial resuscitation, thus saving the child's life.



Problems of Operating Men

Edited by James T. Beard



Continuous Operation of Mine Ventilating Fan

Safety the First Consideration—Expense Heavy in Idle Time —Conditions in One Mine Afforded Satisfactory Natural Ventilation—No Fixed Rule Can Apply to All Conditions

SINCE reading the excellent letter of "Mine Foreman," *Coal Age*, Mar. 30, p. 537, regarding the stopping of the mine fan in idle times, we have discussed this question from every angle. It is one on which all mining men do not agree, further than to allow that safety-first is the main consideration.

Personally, I have always felt that good mining practice required the continuous operation of the fan during the entire twenty-four hours of the day, under ordinary conditions. In a mine generating gas in any considerable quantity, my belief is that the fan should never be stopped, except in case of breakdown or urgent need for repair.

In that case, the men should be notified and withdrawn from the mine and not permitted to re-enter, until after the fan has been running a number of hours and the mine examined and reported safe for work. To guard against such emergencies a very gassy mine should be equipped with duplicate fans that can be operated alternately, one being held in reserve in case of accident to the other.

Expense of Running Fan Needlessly Must Be Considered

While I have never advocated and do not now advise the shutting down of a mine fan during a period of idleness, this question was put up to me a while ago when in charge of a mine where the equipment was entirely electrical. The fan was located at a distance of about a mile from the power plant and operated by an electric motor.

It can readily be understood that the running of this fan during a period of idleness, when there was no need for power for other purposes, involved a heavy expense that the company was anxious to avoid. At the same time, they were unwilling to provide any other equipment for running the fan independently.

Under these conditions, I began to investigate in order to ascertain what effect the shutting down of the fan would have in the mine. My surprise can well be imagined on finding that there was almost enough natural ventilation to keep the mine safe when the fan was shut down, provided the air could be carried to the face of some of the more distant workings.

After making a few needed repairs on the stoppings, however, we were able to obtain a volume of 11,000 cu.ft. of air per minute in that district, which was sufficient to keep the mine cool and safe. It should be stated here, however, that there was no explosive gas and very little gas of any kind generated in this mine. The principal object was to secure a sufficient circulation to keep the workings cool and avoid the danger of spontaneous combustion.

Ventilation Not Wholly Natural

Neither must it be thought that the condition I have described was wholly the result of natural ventilation. The heat from a steam pipe in the hoisting shaft, which was the upcast of the mine, greatly assisted the circulation. The steam was used to operate the pump at the foot of the shaft. Also a considerable amount of water was falling in the downcast shaft, which was another help.

The practice of shutting down the fan during an idle time has now been followed for over two years at this mine, and has proved satisfactory. The experience has taught me that no hard-and-fast rule can be applied to suit all conditions. What is safe practice in the mine just mentioned would be far from safe under other conditions and these conditions must be carefully studied, before deciding the question of stopping the fan on idle days.

Central City, Ky. Ostel Bullock.

Speed of Fan at Firing Time

Slack ventilation and black powder cause explosion in mine — Decide to run fan at normal speed when firing.

AN instance that occurred not long since and which might have proved a fatal disaster, brings to my mind the subject of whether a mine fan should be slowed down, run at normal speed, or have its speed increased, at the time when shots are to be fired in a mine.

This subject has been widely discussed by able men and the general conclusion seems to be that there are conditions when the fan should be run slower and others when it should be run faster, at the time of firing shots.

The instance to which I refer occurred in a mine where thirty-six men were shooting coal off the solid with black powder. All shots were fired twice a day, at noon and again at 4 p.m..

The mine in question had much in its favor that would seem to render it almost immune from explosion. It is a wet mine and the 9 ft. seam has a fireclay parting about the middle, which should assist in rendering inert any dust that might accumulate.

With these conditions in its favor, however, the mine exploded at noon, one day, flames coming out of the drift in large volume. The fan was so badly damaged that new parts had to be secured before the mine could be again operated. Fortunately, no one was in the mine at the time.

In this mine, it was the custom for all the men to come outside for lunch, at the noon hour. When word was given to fire, the men would all light their shots and run for the entrance and, on this occasion, every man was safely outside of the mine when the explosion took place.

Little damage was done inside of the mine, the force of the explosion being wholly outward, the inner workings acting as a *cul de sac*. Not a post was knocked down or a car displaced; but everything remained as the miners had left it a few moments before.

Lack of Ventilation the Cause

Speculation as to the cause of the explosion resulted in the unanimous conclusion that it was the natural result of insufficient ventilation at the time of firing. It can readily be imagined what the condition of the mine atmosphere would be if from fifty to one hundred shots, charged with black powder, were exploded, practically at the same time, or within a few minutes of each other.

All holes in this mine, were charged with black powder; and the hot gases set free when the first shot fired furnished a highly combustible atmosphere to be ignited by the flame of the later shots. Everybody apparently knew and realized this condition and reached the same conclusion as to what was necessary to avoid another catastrophe.

It was decided by all that there was not enough air moving at the working face to dilute and render harmless the gases produced in firing. On the other hand, it was argued that to increase the speed of the fan beyond the normal would cause a dangerous velocity of the air sweeping the working faces.

In view of these facts, it was the unanimous conclusion that the fan should be run, regularly, at its normal speed. In addition, it was decided to

repair all stoppings and use nothing but permissible explosives in blasting. This, it was hoped, would render the mine immune from further explosion.

Pikeville, Ky. ENGINEER.

Labor on Tonnage Basis

Economy of mine labor—Practical effect of putting mine foremen on tonnage basis.

SPEAKING in regard to economizing on mine labor, a mine foreman of Madisonville, Ky., in his letter, *Coal Age* Apr. 20, p. 660, advocates putting all mine employees, including the mine foremen, on a tonnage basis, as the best means of securing a full day's work for a full day's pay.

I have been wondering if our friend has stopped to consider for a moment, what would be the result of putting the mine foreman on a tonnage basis. Without reflecting any discredit on the honesty of mine foremen in general, let me ask if this proposition would not throw a strong temptation in the way of the average foreman.

Think for a moment what the rightful province of a mine foreman is and how he labors in a different way from the miner and other daymen working in the mine. While miners and daymen are chiefly interested in increasing the output of the mine, assuming they are all working on a tonnage basis, the foreman is responsible for looking to the future interests of the company, as well as increasing the daily tonnage.

The development of a mine with regard to the future and the conservation of the coal often makes present interests secondary to the future requirements. For example, areas of low coal must be worked out at once or lost; there is deadwork to be performed if the roads are to be maintained, abandoned places made safe and the working places properly ventilated.

Responsibility of Foremen

It is up to the foreman to see that these and other matters are constantly given attention, though he knows that it means a certain curtailing of the possible output of the mine. The question is will the average foreman set aside his own personal interest in securing a heavy tonnage whereby his pay will be increased.

Now, it is human nature for every man to look to his own interests first and mine foremen are no better than other men in this regard. That being true, what would be the natural result of a mine foreman being paid on a tonnage basis. Would it not result in the following conditions?

There would be the temptation to work out cheap coal; rob entry pillars and take out blocks of coal that should remain until they can be removed with greater safety and economy a little later. Men would be put to work in places that should stand idle, for a time, in order to avoid undue pressure being brought on the pillars in other sections of the mine. Finally, the work of repairing stoppings, timbering airways and keeping up the roads would often be sadly neglected.

Without going into further details, is it not true that every man's heart, including that of the foreman himself, would be wholly set on putting out a large daily tonnage, without proper regard for what that would mean to the future welfare of the mine and the best interests of the company.

Mayport, Pa. JAMES THOMPSON.

Importance of Checking System

Accident revealed only by failure of men to return home—Prompt rescue saves lives of two men caught by a fall—Checking system needed in every mine.

ONE reads with deep regret reports of fatal accidents such as that found in the news columns of *Coal Age*, Apr. 13, p. 641, recording the deaths of two miners, working in the Woodward mine of the Glen Alden Coal Co., at Edwardsville, Pa.

While the report states that both of these men were probably instantly killed, their necks and backs being broken, it is not known at what time the fall occurred and how long a time may have passed before their bodies were found. The fact of the accident was only made known by the failure of the men to return to their homes, and a search was then made to ascertain the cause of their delay.

Importance of Checking System

Reflecting on these reports that come to our knowledge from time to time, one is forcibly impressed with the importance of a thorough checking system being installed in every mine. Allowing it is true that, in this case, such a system would not have saved the lives of these men, it still remains that there are numbers of instances occurring daily in which it would be effective.

In the present case, an investigation would have been made immediately following the time when all the men should be out of the mine. This instance recalls to my mind the experience some time ago of two men working on a pillar when a fall of coal and rock caught and held them fast until rescue finally came.

That accident occurred in mine 201 of the Consolidation Coal Co., at Jenkins, Ky. Had it not been for the prompt report of their plight, these men would also have been killed, as shortly after their rescue another fall occurred that would have crushed out their lives.

Personally, I am strongly of the opinion that an adequate checking system should be installed in every mine, and that this should be made compulsory by law. There are numerous systems of this kind in use; but to be effective there should be a check on every man who enters the mine, and the evidence of his going in should again be withdrawn on his coming out, whether his stay is for short or long.

Edwight, W. Va. J. W. POWELL.

Abandoned Workings in Mines

No fixed rule possible—Many abandoned areas ventilated to advantage—Other areas dangerous if left open—Confined bodies of gas always dangerous.

IN giving my views on the question of ventilating or sealing abandoned areas in mines, I must confess to having no fixed conclusion in this matter. In my opinion, it is a thing in which no hard and fast rule can be laid down.

After carefully turning over the question in my own mind, I feel that any law covering this subject should place it wholly at the discretion of the state mine inspector, who must be able to determine the method of procedure in any given case that will promise the greatest degree of safety in the operation of the mine.

No Arbitrary Standard

To say that all abandoned workings shall be sealed, or all shall be ventilated, would be too much like setting up an arbitrary standard, without regard to the particular case, or giving a proper solution to the problem in hand.

Considering the diversity of coal-mining methods and systems, as we find them in the principal coal-producing states, I believe it is generally agreed that what will apply to the conditions in one district will fail to suit conditions in another district.

While there are undoubtedly districts where abandoned areas can be ventilated in a manner to prevent the accumulation of dangerous quantities of gas, the conditions in other districts and the methods of mining employed will hardly permit of this proceeding.

Standing Gas Dangerous

On the other hand, it is quite generally agreed that a standing body of gas, even though confined in a tightly sealed area, may prove a menace to safety and the security of the property. In other words, it is a hazard that invites a catastrophe and should not be permitted if it is humanly possible to prevent it.

In general, let me say that large abandoned areas in mines should only be sealed as a last resort; when it has been finally decided that such procedure will make the mine safer or less subject to disaster, by reason of the gaseous condition of the workings.

Pikeville, Ky. GEORGE EDWARDS.

Maintaining Tracks in Airways

Ventilation inefficient in many mines—Airways practically neglected when tracks are drawn—Main airways blocked by falls, owing to lack of timbering.

I HAVE read many references, in *Coal Age*, to the insufficiency of ventilation at the working faces in mines. Almost invariably, investigation will show that the cause is neglected airways that are choked by

falls of roof which prevent the free passage of the air current.

In a few instances, no doubt, the fault will be found in long lines of brattices, many of them in bad repair and leaky stoppings on the roads, which prevent the air from reaching the working faces.

In my own experience, I have found that whenever the track is drawn from a main intake or return air-course the result is that far less attention is given to the timbering of that airway; and it is not long before heavy roof falls occur, which obstruct the flow of the air and there is trouble.

Small Falls Often Disregarded

At first, these falls are small and of little consequence. But it should be remembered that they are the forerunners of larger breaks that will extend eventually several feet in height and length. Because the track has been drawn no attempt is made to clean up the falls and, for the same reason, little timber is taken into the place and set. Had the tracks been allowed to remain, the condition would be quite different and there would not be the same objection to cleaning up the airway and keeping it properly timbered.

Danger of Removing Track

In my judgment, the removal of track from main air-courses means their practical abandonment to the consequences just mentioned. In many instances, I have known main airways to be almost completely blocked for several hundred feet, to the extent that it was almost impossible for a man to get through them.

One can readily imagine what the effect of this condition is on the ventilation of the mine. It is a matter that needs careful consideration. In my opinion, no main air-course should be left without a track on which refuse can be hauled out and the necessary timbers taken into the mine.

Hillside, Ky. O. Kennett.

Inquiries Of General Interest

Use of Carbon Monoxide Detector in Mines

Device Depends on Color Test—Absorbent Material Contained in Steel Tubes—Extra Tubes and Charge of Absorbent—Practical Tests Prove Instrument Useful

KINDLY explain the use and construction of the device known as the "Carbon Monoxide Detector," which I have heard has been used with success and is a more practical means of detecting this dangerous gas in mines, than by observing the effect of the gas on small birds and mice confined in a cage. Safety Inspector.

————, Ky.

This device, as developed and manufactured by the Mine Safety Appliances Co., Pittsburgh, Pa., is illustrated in the accompanying figures. It consists of a small metallic tube or barrel A, to one end of which is screwed a headpiece B, containing two valves C, C, an inlet and an outlet valve, which control the flow of the air-charged gas in its passage through the instrument.

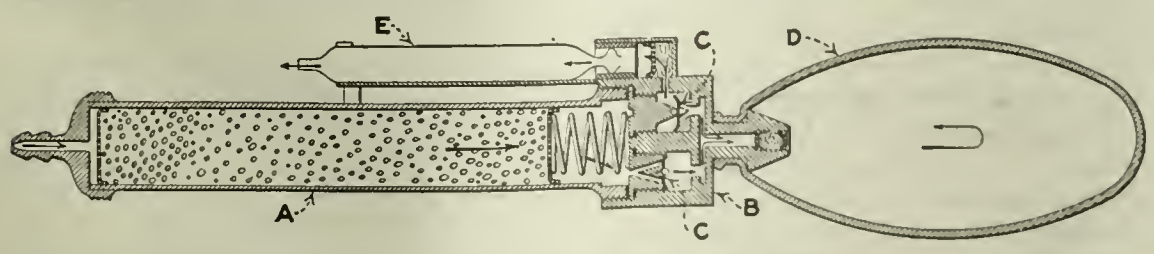


FIG. 1. LONGITUDINAL SECTION SHOWING CONSTRUCTION OF DEVICE

To the headpiece B, is attached, as shown in Fig. 1, a rubber bulb D, the compression and expansion of which first draws the air into the instrument and then forces it out through the detector tube E, which contains a highly acid substance that changes to a green color, under the action of carbon monoxide gas. The depth of the color depends on the percentage of gas present in the air passing through the tube.

As shown by the arrows in the figure, the air to be tested for gas is drawn through the metal tip or nozzle attached to the other end of the barrel A. In this barrel is contained, between two plate screens, a chemical substance that is capable of absorbing and removing from the air any gas it might contain, except carbon monoxide.

This absorbing material has been called "gasorbent." The material becomes saturated by use and must be replaced, from time to time, one extra charge being furnished with the instrument. In order to test the efficiency of the gasorbent, it is only necessary to take a fresh detector tube and make a test in the regular manner in a gas-free atmosphere. Any color appearing in the tube, after twenty squeezes of the bulb, shows the gasorbent must be replaced by a fresh charge. This is done by unscrewing the head piece B, removing the screen and pouring out the charge, refilling the barrel and replacing the screen, and head.

The detector tubes E, are made of heavy glass and filled with a specially prepared chemical solid called "hoolamite." Each end of a detector tube is sealed, by being drawn to a fine point, which is scored and easily broken off when about to make a test and before inserting the tube in place on the instrument.

When making a test with this instrument, both ends are broken off from a detector tube, which is then inserted in place on the instrument, side by side with another tube that furnishes a color scale for determining, by comparison, the percentage of gas present in the air tested.

When all is ready, squeeze the bulb ten times (Fig. 2) and compare the color produced in the detector tube, if any, with the color scale by sliding the latter along until a correspondence is reached in the color of the two tubes. The original color of the chemical is a grayish white, which changes to green, the intensity of the shade being an index of the percentage of gas present.

If no green color appears in the tube, after ten squeezes of the bulb, there is



FIG. 2. MAKING A TEST FOR GAS

less than one-tenth (0.1) of one per cent of gas in the air tested. Again, no color showing in the tube, after twenty squeezes of the bulb, indicates that there is less than five-hundredths (0.05) of one per cent of gas in the air. Should more than one-tenth per cent of gas be present, coloration of the material will result from several squeezes of the bulb.

A single detector tube will last from eight to ten tests of ten squeezes each, before being exhausted, which is determined by the color failing to fade out after a test is made. Owing to the fading of the color after a test, it is important to determine the percentage of gas quickly. The slight smoke or fumes sometimes observed coming from the end of the tube when making a test is harmless.

Rubber tubes one-eighth of an inch in diameter are supplied with the instrument, to be attached to the tip end of the barrel, for the purpose of drawing the air from some high point in the roof, if desired.

Examination Questions Answered

Bituminous (Pa.) Mine Foreman's Examination Held April 11-13, 1922

(Selected Questions)

QUESTION—*What are the duties of the mine foreman in regard to the following*: 1, *Reports*; 2, *Examining working places;* 3, *Measuring air currents;* 4, *Tracks and timbering;* 5, *Stoppings;* 6, *Coal dust;* 7, *Fencing off places, use of danger signals and removal of dangers;* 8, *Ventilation;* 9, *Accident to fan;* 10, *Extraction of pillars?*

ANSWER—1. Foreman must sign reports of firebosses and assistants; make daily and weekly reports of condition of mine and air measurements; report all serious and fatal accidents to mine inspector; and report to the superintendent in writing any failure to remove gas from inaccessible places.

2. All working places must be examined each day by foremen or assistants.

3. Foreman or assistant to measure air at inlet, outlet, last breakthrough in last room and at face of entry, in each split, and report same once a week.

4. See that every working place is securely timbered and a plentiful supply of timber for that purpose on hand, or remove the workmen where timber is wanting.

5. Foreman must see that stoppings are built where necessary to carry the air forward to the face of the working; all stoppings on main entries and airways to be substantially built of concrete or masonry.

6. Foreman must see that accumulations of dust are kept damp, by suitable means or a sprinkling system. All dust accumulated at working faces must be loaded out of the mine.

7. Foreman must see that all dangerous places are promptly fenced off and danger signals placed to warn persons not to enter. He must see that all dangers reported are promptly removed or safeguarded.

8. The foreman is made personally responsible for all matters pertaining to ventilation and must see that a sufficient air current is kept in circulation and made to sweep all working faces throughout the mine.

9. In case of accident to fan, the foreman must remove the men from the mine and not permit them to enter again, until the mine has been examined and reported safe.

10. Foreman must attend to the drawing of all pillars in a safe manner and employ only experienced men for that purpose.

QUESTION—(*a*) *In an entry* 9 *ft. wide and* 5½ *ft. high, the anemometer reads* 225 *ft. per min.; what is the volume of air passing? (b) Show the formula by which this problem is worked.*

ANSWER—(a) The sectional area of the airway is $9 \times 5\frac{1}{2} = 49.5$ sq.ft.; the volume of air passing is, therefore, $49.5 \times 225 = 11{,}137+$ cu.ft. per min.

(b) Calling the quantity of air in circulation, Q; sectional area, a; velocity of air current, v; the required formula is $Q = av$.

QUESTION—*State why, in your opinion, the pressure or water gage increases as the workings are extended, other conditions remaining the same.*

ANSWER — The pressure or water gage is a measure of the mine resistance, which is determined by the extent of the rubbing surface and the velocity of the air current. As the mine is extended, the rubbing surface is increased, which increases the mine resistance and the water gage.

QUESTION—(*a*) *Name and give the symbols and specific gravities of the non-explosive gases. (b) What are their effects on life and combustion?*

ANSWER — (a) The non-explosive mine gases are carbon dioxide (CO_2); specific gravity 1.529; and the nitrogen of the air (N_2); specific gravity 0.967.

(b) Carbon dioxide, though not a poisonous gas, has a distinctly toxic effect on the system. It is an incombustible gas that will not support life or flame, but causes death by suffocation when breathed in sufficient quantity. In less quantity, it causes headache and nausea.

Nitrogen, also, is an incombustible gas and will not support life or flame, but causes death by suffocation.

QUESTION—*In mine ventilation*: 1. *What is the minimum quantity required by law?* 2. *What are the advantages derived from splitting the air?* 3. *What is the effective limit in splitting the air current?* 4. *Why is it necessary to use a regulator?* 5. *What are the requirements of the law in regard to principal doors?* 6. *What does the law require in regard to checking the air current into the working places?*

ANSWER—1. In non-gaseous mines, the law requires 150 cu.ft. per min.; and in gaseous mines, 200 cu.ft. per min., for each person employed and as much more as one or more of the inspectors may consider is required.

2. Splitting the air current gives a larger quantity of air circulated by the same power, at a less velocity. Each district is provided with a separate air current that isolates it more or less from other sections of the mine and the ventilation of the workings are under better control.

3. Splitting reaches the limit when the velocity is so far reduced as not to dilute, render harmless and carry away all noxious and dangerous gases.

4. A regulator is required to proportion the quantity of air to the need in each split.

5. Principal doors must be so placed that when one door is open another having the same effect on the current will remain closed. An extra door must then be provided to be used in case of necessity.

6. The law requires the mine foreman to see that cut-throughs are provided in all room and entry pillars and, later, closed with suitable stoppings, so that the air current will be made to pass through the last cut-through next to the working face.

QUESTION—*A siphon pipe is* 4 *in. in diameter and* 1,000 *ft. long, with a rise of* 15 *ft. and a fall of* 23 *ft. How many gallons of water will be discharged in* 24 *hr.?*

ANSWER—Without knowing the separate lengths of the suction and discharge ends of this pipe line, it is not possible to determine if the siphon will work satisfactorily. In order to obtain the best results in siphon drainage, the diameters of the two respective parts of the siphon must be proportioned to their respective lengths and the effective head in each. However, in a general way, the flow in this pipe may be estimated from the total effective head and length, according to the following formula:

$$G = d^2\sqrt{\frac{800d(h_2 - h_1)}{l}}$$

$$= 4^2\sqrt{\frac{800 \times 4(23 - 15)}{1{,}000}}$$

$$= 16\sqrt{0.8 \times 4 \times 8} = 16\sqrt{25.6}$$

$$=$$ say 81 *gal. per min.*

On this basis, the total flow in a 24-hr. day would therefore be $81 \times 60 \times 24 =$ 116,640 gal.

QUESTION—*The inlet air current of a mine has a temperature of* 60 *deg., and at the outlet the temperature is* 65 *deg., barometer* 30 *in. What is the difference in weight of* 100 *cu.ft. of air between the inlet and outlet?*

ANSWER—The weight of a cubic foot of air at a temperature of 60 deg. F, bar. 30 in. is

$$w = \frac{1.3273 \times 30}{460 + 60} = 0.076575 \text{ } lb.$$

Likewise, the weight of a cubic foot of air at a temperature of 65 deg. and the same barometer, is

$$w = \frac{1.3273 \times 32}{460 + 65} = 0.075845 \text{ } lb.$$

Then, for 100 cu.ft. the difference in weight would be 100 (0.076575 — 0.075845) = 100 × 0.00073 = 0.073 lb.

President Harding "Invites" Operators to Return to Mine Properties and Resume Operations

By Paul Wooton
Washington Correspondent of *Coal Age*

LATE Monday night the chief topic of speculation among coal operators was the meaning of the President's invitation to the operators "to return to your mine properties and resume operations." In the opinion of some this was taken to mean that the President intends that the production of coal must be resumed at once and the means is left to the operators to work out, but whether with a guarantee of protection is not clear.

While the President expressed disappointment at the lack of unanimity, the point was emphasized in a White House statement that all operators had subscribed broadly to the proposal to arbitrate. The separate replies of the different groups of operators appear elsewhere in this issue. The statement on which all agreed was presented in the form of a letter from Mr. Ogle to the President. It follows:

"We have given most careful and thorough consideration to the proposal submitted by you on July 10, supplemented by your statement of July 15, and we are not only in entire accord with your plan to establish a general tribunal to inquire into all the facts in our industry and make recommendations for the solution of our fundamental problems but we urge that such a plan be put into effect by you.

"We also wish to remind you that we have already proposed the broad principle of arbitration in our previous conferences with the officials of the administration and with the representatives of the miners. We still stand on that broad principle and are in entire accord with you in that respect. We did have in mind, however, discussing with you certain recommendations as to the machinery to make an arbitration plan effective and to accomplish the results which the country and you yourself desire.

"In view of the contingencies that confront us and the varying conditions in the different coal-producing districts of the country, our conference has decided to answer your proposal by districts, rather than as a whole, and we attach hereto statements of the position taken by the several districts represented in the conference of operators assembled at your request here in Washington.

"All of the operators of your conference unite in supporting the principle of arbitration and collective bargaining and your high motives in calling us together. And, finally, they say to you and to the American people that each and every one of them stands ready in this crisis to put his properties and his own services at your disposal and command at any instant."

When the President has received the several replies, he said:

"I have heard your decision. I would not be frank if I did not confess a disappointment in your lack of unanimity. To the large majority of you, who have pledged readiness to resume activities under the government proposal, I must express my own and the public's gratitude.

"We have now reached a point, owing to the refusal of mine workers and a minority of your operators to accept the proposed arbitration, where the good offices of the government in seeking a voluntary adjustment of the dispute between mine operators and mine workers are without avail.

"I cannot permit you to depart without reminding you that coal is a national necessity, the ample supply of which is essential likewise to common welfare and to interstate commerce.

"The freedom of action on the part of workmen and on the part of employers does not measure in importance with that of public welfare and national security I, therefore, invite you to return to your mine properties and resume operations."

After the conference, the following statement was given out at the White House:

"At five o'clock this afternoon the coal operators made extended verbal and written reports to the President. All of them subscribed broadly to the proposal to arbitrate. The majority of the districts represented in the conference accepted the President's proposal unconditionally. A minority of the districts in the conference joined in subscribing to the general principles of arbitration and collective bargaining."

Objectors to Anthracite Tax Must File Exceptions and Furnish Bond

SAMUEL S. LEWIS, Auditor General of Pennsylvania, has notified all coal companies that have not made returns or paid the anthracite coal tax to the state, pending appeals of the constitutionality of the act of 1921, that they must file specifications of objection to the sum determined to be due and furnish bond in double the amount of the tax contested and make cost provisions for the collection. The tax in question is on production for the last half of 1921, and more than $3,100,000 is due for that period, according to the records of the Auditor General's department.

After the State Supreme Court had declared the act constitutional the Auditor General informed the companies which had taken appeals from the decision of the Dauphin County court that he expected notice whether the appeals were to be withdrawn or further contested in the United States courts because of the interstate complications arising from the imposition of the tax. Operators and companies not paying pending the determination of the constitutionality of the anthracite tax were told that they must pay promptly or incur the penalties provided for the nonpayment of any state tax within the time limit.

In a statement by Auditor General Lewis it is shown that 161 operators have settled their tax so far. He said: "Reports have been filed by 197 operators of the 385 collieries, washeries, or operations, and accounts have been settled against 161 operators at this date. Of the concerns mentioned, eighty-five showed no production during the period referred to, or from July 1, 1921, to Dec. 31, 1921. The aggregate amount of taxes, as shown by reports of anthracite coal producers filed, is $3,164,189.02, and accounts have been settled for $2,256,778.11 of this amount, although only payments have actually been made in most cases."

Coal Consumed by Public Utilities. 1919-1922

(In Thousands of Net Tons)

	1919	1920	1921	Monthly Average Last 3 yrs	Ratio each monthly av to Total Average	1922
Jan.....	3,000	3,594	2,984	3,192	110 60	2,512
Feb.....	2,860	3,251	2,644	2,918	101 11	2,247
Mar.....	2,560	3,263	2,641	2,821	97 79	2,354
Apr.....	2,520	2,923	2,417	2,620	90 79	2,109
May.....	2,560	2,832	2,415	2,602	90 16	2,173
June.....	2,650	2,858	2,434	2,647	91 72	
July.....	2,730	2,945	2,454	2,709	93 87	
Aug.....	2,860	3,010	2,573	2,814	97 54	
Sept.....	3,000	3,013	2,586	2,866	99 31	
Oct.....	3,180	3,169	2,759	3,036	105 20	
Nov.....	3,480	3,167	2,779	3,142	108 87	
Dec.....	3,700	3,198	2,893	3,264	112 75	
Total...	35,100	37,223	31,579	2,885		

Members of the Mine Inspectors' Institute of the United States, in convention at Chicago, July 11-13, missed the friendly and helpful presence of James T. Beard and re-elected him editor in chief of the Institute's proceedings.

Acrimonious Conferences of Operators Fail to Agree Unanimously to Harding Arbitration Plan

AFTER a series of conferences, described as having been the most acrimonious in the history of operators' meetings, the representatives of the various bituminous-coal producers' associations in unionized territory failed on Monday, July 17, to agree unanimously on the acceptance of the President's arbitration plan. A majority report, drafted by a committee headed by H. N. Taylor, was signed by all but three of the associations. This report accepted the President's proposal "without reservation or qualification." The three associations which submitted dissenting replies were the Pittsburgh Coal Producers' Association, the Indiana operators and the Central Coal Association of Pennsylvania. The text of the majority report is as follows:

"We have approached the earnest consideration of your proposal of July 10, 1922, for arbitration in the coal situation, with that degree of solemn earnestness that is due a subject that is so fraught with grave and far-reaching consequences to the whole American people that no private interests of ours can weigh in our considerations.

Accept Proposal Without Reservation

"Therefore, on behalf of the bituminous-coal operators who have been in conference with you and who represent associations producing in 1921 somewhere near 90 per cent of the bituminous coal, which was covered by collective bargaining with the United Mine Workers of America, we beg to state that we accept your proposal of July 10 without reservation and qualification. While making this unreserved acceptance we think that it is due to the public and to the industry that we should point out not only some suggestions which we believe would be helpful in the consummation of so great an undertaking but also some of our difficulties in acceptance.

"Inasmuch as the old machinery for making scales based on the Central Competitive Field has broken down, proven entirely inadequate to meet the changed economic conditions of the country, and is therefore now irretrievably abandoned, and inasmuch as the great varied technical and economic situation of the various districts makes it almost impossible for a national arbitration board to satisfy these differing situations, and inasmuch as the operators here assembled are anxious to maintain the principle of collective bargaining, we suggest that it should be made possible under a national arbitration for negotiations to be undertaken by states or other large groupings of districts, subject to the general direction of the arbitration commission of the major issues involved. This is in the mutual interests of both operators and workers, because of the many technicalities and varied economic conditions differing in the various sections of the country.

Recent Wage Scales Above Country's Average

"The wage scales expiring March 31, 1922, in the unionized industry based upon an inside day wage of $7.50 per day for mine labor, are far above the wage levels of the country. They are far above our competitors in the non-union fields. They impose a burden on the consuming public and the whole of industry. They affect the freight rates, the costs of manufacturers, the interests of our farmers and our work people in every direction. We have no doubt that in your proposal that the miners should return to work upon this scale even temporarily, you had in mind the more essential question of immediate return to production, in order that industry should not be paralyzed, that the proper wage levels to be determined would not thus be prejudiced, and that we and the public at large could afford to make this sacrifice in your effort to secure the return of the men to work, even though it did lean entirely to the side of the miners rather than to that of equity and general public interest.

"We had thought that the scale of November, 1917, based upon $5 per day for common labor, would furnish a better medial line between the contentions of the two parties. The largest part of the non-union coal production of the country at the present moment is carried on below this level.

"We welcome an exhaustive inquiry into the functioning of the industry, as we believe any exposure of the truth of the situation will show the intolerable and wasteful conditions under which the unionized industry is carried on under the present labor régime, and the penalties that are imposed upon the public by the inability to secure the enforcement of contracts and the thousand other ills. We suggest that it would be desirable to separate the problems of anthracite and bituminous coal. We see no objection to separating again the investigation problems from those of arbitration of the present disputes into different commissions, pending the development of some plan of stability.

"H. N. Taylor, Chairman;
"Michael Galligher,
"R. M. Davis,
"Rice Miller,
"E. C. Smith,
"P. J. Quealy."

In addition the statement was signed by the following associations: Pittsburgh Vein Operators' Association of Ohio, Cambridge District, Fifth and Ninth District Coal Operators' Association of Illinois, Jackson (Ohio) District, Illinois Coal Operators' Association, Central Illinois Coal Operators' Association, Iowa Coal Operators' Association, Southwestern Coal Operators' Association (Missouri, Kansas, Arkansas and Oklahoma), Oklahoma Coal Operators' Association, Bergholz-Amsterdam District of Ohio, Montana Coal Operators' Association, Southern Wyoming Coal Operators' Association, Central, North, Massillon and Coshocton Districts of Ohio; New York coal companies' interests in southern Ohio and Crooksville districts and some thirty individuals in various Eastern fields.

Washington, July 15.—That federal intervention in the coal strike was a great mistake is becoming increasingly evident, according to a widely held opinion in Washington. It is conceded, however, that since such a policy has been initiated there now can be no turning back. As a result of what is regarded by many as its ill-timed interference, the administration now is confronted with a self-created task almost comparable in intricacy and dangerous possibilities with the Irish problem. The step having been taken, however, it is believed it would be nothing short of a public calamity were some basis of arbitration not worked out. As a consequence, it is believed that some means will be found for reaching an adjustment for the present coal year. Each side to the controversy, however, fully expects to see the government take over certain mines and operate them in the interest of those localities threatend with a shortage of fuel.

An analysis of the so-called miners' refusal of the President's proposition reveals that it is not a rejection of the arbitration proposal at all. The position of the policy committee of the United Mine Workers simply is to withhold their acceptance of the arbitration proposal.

While it is believed that some form of arbitration is going to be brought about, no one sees how any decision can be reached that will be equitable or that can result in anything more than a truce. Arbitration, especially in view of the President's explanatory letter, can mean little more than a Central Competitive Field agreement. More than 300,000,000 tons of annual output were not represented at the final meeting of operators when the deadlock was reported to the President. There is no way whereby the federal government can force the non-union operators to fix wage scales. It is quite apparent that operators in the Kanawha field or even in a smaller subdivision, such as the Windber region in Somerset County, Pennsylvania, are

not going to throw away large investments made in efforts to stay non-union, even if the majority of their workers have affiliated with the labor organization.

As the strike enters its sixteenth week it is evident that various events have strengthened the union position. Principal among these is the success which has attended the efforts of the railroad shop crafts to interfere with transportation. That there is joint action between the striking miners and the striking shopmen cannot be doubted. Efforts have been concentrated on the weak spots of the coal distribution system. The movement of coal has been seriously interfered with at junction points on the Louisville & Nashville and on the Chesapeake & Ohio. The L. & N. was recognized as a weak spot and the success which attended the efforts to hamper coal movement on that line did not occasion great surprise, but when the better situated Norfolk & Western and the C. & O. were involved in serious difficulties before the shopmen's strike was two weeks old, it became apparent that the railroad strike is going to be a major factor in the coal strike. Students of the situation are at a loss to understand why the administration did not use its influence with the Railroad Labor Board to prevent the thrusting of a second crisis on the government. At the very least the railroad strike is resulting in a loss of 2,000,000 tons of coal supply just at the time that it was most needed.

LETTER FROM J. G. BRADLEY, president, Elk River Coal & Lumber Co., Dunton, W. Va., and former president of the National Coal Association, to Secretary Hoover, dated July 10, 1922:

Dear Mr. Hoover: I came down from Harrisburg at Mr. Ogle's request to discuss the coal-price situation and feel it is my duty to tell you what I told him.

You are familiar with the natural difficulties in the way of keeping the price of any commodity down when the demand is in excess of the supply. The fact that you have been successful in keeping the price of coal from running away up to this time is, I believe, largely due to the fact that the production has been steadily increasing, so that the consumers have been led to expect that it would shortly equal the demand and have therefore refrained from struggling against each other to secure the current production. The public is now, however, aware that not only has the increase been stopped but that the rate of production has actually been diminished. The causes for this are immaterial so far as the consumers are concerned. We therefore see now the first stages of a buyers' panic and I am of the opinion that no effort of ours will avail to continue to control the market price if the panic prevails.

It is not necessary for me to point out to you the causes leading to such a panic condition. First there is the fact that production since the first of April has not been sufficient to protect the consumers' stocks. If outside forces had not been brought to bear the rate of current production by this time perhaps might have been accelerated so as to maintain the consumers' confidence, but the railroad strike has so interfered with the movement of coal as to cut down production and so lead the public to believe that its fuel supply, which was already precarious, might be cut off.

The increase in coal production some time ago reached the maximum possible from the non-union districts and has lately been coming from districts in which the union had previously been in control. The increase from these districts was very satisfactory and a study of the Geological Survey reports would indicate that if nothing happened to give it a setback demand and supply might have been again equalized in September, but when it became understood that the efforts of the government would be directed toward assisting the miners to make a blanket settlement rather than toward the protection of those who are willing to go to work at current wages, this movement in the same organized fields was brought to a stop. There is the story. The all-important thing to reduce the market price of coal is production, commensurate with the demand. The only thing necessary to secure such production is protection to the man who is willing to mine coal at the market wage.

I have read the President's statement which appeared in to-night's papers with much interest. I think he cannot have realized that to put the union field back to work at the 1920 scale under present conditions means that wages in the non-union fields, which are now producing two-thirds of the country's normal consumption, will have to be raised to approximately the same level for those fields to hold their supply of labor and that the effect of his suggestion, if carried out, is therefore to increase the labor cost of mining all bituminous coal about 30 per cent above the present cost, which in the case of the non-union operation, where wages have been reduced in the general economic adjustment which has been taking place during the past year, would be an increase of about 42 per cent. This in itself would, of course, upset the basis upon which you established fair prices.

I can hardly believe that it is the President's intention by executive action to grant a special privileged wage to mine labor, but such would be the effect of his plan, thus putting an added burden on American industry and on every American householder.

The text of the reply of the Pittsburgh Coal Producers' Association, dated July 17, is as follows:

Mr. President: Your proposal for the settlement of the present bituminous-coal strike has been given most thorough and respectful analysis and consideration by the operators of the Pittsburgh Coal Producers' Association. We fully appreciate the propriety of your interest, as the representative of the American people, in the unfortunate strike now pending in the bituminous-coal industry, and we beg to say that we are not unmindful of the responsibility which your proposal has placed upon us, not only as coal operators but as American citizens.

We regret to say that we regard your proposition as one that will merely for the moment tide over a crisis, to the ultimate injury not only of the industry, miners and operators alike, but also to the country.

Your proposition requests that we consent to arbitrate a basic wage scale for the union mines of the United States by a national commission. We will treat it first from the economic standpoint. We assume that you know that the non-union mines of the country, which are not, and we believe should not be, involved in your proposal, are now producing two-thirds of the present economic demands of our people for coal, and are able in peak times to produce perhaps 50 per cent of the nation's demands. It would, therefore, be the function of your commission to fix a basic wage and working conditions for perhaps 50 per cent of the coal production of the country, while the other 50 per cent would have the privilege, from time to time, of establishing for itself such wage scales and working conditions as might be arranged between employer and employee to meet changed economic conditions. This means that the union operator is tied to fixed standards, while the non-union operator may at any time deal with his men as best suits the immediate advantage of both. The result inevitably will be that in the non-union branch of the industry the wage scale will vary to give the non-union operator the business and the non-union miner the work while the union operator and union miner will take largely the business that is left. Your plan cannot operate otherwise.

The Bituminous Wage Commission appointed by President Wilson, which had larger scope due to the war powers of the President, fixed a wage that had that effect, and many operators in the Pittsburgh district were compelled to close their mines or operate at a loss for the last year under it. We cannot conceive how we can operate our properties on a basic wage fixed by a commission which covers only approximately one-half of the coal industry. We cannot deliberately jeopardize our properties and business interests by acceptance. Some other solution must be found.

You propose to put the mines back to work at the wages which were paid under the scale which expired March 31, 1922. These were the highest wages ever paid in the industry. Under this scale basic day labor received $7.50 per day of eight hours. These wages were fixed at the peak of war wages and conditions, and have been already liquidated in the non-union fields of the industry. If this wage is to be but a temporary one, what operator or dealer in the Great Lakes trade would care to take the chances of getting back the higher cost of his coal in the face of an assured reduction in the immediate future?

Is this proposition from the government fair to the non-union operator who has already liquidated his wages and who in many fields has worked his mines under the hardship of unlawful aggression by the United Mine Workers of America? Can he hope to keep his mines at work on the wage scales now being paid if the union miners are to receive these war-time wages? How can it result otherwise than to cause dissatisfaction among his employees? He will be compelled to submit to unionization or, for the immediate future at least, meet the wages proposed by you. If he can escape unionization by paying such wages it will mean that the public over the whole United States will have to pay war time prices for coal as long as such wages are in effect. The American people cannot afford to suffer this arbitrary organization to dominate its fuel supply. If it were not for these non-union fields the entire country would now be under its autocratic, arbitrary and ruthless domination. Today only these fields protect the American public from great privation for want of fuel. The right of an employer to enjoy his constitutional rights and keep aloof from this organization must not be denied. This proposition is vital to the preservation of American liberties and we should not be parties to compromising it.

Your proposal further provides that for the present we must pursue, and for the future either arbitrate or waive our objections to, the so-called check-off practice; we speak of it in its broadest sense. As you know, its legality has been seriously questioned in judicial proceedings, and we believe, regardless of legality, that the economic results of the institution are so unquestionably vicious and un-American that it must be eliminated. The check-off practice in the coal industry means more than the mere collection by the operator for the union of initiation fees, dues and assessments of the members; it means that no miner can work in a union district and pursue his vocation of coal mining unless he joins the United Mine Workers of America and agrees to subject himself to their arbitrary dictation, not only as to wages and working conditions but as to all their strike orders and commands in all matters pertaining to the affairs of the union as administered.

Under this practice the operators are compelled by the United Mine Workers of America to collect for it many millions of dollars annually, which vast sums, as already found and proven in many judicial records in the courts of the country, are then used by this autocratic organization to pursue their objects by force. The union operators have already been charged with being parties to the unlawful practices of this organization because of their participation in this check-off system, and the operators of the Pittsburgh Coal Producers' Association refuse longer voluntarily to pursue it. They do not care longer to be so charged.

In 1920, before the Wilson arbitration board, we earnestly asked for the elimination of the practice. That tribunal failed either to condemn or eliminate it. Your proposal asks us again to submit this practice to arbitration; this we cannot do. As we would voluntarily be submitting this matter to a commission we have serious doubts as to whether we could be protected in the courts in pursuing it if your proposed board neglected or refused to eliminate it.

We come now to a consideration of the doubtful legality of making a basic wage scale for the union mines of the United

States with the check-off feature. We express no opinion as to the matter.

It is pertinent, however, to observe that in this overdeveloped industry all mines of the country, generally speaking, are engaged in sharp competition in interstate commerce. The mines in each district compete in the same market, and the districts, union and non-union, some with one, some with another, are in close competition.

The wage scale very largely determines the price of coal and it has been inferred in the past that a basic wage has been fixed by operators and miners to impose a basic price on the American people, and that the check-off furnishes the funds to accomplish it.

The present Attorney General, in referring to trade associations, has also said that the arbitrary fixing of the principle elements entering into the price of commodities would be violative of the law. Is the fixing of a basic wage different from other elements?

Is it not pertinent for us to inquire why a basic wage for the mine workers should be fixed for the whole United States just because they demand it, especially as the mining of coal is primarily a state function? We see no economic necessity or economic good either to ourselves or to the country in such procedure. We cannot even see why it is to the advantage of the individual miner. It will have the certain effect in many districts of taking away from him his work. The truth of the matter is that it is only the miners' leaders who want a basic wage for the United States. Their purpose, as set forth in their constitution, is to unionize North America. They desire to completely nationalize the coal industry. If they can gather together in joint conference or in a national arbitration this great industry and fix the wages and working conditions for the miners of North America they will have the economic power, as they believe, to accomplish their purpose.

We cannot forget that even if we would consent to your proposal, that we are still, in the eyes of the law, free agents and doubt our ability to evade the legal effect of our putting into practice any arrangement made by a voluntary commission. The very purpose itself to fix a basic mine wage for the United States would seem to us objectionable as being contrary to public policy. Without hazarding a legal view on a subject so complex, we feel that such a procedure comes gravely close to an arbitrary and man-made interference with the free flow of coal in interstate commerce.

We appreciate that you make your proposal in the interest of compromise and peace, and to provide coal for the country, but we do not think that we should participate in an arrangement that in our opinion will not be helpful to the industry or inure to the public welfare. We also fully realize that you cannot personally have an intimate knowledge of the problems of this industry, and that you must be guided by the opinions of others, and for that reason we have thought you would desire us to speak our minds plainly in the matter.

We, as you, earnestly desire a proper solution of this unfortunate controversy. We are not unmindful of the fact that we are trustees for the American people in our industry, and being of the opinion that your proposal is not the best solution of the controversy we respectfully decline it as made.

We however agree with the principle of arbitration in matters of this kind, and, therefore, propose the following:

(1) That the principle of district settlements be recognized by the United Mine Workers of America.

(2) That the mine workers at mines in the Pittsburgh district now on strike return to work immediately on the wage scale in effect in November, 1917, without the check-off. This scale to be effective until March 31, 1923, or such earlier date as the board of arbitration hereinafter referred to may be able to fix a wage for the district, provided, however, that this arrangement shall not apply to the mine or mines of any operator who refuses to participate.

(3) That the President of the United States shall, as soon as conveniently may be, appoint a board of arbitration for the Pittsburgh district consisting of three members, said arbitrators to be resdents of the Pittsburgh district, none of whom shall be miners or operators or in any way connected with the bituminous coal industry. The finding of a majority of said board shall be final and binding upon both operators and miners. It shall be the function of this board to immediately commence the study of conditions affecting the district, and to fix as promptly as possible a proper wage scale for the district, said report to be made not later than April 1, 1923.

(4) The check-off practice to be eliminated.

(5) The competitive relations in and about our district and with competing non-union and union districts and operations to be the determining factors in arriving at any wage scale.

We have no objection to your proposal to create a national commission to investigate the coal industry in all its phases and to make report thereon, but insist that the organization, history, aims, purpose and conduct of the United Mine Workers' organization be not overlooked in the investigation.

In case this plant is not accepted by the miners' organization, the operators of the Pittsburgh Coal Producers' Association, relying upon the President's enunciation of the doctrine of individual liberty in his address at Marion July 4, that "liberty is gone in America when a man is denied by anybody the right to work and live by that work. It does not matter who denies. A free American has the right to labor without any other's lieve," and again, that the government "will force no man to employ men against the free exercise of an employers' rights," will then undertake to exercise their constitutional right to operate their properties and supply the public with coal. They will demand that they and their employees be protected in their right, in the hope that the right will be vindicated, not by words, but by the protective arm of Government.

We further offer if the governmental authorities so desire, to enter into immediate negotiations providing for governmental operation of our mines in order that the public be supplied with coal.

Central Coal Association of Pennsylvania Balks

The text of the reply of the Central Coal Association of Pennsylvania, also dated July 17, is as follows:

Dear Mr. President: The Central Coal Association of Pennsylvania has a full realization of the solemn obligation placed upon it to concur in any plan which promises a speedy and peaceful settlement of the present strike. When such a plan is offered by the President of the United States it becomes in effect a command of the American people.

The only possible justification for a refusal to accept unquestioningly the President's decision is a sincere and well-founded conviction that such a proposal embodies features that imperil the general welfare and constitute a menace to other industries than our own.

The mere fact that such a plan may work an irreparable injury among hundreds of thousands of individuals whose savings are invested in mining enterprises is serious but not sufficient in itself to warrant a refusal to accept its provisions. In fact it is insignificant in comparison with principles of public interest and citizenship which are involved.

With these principles in mind the operators have made a sober and careful analysis of the President's plan. They must refuse to accept it and their reasons are as follows:

(1) The wage rates offered by the President to union miners in the provisional scale are those exacted and paid in 1920 when the peak demand and peak prices for commodities prevailed. The wage rates already accepted by non-union miners who, up until this week, had continued to produce one-half of the country's requirements, are aproximately 30 per cent lower than those proposed by the President and equal, nevertheless, to the highest war time wages paid in 1918 and 1919.

The inevitable consequence of our acceptance of this provisional scale is to cause an immediate reinflation of the cost of mining and the price of coal in the districts which had already made the post-war adjustment and continued to serve the country's fuel needs on a reasonable basis.

An acceptance on our part of this provisional scale would constitute a betrayal of the operators and of the mine workers who had already borne their share of the economic burden which we have understood from the President's previous and often repeated statements was expected of every industrial group in the country.

As to the increased cost of coal to the consumer, we have nothing to say. The government having intervened, the public's interests are in its hands. We do, however, protest most vigorously against the unfair weapon now placed in the hands of a small group of labor leaders with which to destroy the work of readjustment already peacefully effected by mutual agreement in one-half of our industry.

(2) The President's plan embodies a provisional scale for the resumption of work on basic wage rates and working conditions which grant to the miners practically every exorbitant demand which they have made, and for which they have contended without regard either for economic law, or for the laws of this country enacted to protect life, to preserve order and to guarantee the right of individuals to offer or to obtain employment by free bargaining, either singly or collectively.

Our acceptance of this proposal would establish and vindicate the doctrine of the radical element in organized labor that force wins victory.

As to the President's plan of arbitration, we are thoroughly in accord with it in principle as evidenced by our last resolution in conference, which was rejected by the mine workers. We protest, however, that the true principle of arbitration is perverted in the President's plan on the following grounds:

(1) The operators are asked to surrender unconditionally their fundamental principle of district wage agreements before appearing before this commission. No recognition of regional necessities is granted during the provisional term which might, and no doubt would, be extended until March, 1923.

(2) We protest against the recognition made by the President's plan of the compulsory collection of union dues from the pay envelopes of all their employees under the inlquitous "check-off" system. By this means an enormous war chest has been automatically financed for the United Mine Workers. The funds thus exacted from every union miner have provided the means for conducting armed warfare, for financing a host of newspapers, pamphlets and lecturers which have attacked the administration of the United States, attempted to nullify the authority of the supreme and federal courts, to foster class hatred, to condemn and discredit the orderly forces of society.

We are compelled to waive our two fundamental contentions before the appointment of a commission and the remainder of our case which might be brought before the commission is of comparatively little moment to us, or to those we represent and cannot, in our opinion, be called arbitration in any true sense of the word.

We will promptly and willingly submit to any neutral commission of representative citizens not connected with the production of coal the full and detailed reasons for our unalterable stand upon district agreements and the abolition of the "check-off" system. And with these issues we will also arbitrate any and all other phases or features of our business.

Pending the appointment of a neutral commission and in order to meet the imperative demand for a prompt resumption of mining, we respectfully suggest that the President should amend his proposal for a provisional wage agreement as follows:

"Mine workers are to return to work on the scale of wages which expired last March 31st, adjusted to conform with the changes in the cost of living between August 15th, 1920, when his scale became operative, and this date. This adjustment to be determined from the cost of living under index figures of the . epartment of Labor."

We believe that the future of America as a manufacturing nation, and even as a democratic society depends upon the successful issue of our contentions.

It is with a full knowledge of its gravity that we have reached our decision and we respectfully call the President's attention to the perils involved in a compromise of principle to gain expediency at this critical juncture.

To Take Course That Serves Industry and Country

The text of the reply of Indiana operators, under date of July 17, is as follows:

My dear Mr President: The Indiana operators wish to assure you that we are determined to pursue the course which in our judgment serves our industry and country best. We have been among the first to respond to the President's suggestion that a general fact investigating tribunal should be established to fully develop all facts and conditions within the industry and make recommendations for the solution of its fundamental problems.

We have always in times past and have again in this emergency, proposed unlimited and unrestrained arbitration and are in

entire accord with the President on this basic principle. We are, however, regretfully obliged to advise you that we cannot accept your proposal of July 10, supplemented by your statement of July 15, for two reasons:

(1) Repeated experiences in the coal industry have shown that arbitration by boards composed even in part by partisan members, is entirely impracticable and ineffective and in the past such boards have tended only to lead us into greater difficulties.

(2) As shown in the requests of the parties affected, for interpretations of your proposal, there is evidence of doubt on some of the salient features and consequently there will be room for much misunderstanding and confusion.

We wish to advise you, however, that we now pledge ourselves to engage unreservedly to abide by every decision and order of a board of arbitration appointed by you which does not include in its membership either miners or operators.

President Harding Interprets His Statement of July 10

To A. M. Ogle, president of the National Coal Association;

To S. D. Warriner, president of the Anthracite Coal Association, and

To John L. Lewis, president of the United Mine Workers of America:

Since I tendered to you in a joint session at the Executive Offices on Monday, July 10, certain proposals for the arbitration of the coal dispute and since there have been numerous inquiries and several informal conferences in the intervening time, aimed at clearer understanding, I have thought it desirable to place before you, in writing, such interpretation on the general proposal as I have sought informally and in verbal statements to convey. These definite interpretations do not in any way modify the original proposal, but will serve to clarify such doubts of construction as have been expressed and leave no possibility of misunderstanding.

The program contemplates three successive stages, as follows:

First—That the mine workers return to work under the same terms and conditions as those which governed each case on last March 31. This includes the check-off.

Second—It is the intent that the temporary arrangement above shall remain in force only during the shortest period that may be required for a determination of terms and conditions of labor for the period ending March 1, 1923. I have emphasized this by suggesting that the wage scale shall be determined by Aug. 10, 1922, with authority in the commission to extend that period by such number of days as may be required. Its earliest determination is very necessary in order that contracts and estimates involved in business transaction may become settled, and it is understood that all questions of dispute as to conditions of labor or any other points of friction between operators and employees, who are parties to this arrangement, shall be determined by the commission, and such settlement shall hold until March 1, 1923. These decisions may also require more time than until Aug. 10, and therefore the commission is to have authority to extend time for settlement of each or any of these questions as it finds to be necessary.

Third—That the commission in recommending an establishment for maintenance of industrial peace in the coal industry will be expected to bring in such recommendations in time to allow for their use in the settlement of relations after March 1, 1923. They are to be recommendatory and not binding.

The President will ask of Congress as soon as the House is reconvened in August for a grant to the commission of the necessary legal powers to make an exhaustive inquiry into the coal industry in order to acquire the needed information upon which to formulate plans to avoid future suspension of production.

In order to clarify what shall constitute a commitment to the plan I have proposed, let it be understood that, as to the bituminous fields, the basis of agreement in national disputes has hitherto been agreements between the United Mine Workers with operators in the Central Competitive Field. Therefore, the acceptance of this offer by the United Mine Workers and by the operators shall be deemed complete and binding when the United Mine Workers and the operators, parties to the Central Competitive Field agreement which expired on March 31, have accepted it. The other bituminous mines which are now idle because of strike or suspended operation are expected to adhere to the plan and comply with the decisions of the commission, but their action in no way affects the validity of the agreement to the plan.

In the anthracite fields the acceptance of this offer by the United Mine Workers on one side and the Anthracite Operators' Association on the other shall render it effective. If the mine workers and operators agree, there shall be a separate commission.

It is understood that all decisions by the commission must be reached by a majority vote thereof, and all decisions shall be binding to all parties to the agreement until March 1, 1923.

Mine Workers' Reply Withholds Acceptance of Arbitration Plan

The policy committee of the United Mine Workers of America met at the Red Cross Building to adopt an answer to President Harding's arbitration proposal. Members of the anthracite scale committee held a separate meeting earlier in the day and decided to reject the proposition. These members also sat in the policy committee meeting and participated in the general consideration of the subject.

By unanimous vote the policy committee rejected the proposal of the President, and a letter signed by the International officials and all of the district presidents of the United Mine Workers of America was prepared and delivered to President Harding at the White House. The letter sets forth the reasons for rejection of the arbitration proposal and is as follows:

Dear Mr. President: We are in full accord with your proposal for the establishment of a commission which, as you state, "shall investigate exhaustively every phase of the coal industry. It shall reveal every cost of production and transportation. The President will ask Congress to confer authority for the most thorough investigation and make appropriations necessary to do such work."

The fundamental interests of the mine workers and of the consumers of coal are dependent upon such action being taken. It is also essential to the proper development and stabilization of the coal industry itself.

During the past two years it has been very apparent to the mine workers that such an investigation as you now propose should be inaugurated, and we have, on every proper occasion, recommended that this be done. When at the beginning of the existing controversy our representatives were called upon to testify before the Committee on Labor of the House of Representatives, we formally urged the creation of such a commission and submitted detailed suggestions as to its composition and powers. We are, therefore, indeed, gratified to accept your proposal for a comprehensive investigation of the coal mining industry by a commission representative of the mine workers, the operators and the public, and to assure you that it shall have our most hearty co-operation and support.

The actual completion of the work of such a commission and the application of practical reforms, however, is an essential preliminary and a necessary prerequisite to any attempt to determine rates of pay to workers in the coal mining industry upon a just and reasonable basis.

Labor is only one factor in the production and distribution of coal. Labor costs are only one element in the many elements of costs involving the mining of coal and its transportation. All of these factors and elements are closely interrelated and interdependent. One factor, such as labor, cannot be segregated and a decision made upon it alone. Among other things, the relation of labor and other costs to profits and prices must be associated. Inquiry must also be made as to the degree of regularity of operation of the mines and the opportunity afforded to the mine worker under prescribed rates of pay, to earn an adequate income for himself and his family.

By way of concrete illustration, it is stated on the basis of the facts available that the bituminous coal industry functions irregularly and intermittently because of overexpansion and unfair competition. Employees under existing rates of pay are unable to secure sufficient employment to earn living wages, while the public is compelled to bear excessive overhead charges amounting to approximately $1 per ton on each ton of soft coal produced. Manifestly it is futile to attempt to adjust wage rates on an equitable basis until the truth of this condition of affairs has been thoroughly uncovered and the cause of it finally removed.

On the other hand, in the anthracite branch of the industry where wage rates are lower than in the bituminous mines, but employment more regular, it is known on the basis of available facts that a monopoly exists under which excessive profits are obtained from coal producing and coal sales companies and from excessive freight rates charged by the anthracite railroad corporations, which are the head of the combination. With the anthracite coal operators alleging a labor cost of $3.92 per ton for their production, it is manifestly unfair practice for them to charge the ultimate consumer in the Atlantic seaboard market an additional $12 per ton. It is, therefore, obvious in the anthracite field that indefensible monopoly profits are the significant factors in the determination of the price of anthracite coal to domestic consumers.

All the facts, in short, must be known if justice is to be done to the anthracite mine workers and the public. Moreover, even after the facts are known, equitable results can not be secured until assurance is received that any constructive reforms, based on a study of the facts, are to be practically accepted and applied.

Abstract reasoning alone would clearly demonstrate the soundness of this conclusion, but aside from all abstract considerations, the actual history of the coal industry itself during the last two years amply confirms it. Two years ago, after a prolonged strike arising from the same fundamental causes as the existing strike, our rates of pay in the bituminous mines were fixed by a Presidential commission, with complete authority as to wages, prices and profits. In making its wage award this commission also made seventeen basic recommendations. Most of these recommendations were made with the knowledge that if carried out they would stabilize the industry and bring a degree of order out of chaos. The wage scale also was predicated upon the assumption that these recommendations would be heeded and adopted, but absolutely nothing has been done. On the contrary, the year 1921 was the most disorganized and irregular period that the soft coal industry has had for at least thirty years. Several months after the bituminous coal commission had rendered its report a decision as to wages and working conditions in the anthracite field was handed down by the anthracite coal commission, which had also been appointed by the President. Unlike the bituminous commission, however, the anthracite commission restricted its findings to wage matters only. The result was that wages were fixed below accepted standards as to healthful and decent living requirements, without regard to labor and other costs of production, monopoly profits and prices to consumers.

Both by reason and experience we are therefore, convinced that the establishment of a fair wage in the coal industry is dependent upon regularity of operation, overdevelopment, costs of production, profits and prices.

When all the facts bearing when the production and distribution of coal have been collected and impartially analyzed, we shall gladly face these facts and accept them as a condition to the rehabilitation of the coal mining industry.

In any case, the combination of a scientific investigating commission with a wage arbitration board is bad. It is particularly bad when the wage scale at issue is a

matter of heated and bitter controversy. The primary duty of the commission, to be of real service, must be to collect the facts and give consideration to broad matters of peace and policy. These questions involve the reorganization of a huge industry, which in itself is a prodigious undertaking.

In the face of this tremendously important task, no wage questions should be injected.

We believe that there will be no difficulty in establishing proper wage scales through conferences with the operators if the industry itself was operating on a proper basis, and that therefore, if the commission is successful in establishing the proper basis for the future conduct of the industry, the fixing of detailed wage scales can properly be left to the usual conferences.

The mine workers desire to point out that the coal operators who have been in attendance at the recent conferences assembled by you, and to whom you have submitted the plan for arbitration of the coal strike, are only partially representative of the producing interests affected by the present suspension of mining. Operators representing nearly fifty per cent of the tonnage in strike fields where production is stopped have not been in attendance at such recent conferences and we have no information that the proposed plan of arbitration has been submitted to them by any governmental agency. We are further advised, through public and private information, that these interests have no intention of coming within the purview of the provisions of your plan of adjustment. Under such circumstances, it is futile to believe that any general settlement can be made. It is manifestly unfair to attempt to exact from the mine workers' representatives commitment to an arbitration plan while at the same time powerful operating interests, employing hundreds of thousands of men now on strike, are left free to follow their own selfish impulses and escape responsibility in the premises. We feel assured that your Excellency transmitted this plan of settlement with the sincere hope that the present strike could be adjusted upon a basis of national scope. We find upon examination and analysis, however, that even the acceptance of the plan by the mine workers would bring about only a partial settlement, leaving the public to be embarrassed and industry further dislocated by a continuance of the strike situation in vast coal producing areas. The mine workers cannot, under these circumstances, lightly consider the utter abandonment of more than 200,000 of their members to the whims and caprices of hostile employing interests who are publicly committed to the policy of destruction of collective bargaining in the industry.

For these substantial reasons, the representatives of the United Mine Workers are compelled to withhold their acceptance of the arbitration proposal submitted by you.

The mine workers are alive to the necessity of immediate resumption of coal mining operations. Already coal stocks are so low that there is possibility of a serious coal shortage next fall and winter. Industry is now, and has been for some time, paying an excessive price for its fuel, and the public may expect further unwarranted price extortions before its coal requirements are fully met. There is every moral and economic reason for a termination of the present strike in the mining industry, and the mines should resume operation at the earliest possible date.

The development of this emergency has been constantly apparent to us since last April, and we have repeatedly warned the operators, the public and the Government of its approach. It would have been obviated if the bituminous operators had fulfilled their contractual obligations and met with us in the usual way to adjust wage scales and working conditions. The only effective way, at the present time, to escape the industrial and domestic catastrophe which these operators have thus made imminent is for them to measure up, even at this late day, to the requirements of honor and good faith by meeting with our representatives in interstate conference.

In the anthracite situation we again emphasize the offer previously made by our representatives that the anthracite coal operators recognize the principle of the eight-hour day for all men in the industry, with proper recognition of the union, and that the existing rates of pay be taken as a starting point for future joint negotiations, together with a discussion of the merit of the additional demands of the anthracite mine workers. Such consideration will so simplify matters that a basis of agreement may be easily reached.

The mine workers represent the human factor in the coal industry and human consideration should take precedence over all others. We respectfully submit, and feel confident that you will agree with us, that the mine workers should not be responsible for all the alleged ills and maladjustments of a diseased industry. For generations back our people have been the patient sufferers from all the adverse factors which have operated against them. We call to your attention that each year 2,500 of our men die and countless numbers suffer injury in order that society might be provided with fuel. The hazard of the calling should be given every consideration and our people should be compensated in accordance with their skill as artisans, the laboriousness of their toil, and the degree of personal danger which they encounter. For a period of fifteen weeks they have been deprived of their means of livelihood. They have suffered and have seen their wives and children suffer. Thousands have been evicted from their homes, and they have bravely endured every discomfort and personal sacrifice. They cannot now lightly forego the fruits of their struggle, and every dictate of humanity requires that they should be treated with that consideration due them. The public interest, as well as that of the mine workers, requires that their material wants be provided and their pride as citizens maintained.

We feel confident that this attitude will commend itself to your sense of right and justice and that it will be sanctioned by the reason and wisdom of all thoughtful men who love justice and humanity.

Anthracite Operators Express Sympathy with Proposed Plan of Settlement

Dear Mr. President: On behalf of the anthracite operators, we beg to make the following reply to the proposal of arbitratoin which you submitted to us on July 10.

We are deeply appreciative of your effort to end the present suspension of anthracite production, and desire to co-operate with you to the fullest extent in this endeavor.

After continued conferences with the representatives of the mine workers from March 15 to June 2, it appears no agreement satisfactory to both sides could be reached.

The operators then proposed that the "President of the United States be requested to appoint a commission or tribunal to ascertain and consider all the facts and determine the questions concerning wages and conditions of employment at issue between us; said commission or tribunal to find a practical method by which prompt operation of the mines may be resumed pending its ultimate decision, and also to seek and recommend a method by which future suspensions or strikes may, so far as possible, be avoided.

The anthracite operators further agreed that all such matters as the President might determine were pertinent to the questions in controversy concerning wages and conditions of employment should be considered by the commission or tribunal so to be appointed and agreed to abide by and faithfully carry out its decision or award.

We are, therefore, committed to arbitration, and are entirely in sympathy with the principle of the method of settlement which you have proposed.

We believe, however, that certain amplifications of your proposal are desirable to the end that the settlement shall be speedily reached, shall be permanent in character, and shall be binding upon both sides of the controversy.

Throughout the fruitless negotiations which have been held with the mine workers, the anthracite operators have had two primary objects in view:

First—An agreement on a wage scale which while adequate should at the same time afford the steady employment which the anthracite mine workers have enjoyed in the past and which only regular demand for the product can assure. It has been the firm conviction of the anthracite operators that this is economically possible only by such adjustment of these wages as would reduce the cost of producing anthracite, in line with adjustments which have taken place with respect to other commodities.

Second — That any agreement reached should be durable and at the same time provide reasonable means of wage adjustment from time to time to meet the changing economic conditions of the country. The object sought was prevention of the periodical disturbance of the public and of industry generally by the recurring interruptions to production.

We feel confident of your desire to further these objects in a manner fair to all concerned.

In order that this may be accomplished, we respectfully make the following suggestions:

First—Because of the wide difference in the problems that confront the anthracite and the bituminous industries it is practically impossible for one commission to study and decide the questions in controversy within a reasonable period of time. Of necessity they must be studied separately if the prompt adjudication that all interests desire is to be obtained.

The anthracite business has no problem of overdevelopment and underemployment. It is already stabilized and has maintained full-time employment of the mine workers. Its mining conditions are entirely different from those in the bituminous field, and it is a manufacturing as well as a mining industry. Its product is mainly a domestic, not a manufacturing, fuel.

It has been consistently held not only by the operators but also by the mine workers that the anthracite industry with respect to agreements affecting wages and working conditions is and should be absolutely autonomous.

Because of these conditions, we feel that it is necessary for a separate commission to be designated by yourself to consider our problems, and we take the liberty of suggesting that such commission should be, so far as possible, non-partisan, not more than one member representing the operators and one the miners, and not less than three to be appointed by yourself as repesentatives of the public.

Second—The anthracite operators cannot escape the conviction that the re-establishment of the scale of wages in effect from April 1, 1920, to March 31, 1922, even as a temporary expedient, will embarrass rather than assist the efforts to restore normal conditions.

The demand from the public for decreased prices of anthracite is imperative. Anthracite is the only essential commodity which has not been deflated in price and the continuance of present prices will undoubtedly impede the distribution of the product, which should be prompt and uninterrupted on the resumption of mining.

We nevertheless agree to your proposal that, pending a permanent scale, the mine workers are to return to work on the scale of wages which expired last March.

It will be evident to you, however, that it will not be possible for the anthracite operators to contract for the disposition of their product while uncertain as to the costs of production. We are therefore confident that it is necessary to the success of your plan and in conformity with your intent that it shall be made mandatory upon the commission, first, to determine the wage scale, to be effective until March, 1923, and that its decision in this regard shall be handed down on or before Aug. 10.

Our agreements have always expired with the end of the coal year, March 31, and we suggest that this date be adopted for the expiration of the temporary wage scale.

Third—We respectfully submit that a recurrence of the present unfortunate situation will not be prevented by the establishment of only a temporary wage scale, expiring in March, 1923. A renewal of the present controversy at that time would be deplorable.

It is our understanding that the commission shall be empowered and directed not only to determine temporary wages and working conditions but shall also be empowered and directed to devise a method by which periodical disturbances may be avoided, and by which wages and working conditions may be automatically adjusted, by negotiation if possible, and if not, by such machinery as the commission shall set up; and that its decisions in this regard shall be binding on both parties.

We agree to abide without reservation or qualification by the findings of a commission so to be appointed and empowered.

It is our belief that these suggestions are within the intent and spirit of your general plan and that their adoption is necessary to bring about what you aim to achieve, namely, "the establishment and maintenance of industrial peace in the coal industry."

S. D. WARRINER,
W. J. RICHARDS,
W. L. CONNELL,
W. W. INGLIS.

Fifteenth Week of the Coal Strike

EDITORIAL REVIEW

THE principal developments in the fifteenth week of the strike were the fruitless effort of the President to get the operators and miners together on a voluntary basis of settlement and the curtailment of production from non-union fields and from western Kentucky caused by the strike on the railroads. Opinion is divided as to whether the real crisis in the coal strike has been passed, with a majority feeling that it is yet to come. Much depends on the new stand the President takes, now that the situation created by his proposal of July 10 has been wiped off the slate. Beyond doubt the next week will see some turn in affairs that will point the way out.

Six Killed and Many Wounded in Attack On Non-Union Mine in West Virginia

H. H. DUVAL, Sheriff of Brooke County, W. Va., and five other men, said to have been union coal miners, were killed Monday, July 17, at Cliftonville, W. Va., and more than two dozen men were wounded when an armed band of about 300 men made an attack on the tipple of the Richland Mining Co.'s Clifton mine. After a battle lasting an hour and a half, in which thousands of shots from revolvers and rifles were exchanged, the attackers were driven off and more than forty prisoners were captured and placed in the county jail.

Production in Connellsville Region Takes Rebound Following Holiday Slump

WITH the passing of the July 4th holiday output in the Connellsville coke region is on the rebound. The H. C. Frick Coke Co. is gaining at practically all its operating mines, especially at the Trotter plant, which is working above 50 per cent of normal, most of the men working there being old men who have returned to work. The Hillman Coal & Coke Co. is gaining all along the line also, shipping two or three cars of coal a day from nearly all of its plants and a car a day of coke from Crystal plant. W. J. Rainey, Inc., the American Coke Corporation, the American Manganese Co. and the Connellsville Central Coke Co. continue to improve slightly. Other operating companies are holding their own or gaining.

Railroad coal shipments from the region are about 25 per cent higher than a week ago and coke shipments about the same. The Southwest branch of the Pennsylvania R.R. and the Monongahela R.R. handled more coal July 11 than at any time since the strike started. The former hauled 359 cars of coal that day and the latter 225 cars, and shipments on the 12th were probably larger. The condition of the Baltimore & Ohio R.R., due to the railroad strike, has somewhat hampered operators who are entirely dependent on that road for the disposition of their product. That condition, however, is improving.

Union Heads "Pass Up" Pittsburgh Parley; Operators Discuss District Settlement

AN expected conference between Pennsylvania Commissioner of Labor Connelley, coal operators and heads of District No. 2 and District No. 5 of the United Mine Workers in Pittsburgh on Thursday, July 6, did not materialize, at least as far as the United Mine Workers were concerned. The meeting was attended by ten representatives of the Pittsburgh Coal Producers' Association, nine from the Bituminous Coal Operators of Central Pennsylvania and twelve from the Central Coal Association. None of the United Mine Workers heads attended. The meeting resolved itself into a discussion of the coal-strike situation with special reference to the feasibility and desirability of settlement of the strike by districts.

Mr. Rose for the Pittsburgh, Mr. Clark for the Clearfield and Charles O'Neill for the Central, separately presented the following to Commissioner Connelley: "That it is to the interest of the operators, the miners and the public that a wage scale and working conditions be negotiated between operators and the miners in each district, and that the mining of coal is a state matter in accordance with a recent decision of Chief Justice Taft."

The operators also made it known that they are opposed to the check-off system as being unlawful in Pennsylvania and it is evident that they will not consider an agreement with the miners that would involve a continuance of the check-off.

The central Pennsylvania operators laid great stress on the fact that they had a contract with the U. M. W. of District No. 2, guaranteed by the officers of the national organization, providing that in the event of a new scale agreement not having been signed on or before March 31, 1922, the U. M. W. of District No. 2 would continue to work for thirty days under the wages and conditions of the agreement then in effect.

Middle West Ready to Go Back to Work; Price Level Is Subject of Speculation

HARASSED beyond measure by the strike situation as it has been developing of late, the Midwest region sent its operators' representatives back to Washington Saturday to accede on Monday to President Harding's plan to resume coal-mining operations at once at last winter's wages. The operators of Illinois and part of Indiana met in Chicago Saturday forenoon and discussed the situation, deciding that it is necessary to line up with the President.

It will be with mixed feelings of relief and deep concern that the great mining region above the Ohio goes back to work at union wages—if it does. Most operators are anxious to produce coal with the market in its present state of high absorbency, but they are morally certain that if the President's commission works out a new and lower scale of wages there will be another strike—probably in the middle of the winter, when the country will need fuel more keenly than ever, thus giving the miners the buoyant feeling that they have the world by the tail. It is generally felt among operators that prices will remain high enough all winter to permit operation at a profit even with wages at the top notch.

One great question of the immediate future is: "What if operations *are* resumed; the railroads will be unable to haul enough coal to supply more than half the country's demand, with the result that most mines will get very little running time." This means, without doubt, that coal prices are going to stay in the clouds. A series of questions to operators on the probable price at which they will start their coal on the market elicits a few vague replies. Some set the figure for southern Illinois coal as low as $3.65. Others declare they must recoup the losses occasioned by the shutdown and the attendant expense of building up their organizations again after resumption. These mention $4.50 and $5. Others are for getting all the market will stand. They boldly declare the country needs coal so badly and will be able to satisfy so little of its demand that Illinois and Indiana coals will match up with western Kentucky coal, which already has passed the $6 point and may reach $7 unless there is immediate production of coal from other fields.

"How long will it take you to get your mines into production again?" brings various replies from Midwest operators. In most cases the operators think hoisting can begin the second day. In other cases the answer is "It will take us a week to get the gas and water out and we'll have to do some cleaning up."

The Bell & Zoller Coal Co., operating Zeigler No. 1 and Zeigler No. 2 mines at Zeigler and a mine at Centralia, Ill., have bumped against a new difficulty, R. H. Zoller,

operating head of the company, said. Last week the company ordered its union engineers back to work at the union scale of wages, so that the giant Zeigler mines could devote the next few days to getting ready for work. The engineers demanded full pay for every day they have been off since April 1 or they wouldn't work.

"Naturally we refused," said Mr. Zoller. "That little item would have amounted to several thousand dollars." So the company is doing nothing to get ready beyond keeping up the operation of fans and a few pumps.

Quiet has reigned generally over the Illinois and Indiana fields except for threats against Indiana wagon mines by masked gangs of visitors. In one southern Illinois town the miners' local got together and voted to remain on strike. This is open to various interpretations, one of which is that miners opposed to the policies of Frank Farrington, state president, feared that possible developments at Washington might open a way for Farrington to negotiate for a state settlement in Illinois, and they merely wished to speak their little piece against such a deal.

"There's no possibility of Farrington making a separate deal," states a well-informed Illinois operator. "He has been doing a lot of talking about it for a long time, but he knows better than to try it. He knows he couldnt deliver, and he's afraid of a test of strength on that issue."

Kentucky Has Severe Railroad Handicap But Hopes to Produce Heavily Soon

FOR ten days or more the Harlan, Straight Creek and Jellico fields of southeastern Kentucky have been shut off as a result of a tight strike of railroad workers at Corbin, Ky., which has tied up movement of freight trains over three divisions of the Louisville & Nashville in that section. The strikers at Corbin have intimidated the merchants, who have refused to sell food to strike breakers, and boarding houses have refused to harbor them, while the authorities have ordered imported workers to leave town when sent to guard or work in railroad property. However, 200 men were sent to the Corbin shops on July 12, and the railroad is establishing a tent colony and commissary to take care of them. Corbin is in the mountain district, a lawless section, and difficult to handle.

Other sections of the state are not having much trouble as a result of the rail strike, and tonnage is moving freely. Hazard has had but a fair supply of cars, but the Chesapeake & Ohio, in northeastern Kentucky, has been going along giving good service. Western Kentucky also reports fair service. If the Corbin trouble is settled much heavier production will result.

Is the State of Illinois in Earnest, or Is Herrin Probe "Merely a Gesture?"

ATTORNEY-GENERAL Edward J. Brundage of the State of Illinois has made two moves giving the impression that Illinois is going to delve into the Herrin murders and prosecute the men guilty of the slaughter of a score of non-union strip miners and guards June 22. Early last week he publicly offered $1,000 "for information leading to the arrest and conviction of persons who committed murder and assault" in Williamson County on the day which the county openly exults in having made "bloody." Later in the week he spent two days in the county and came away declaring he had some information of value which would not be revealed now but would be used to obtain further information. He said that no action would be taken before the present session of the Williamson County Grand Jury, but he indicated the state would have its case ready for the next session, which convenes in September.

"Just a gesture" was the comment of one of the best-known Illinois coal operators who has a mine in southern Illinois. "Nothing much will ever come of it. The state has no intention of going to the bottom of this thing. It only wants to go through a few more or less idle motions to calm the general demand that the bloody-handed gang down there be punished."

Visitations of Coal "Ku Klux Klan" Scare Indiana Workmen from Wagon Mines

MASKED men have been making flying visits to Indiana mines warning workers there to quit and not come back if they wish to retain their good health and chances of longevity. Late last week 25 such mysterious visitors dropped in for a pleasant call at Dr. Sample's wagon mine near Booneville, held up two men in charge, gave the warning against operation, damaged the machinery and departed. The owner has appealed to both county officials and Governor McCray for protection. A bigger gang visited Lunenburg's mine near the same town and ordered work there to stop.

Sees Calm in Utah a Prelude to Storm

NATIONAL GUARD rules regarding the recruiting of men to take the place of Utah mine strikers have not been strictly adhered to during the past week. There is, however, no campaign by the operators for strike breakers, as the strike leaders are protesting loudly against the action of the authorities in allowing the companies to send the few men that have been permitted to work. All is quiet but there are indications that would seem to point to another storm.

Some of the newspapers are outspoken in their disapproval of the Governor's policy of forbidding the operators a free hand in recruiting workers to replace the strikers. One editorial asks: "Is Carbon County a Part of the State of Utah or Is It a South European Dependency?" This question was prompted by the fact that a large proportion of the men out are Greeks, Italians or other foreigners, a large number of them unnaturalized. It is believed that these attacks will compel the Executive to allow the companies to send as many men to the coal fields as they can get, and if this is done there is bound to be bloodshed.

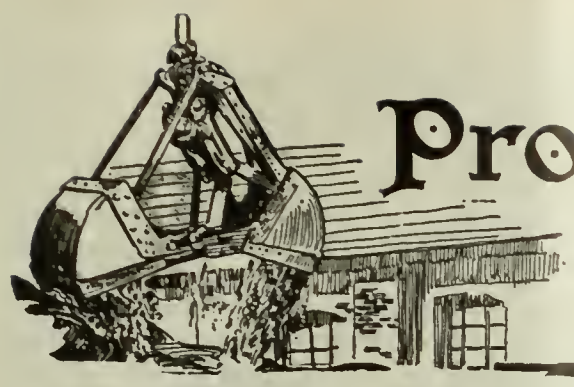
West Virginia Mines Beat Records, Though Half Were Union at Inception of Strike

SINCE the coal strike was declared, on April 1, West Virginia has taken the lead in the production of soft coal, all previous production records in many fields having been broken, notwithstanding the fact that about half the mines of the state were in the union category at the outset of the strike. All this is pointed out in a statement issued by the West Virginia Coal Association, in which it is said:

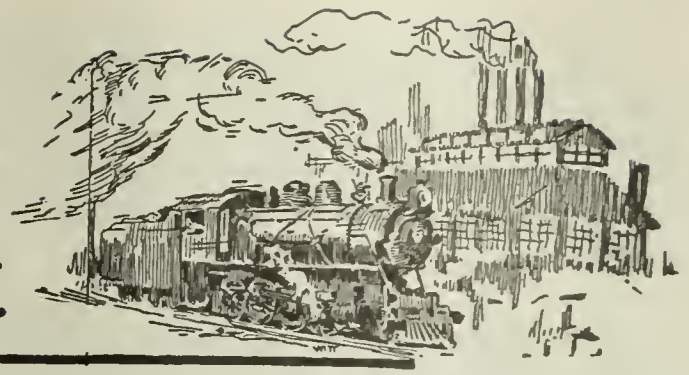
"Since the strike was called the coal-mining regions of the state wherein the men were hampered by union restrictions began producing coal in a manner that surprised the buying public and astounded union officials, who had counted on endangering, according to their own statements, the nation's fuel supply to such an extent that the government would be forced to step in.

"The Logan district, which before the strike call produced about 50,000 tons daily, now produces about 65,000 tons daily; during some weeks the output is 100,000 tons more than before the strike. The Pocahontas field, which had a normal weekly production of 360,000 tons before the strike, produced 455,000 tons last week. Tug River district, which had a normal weekly average of 90,000 tons, shipped 111,000 tons a week ago. The Kenova-Thacker district, which before the strike loaded 108,000 tons a week, now ships well above the 200,000-ton mark each week."

ISSUANCE OF INJUNCTIONS in northern West Virginia became more frequent during the latter part of June and the first part of July owing to the difficulty operators in some instances have experienced in keeping their mines running in the face of organized interference. Among the companies which have recently obtained an injunction is the D. T. S. Coal Co., this injunction being against Louis Carpiel and other members of the United Mine Workers. It was granted by Judge W. S. Meredith, of the Marion County Circuit Court, and enjoins Carpiel and other officials of the United Mine Workers from interfering or attempting to interfere with the mining, shipping and selling of coal at the Thorn No. 1 mine in the Salt Lick Run section.



Production and the Market



Weekly Review

THE long-heralded coal shortage seems to have arrived. An embarrassing lack of production, caused by the mine strike, has been increased by the railroad shopmen's strike. Normal transportation of freight has been impossible, mines which have been running have been forced to curtail operations and the slow movement all around has brought car shortage to the fore.

The coal market has reacted strongly to the combination which has limited much-needed tonnage. A general scramble for coal has resulted, in which Mr. Hoover's price list has been definitely outdistanced in the bidder's market which exists today. Large consumers are the most active purchasers, snapping up every available load on wheels. The steel industry is threatened with partial reduction of operation by the inadequate supply; railroads are insistent that a large share of the mine tonnage be turned over to them and shipping on the Great Lakes is menaced by the lack of vessel fuel.

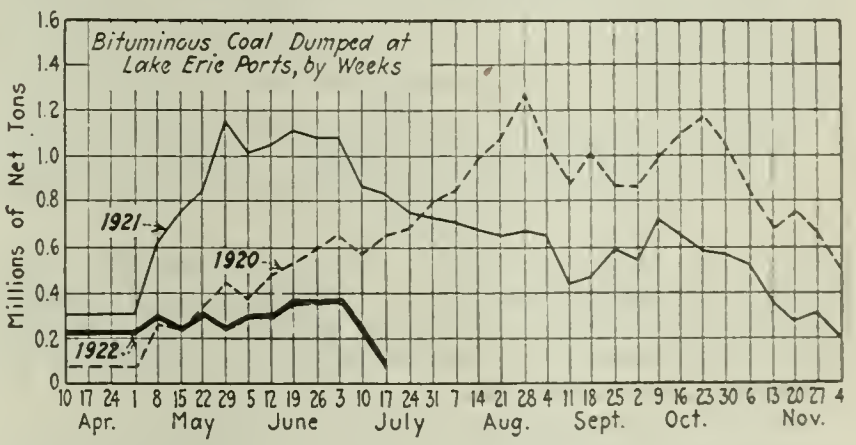
Spot-Price Index Rises Twenty Points

Coal Age Index of spot bituminous prices reached 321 on July 17, an increase of 20 points when compared with July 10. This week's index figure represents an average price at the mine of $3.89, as compared with $3.64 a week ago.

Western Kentucky coal was the mainstay of the Middle West last week and prices were not long in reflecting the strong demand. At this writing western Kentucky is being quoted around $6.25, a full dollar over the last quotation carried on these pages, with every indication that it will go still higher. Eastern Kentucky operations were curtailed by rail troubles, as were West Virginia loadings, while western Kentucky mines were affected to a much lesser degree.

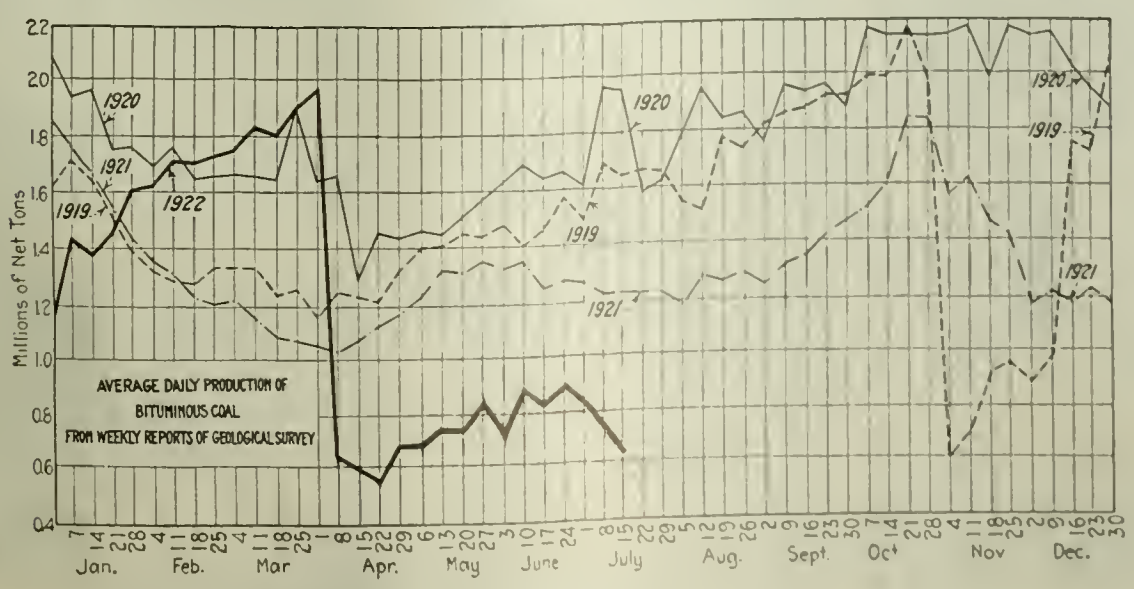
The market around Chicago continues to be the strongest of any section. Rail congestion has so delayed regular contract shipments that large consumers are buying car numbers on the spot market. Railroad supplies are on the verge of exhaustion and large consumers are forced to buy currently, as their reserves have declined below the danger mark. The same market conditions appear to be moving eastward—Cleveland and Cincinnati are hungry for coal, while the dwindling tonnage at the Hampton Roads piers and the meager all-rail receipts from Pennsylvania are being felt with increasing force in New England and the North Atlantic section.

The Northwest is on the verge of a critical fuel situation. Receipts by Lake have been pitifully low.



Dock stocks at the Head of the Lakes are now around 1,500,000 net tons, as compared with 4,342,000 tons at this time last year. The railroads own 600,000 tons of the present dock stocks, 409,000 is under contract or owned by industrials, and the small balance is being doled out to old customers only under the most careful restrictions.

Retail dealers continue to ration their remaining supplies of anthracite. Consumers are placing more orders but are not at all insistent about early deliveries. Most of these orders are being filed for attention when coal is again available.



Estimates of Production

(Net Tons)

BITUMINOUS

Week ended:	1921	1922
June 24 (b)	7 704,000	5 363,000
July 1 (b)	7 658,000	5 227,000
July 8 (a)	6 165,000	3 936,000
Daily average	1 233,000	787,000
Calendar year	232 629,000	191 789,000
Daily av. cal. yr	1 278,000	1 202,000

ANTHRACITE

June 24 (b)	1 847,000	24,000
July 1 (b)	1 858,000	25,000
July 8 (a)	1 525,000	23,000

COKE

July 1 (b)	47,000	114,000
July 8 (a)	34,000	92,000
Calendar year	1 432,000	3,308,000

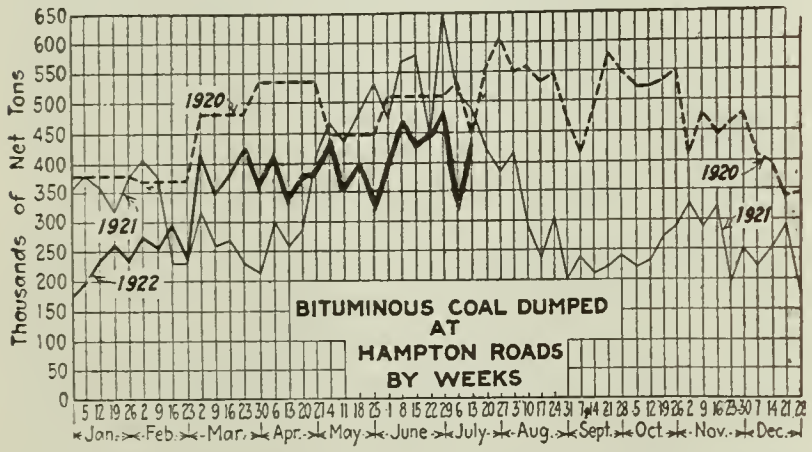
(a) Subject to revision. (b) Revised from last report.

Fresh labor outbreaks have occurred in the Connellsville region following the Washington conference and production of coke has been affected. Demand for coke has increased, but the amount offering is too slight to induce blast furnaces to resume until conditions improve.

BITUMINOUS

"A new cause has arisen to limit the production of coal," says the Geological Survey, "namely: local congestion of traffic associated with the strike of the railway shopmen. Because of the uncertainties of the situation it is difficult to forecast production for last week (July 10-15), but the record of the first four days suggests that the output of bituminous coal can hardly exceed 4,300,000 tons. Production of anthracite continues practically zero. Final returns on the week of Independence Day, the fourteenth of the strike, show that 3,936,000 net tons of soft coal were produced.

"The trend of production in the fifteenth week of the strike (July 10-15) may be gaged from the following table



of cars of coal loaded daily. Monday's loadings (14,952 cars) were lower than those of Monday in other recent weeks, yet on Tuesday loading dropped to 12,829 cars, and on Thursday they fell to 11,584, the lowest on any Thursday since mid-April.

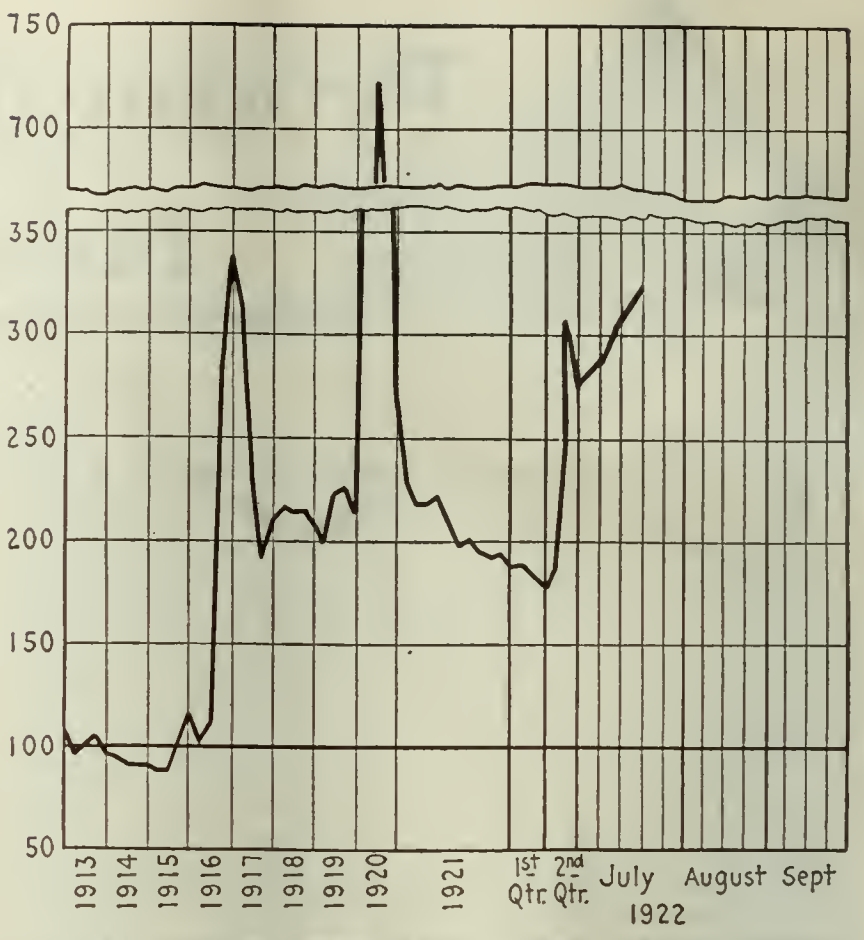
DAILY CAR LOADINGS DURING THE STRIKE

	1st Week	10th Week	11th Week	12th Week	13th Week	14th Week	15th Week
Monday.....	11,445	14,597	15,474	15,311	16,747	11,039	14,952
Tuesday.....	11,019	15,269	15,849	16,622	15,748	334	12,829
Wednesday.....	11,437	15,999	14,905	17,032	15,656	11,979	12,304
Thursday.....	11,090	16,325	14,884	16,432	16,402	14,521	11,584
Friday.....	11,296	15,864	13,933	16,073	15,980	14,631	.....
Saturday.....	8,888	13,991	13,465	13,993	12,603	12,523	.....

"The cause of the decrease was congestion of traffic resulting indirectly from the shopmen's strike. The first districts to be affected were Logan and eastern Kentucky, but in western Kentucky and southwestern Virginia also loadings soon began to decrease, and by Wednesday even the Pocahontas, Tug River and Kenova-Thacker districts were producing far below normal."

An additional lot of British coal was received in New England last week and it is understood that several charters for the shipment of Welsh coal to this country have just been closed. Should the present transportation difficulties continue, cargoes of British coal will be a common sight in North Atlantic harbors.

Hampton Roads dumpings for all accounts were 435,674 net tons during the week ended July 13, as compared with



Coal Age Index 321, Week of July 17, 1922. Average spot price for same period $3.89. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the total output of the United States, weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. (Pittsburgh District, Illinois, Indiana and eastern Ohio prices not included in figures for last week.)

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	June 19, 1922	July 3, 1922	July 10, 1922	July 17, 1922†
Smokeless lump.....	Columbus....	$3.50	$3.65	$3.65	**$3.85@$4.00**
Smokeless mine run.....	Columbus....	3.30	3.45	3.45	**3.50@ 4.00**
Smokeless screenings.....	Columbus....	3.15	3.25	3.25	**3.25@ 3.60**
Smokeless lump.....	Chicago.....	3.25	3.65	3.65	**4.00@ 4.25**
Smokeless mine run.....	Chicago.....	3.10	3.40	3.45	**4.00@ 4.25**
Smokeless lump.....	Cincinnati...	3.55	3.75	3.75	**3.75@ 5.00**
Smokeless mine run.....	Cincinnati...	3.40	3.45	3.50	**3.50@ 4.25**
Smokeless screenings.....	Cincinnati...	3.15	3.25	3.25	3.25
*Smokeless mine run.....	Boston.....	6.10	6.20	6.35	**6.35@ 6.75**
Clearfield mine run.....	Boston.....	3.05	3.45	3.50	*3.00@ 3.75*
Cambria mine run.....	Boston.....	3.50	3.70	4.00	*3.50@ 4.25*
Somerset mine run.....	Boston.....	3.20	3.50	3.65	*3.25@ 3.75*
Pool 1 (Navy Standard)..	New York...	4.40	4.80	.....	.....
Pool 1 (Navy Standard)..	Baltimore....	4.00	4.25	.....	.....
Pool 9 (Super.Low Vol.)..	New York...	4.05	4.65	4.40	.....
Pool 9 (Super.Low Vol.)..	Philadelphia..	4.30	4.55	4.70	**4.60@ 4.95**
Pool 9 (Super.Low Vol.)..	Baltimore....	3.85	4.00	4.40	4.50
Pool 10 (H.Gr.Low Vol)..	New York...	3.80	4.40	4.25	**4.75@ 4.90**
Pool 10 (H.Gr.Low Vol.)..	Philadelphia..	4.00	4.25	4.45	**4.40@ 4.75**
Pool 10 (H.Gr.Low Vol.)..	Baltimore....	4.00	4.00	4.40	4.50
Pool 11 (Low Vol.).....	New York...	3.50	4.15	4.05	**4.50@ 4.75**
Pool 11 (Low Vol.).....	Philadelphia..	3.75	3.90	4.25	**4.25@ 4.50**
Pool 11 (Low Vol.).....	Baltimore....	3.50	3.90	3.90	**4.25@ 4.40**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)..	New York...	3.65	4.25	3.90	**4.50@ 4.90**
Pool 54-64 (Gas and St.)..	Philadelphia.	.....	.....	3.65	**4.25@ 4.50**
Pool 54-64 (Gas and St.)..	Baltimore....	3.50	3.90	3.90	**3.75@ 4.40**
Kanawha lump.....	Columbus....	3.35	3.65	3.65	**3.75@ 4.25**
Kanawha mine run.....	Columbus....	3.25	3.40	3.40	**3.50@ 3.85**
Kanawha screenings.....	Columbus....	3.25	3.15	3.15	**3.25@ 3.50**
W. Va. Splint lump.....	Cincinnati...	3.35	3.65	3.90	**3.75@ 4.75**
W. Va. Gas lump.....	Cincinnati...	3.35	3.65	3.90	**3.75@ 4.75**
W. Va. mine run.....	Cincinnati...	3.00	3.45	3.75	**3.50@ 4.50**
W. Va. screenings.....	Cincinnati...	$2.90	$3.25	$3.35	**$3.25@$4.00**
Hocking lump.....	Columbus....	3.35	3.65	3.65	**3.75@ 4.00**
Hocking mine run.....	Columbus....	3.10	3.40	3.40	**3.60@ 3.80**
Hocking screenings.....	Columbus....	3.15	3.10	3.20	**3.25@ 3.50**
Pitts. No. 8 lump.....	Cleveland....	4.00	4.25	4.25	**4.50@ 5.00**
Pitts. No. 8 mine run.....	Cleveland....	3.70	4.00	4.00	**4.25@ 4.50**
Pitts. No. 8 screenings....	Cleveland....	3.70	4.00	4.00	**4.25@ 4.50**
Midwest					
West Ky. lump.....	Louisville....	3.85	4.40	4.75	**6.00@ 6.25**
West Ky. mine run.....	Louisville....	3.80	4.40	4.90	**6.00@ 6.25**
West Ky. screenings.....	Louisville....	3.80	4.40	4.90	**6.00@ 6.25**
West Ky. lump.....	Chicago.....	3.75	4.45	5.05	**6.50**
West Ky. mine run.....	Chicago.....	3.75	4.45	5.00	**6.50**
South and Southwest					
Big Seam lump.....	Birmingham..	2.20	2.35	2.35	**2.30@ 2.40**
Big Seam mine run.....	Birmingham..	1.85	2.15	2.15	**2.00@ 2.40**
Big Seam (washed).....	Birmingham..	1.85	2.15	2.40	**2.25@ 2.50**
S. E. Ky. lump.....	Chicago.....	3.50	3.65	3.75	**4.00@ 4.25**
S. E. Ky. mine run.....	Chicago.....	3.25	3.40	3.65	**4.00@ 4.25**
S. E. Ky. lump.....	Louisville....	3.75	3.75	3.90	**4.25@ 4.50**
S. E. Ky. mine run.....	Louisville....	3.25	3.50	3.70	**4.00@ 4.25**
S. E. Ky. screenings.....	Louisville....	3.10	3.50	3.50	**4.00@ 4.50**
S. E. Ky. lump.....	Cincinnati...	3.50	3.70	3.90	**3.75@ 4.75**
S. E. Ky. mine run.....	Cincinnati...	3.05	3.50	3.75	**3.50@ 4.50**
S. E. Ky. screenings.....	Cincinnati...	2.85	3.20	3.25	**3.25@ 4.25**
Kansas lump.....	Kansas City..	5.00	5.00	5.00	5.00
Kansas mine run.....	Kansas City..	4.25	4.25	4.25	**4.50@ 5.00**
Kansas screenings.....	Kansas City..	2.95	3.05	2.80	**4.00@ 4.50**

*Gross tons, f. o. b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.
NOTE—Smokeless prices now include New River and Pocahontas.

338,800 tons in the week previous. The heavier dumpings have reduced the pier accumulations materially, as car movement from the mines has been hard hit by the rail shopmen's strike. The movement from the Southern fields was so heavy that it had taxed transportation facilities to the utmost, and with internal labor troubles the railroads could not be counted on for a continuance of the heavy volume of coal freight.

New England buyers have awakened, at least in part, to the advisability of making some additional commitments. The increase is not heavy but is particularly noticeable coming just at the time when the easy movement to Hampton Roads has been interrupted. All-rail shipments were 481 cars during the week ended July 8, as compared with 642 cars in the preceding week. The light movement is confined almost entirely to railroad contracts.

TIDEWATER BITUMINOUS COAL SHIPMENTS IN JUNE, 1922
(In Thousands of Net Tons)

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	June Total	May Total
Coastwise to New England	10	2	..	837	25	876	873
Exports	..	6	..	95	3	104	302
Bunker	109	12	7	166	7	302	453
Inside capes	..	31	26	233	..	291	240
Other tonnage	150	..	..	614	..	764	675
Total, June	269	52	33	1,945	35	2,337	.....
Total, May	264	84	43	1,723	30	.....	2,543

Lake dumpings were 159,655 net tons during the week ended July 17—153,516 tons cargo and 6,139 tons vessel fuel—as compared with 252,105 tons in the previous week. Nearly 900,000 tons of this season's dumpings to date have gone to new destinations on Lake Erie and the Head of the Lakes apparently faces a distressing shortage of fuel next winter. Total Lake tonnage handled this year now stands at 4,233,772; in 1921 it was 11,907,210.

COKE

Beehive coke production during the week ended July 8—92,000 net tons—felt the effect of the Independence Day holiday. The labor situation in the Connellsville region was not so satisfactory last week. Demand is exceedingly strong but is mostly from foundries and miscellaneous users, as the available spot tonnage is too slight and costly to interest blast furnaces.

June production of beehive coke was 458,000 net tons; byproduct, 2,580,000, a total of 3,038,000 tons, as compared with 2,969,000 tons in May. This output consumed 4,429,000 tons of coal; 3,707,000 tons in byproduct ovens and 722,000 tons in beehive ovens.

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 inclusive	April 3 to July 1, 1922 inclusive	Week Ended July 1
U. S. total	45.6	55.7	....	....
Non-Union				
Alabama	63.5	64.6	71.9	87.2
Somerset County	55.5	74.9	45.7	49.8
Panhandle, W. Va.	55.3	51.3	43.4	53.6
Westmoreland	54.9	58.8	82.1	85.4
Virginia	54.8	59.9	80.6	86.3
Harlan	53.3	54.8	54.5	50.9
Hazard	51.7	58.4	60.5	44.3
Pocahontas	49.8	60.0	76.9	81.8
Tug River	48.1	63.7	83.2	85.8
Logan	47.6	61.1	77.5	79.8
Cumberland-Piedmont	46.6	50.6	15.6	16.2
Winding Gulf	45.7	64.3	71.4	72.3
Kenova-Thacker	38.2	54.3	79.7	82.9
N. E. Kentucky	32.9	47.7	no report	
New River‡	24.3	37.9	26.4	51.3
Union				
Oklahoma	63.9	59.6	14.4	16.4
Iowa	57.4	78.4	0.0	0.0
Ohio, Eastern	52.6	46.6	0.0	0.0
Missouri	50.7	66.8	1.7	4.1
Illinois	44.8	54.5	0.0	0.0
Kansas	42.0	54.9	14.4	24.3
Indiana	41.4	53.8	0.0	0.0
Pittsburgh†	41.2	39.8	0.0	0.0
Central Pennsylvania	39.1	50.2	11.6	11.6
Fairmont	35.3	44.0	no report	
Western Kentucky	32.5	37.7	61.0	70.5
Pittsburgh*	30.4	31.9	0.0	0.0
Kanawha	26.0	13.0	5.2	10 0
Ohio, Southern	22.9	24.3	0.0	0.0

*Rail and river mines combined.
† Rail mines.
‡ Union in 1921, non-union in 1922.

Car Loadings and Surpluses

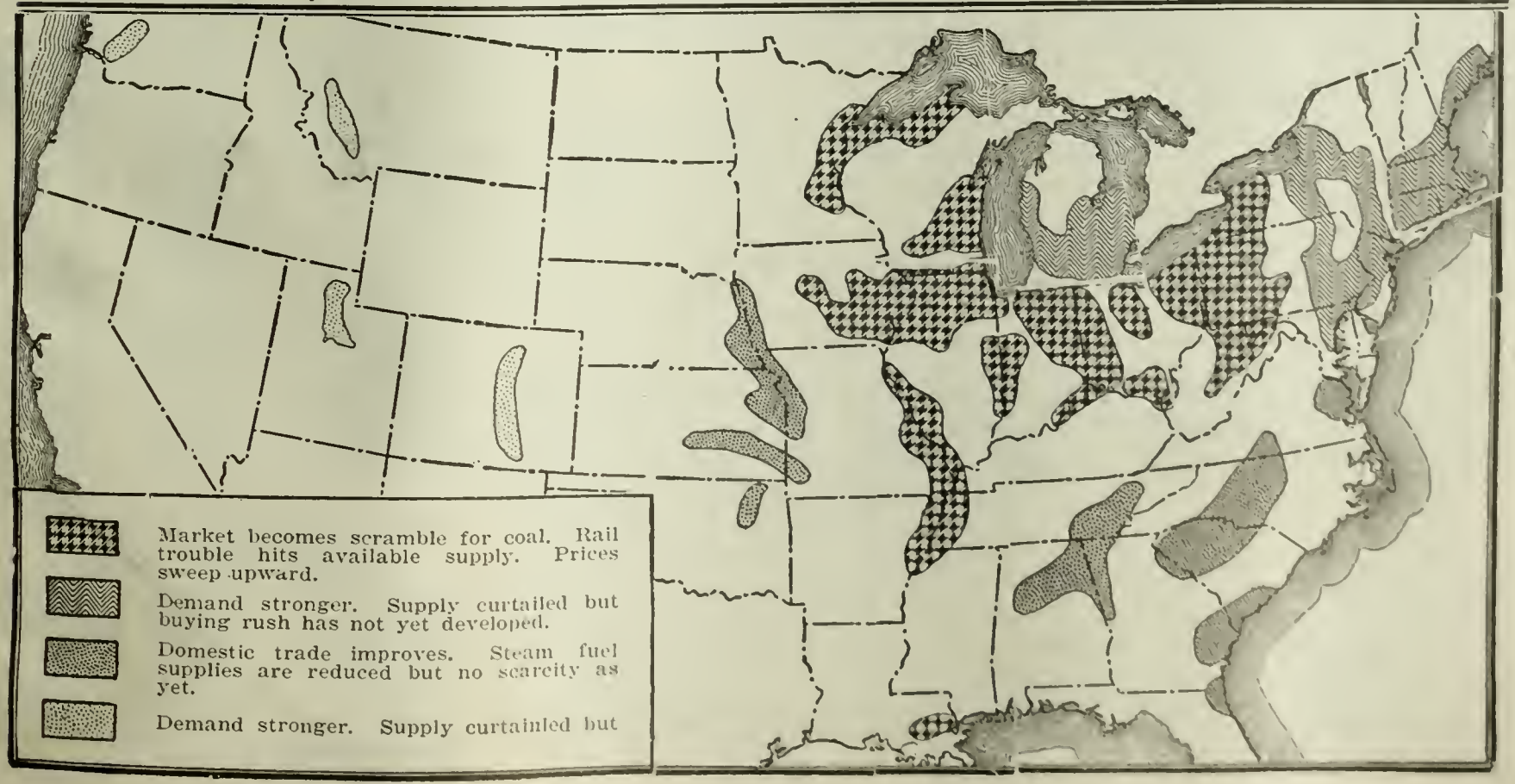
	All Cars	Coal Cars
Cars loaded:		
Week ended July 1	876,896	94,748
Previous week	877,856	96,960
Same week a year ago	776,079	157,113
Surplus cars:		
June 30	239,225	147,558
June 23	255,685	160,733
Same date a year ago	.....	164,000

ANTHRACITE

Production of hard coal, which is confined to river barley, was 23,000 net tons during the week ended July 8. Shipments continue to go forward from the storage yards, being 4,101 cars during the week. Aside from pea coal, there is very little free tonnage to be had.

New England stocks of hard coal have dwindled to 315,391 net tons as of July 1. On April 1 these were 726,611 tons. Since then there have been receipts of 421,923 tons and deliveries of 833,143 tons.

Relative Activity of Markets for Bituminous Coal at End of Fifteenth Week of Strike



Foreign Market And Export News

British Wage Question Nears Crisis

British production during the week ended July 1 was 4,530,000 gross tons, according to a cable to *Coal Age*, as compared with 4,354,000 tons in the previous week. The South Wales export market is unimproved and prices are softer. Rail freights have been reduced, those applying on coal by 15 per cent, and this may have a stimulating effect on the trade.

The audit of the colliery books for the month of April showed that there would be practically no profits for the industry as a whole, and that consequently wages would not rise above the minimum anywhere. It was apparent that wages would continue at the minimum throughout August and much dissatisfaction arose among the miners.

The president of the South Wales Miners' Federation, addressing the annual conference said the executive thought it quite impossible that the men could continue another six months under the conditions which had prevailed so long. They had agreed to recommend that the national executive be urged immediately to approach the coal-owners and endeavor to induce them to increase wages to not less than 60 per cent above pre-war wages, and if they failed to then meet the government and make it clear that it was quite impossible to expect miners to continue any longer under the present wage system.

A decision has been arrived at by the Nottinghamshire Miners' Association in favor of terminating the National Agreement.

French Coal Prices Slightly Lower

The French market was rather inactive during the last days of June, purchasers of industrial coals having postponed their orders pending the issue of the new price-list, effective July 1. The new prices show but slight modifications—a few francs at the most—from the old schedule.

The French Minister of Public Works and Labor had a second conference with the miners' delegates, to whom they gave, at their request, more details on the cost prices of the collieries.

On the other hand, the miners' delegates declared that the Eight Hour Act could not, in their opinion, be held responsible for the considerable decrease in individual output, which they ascribe to other causes.

The ministers then asked the delegates to state exactly by writing what are these other causes.

Export Clearances, Week Ended July 13, 1922

FROM HAMPTON ROADS:

	Tons
For Brazil:	
Br. S.S. Tennyson, for Buenos Aires	3,874
For Cuba:	
Dan. S.S. Anna Maersk, for Cienfuegos	1,932
For Ecuador:	
Br. S.S. Alvarado, for Guayaquil	1,014
For Peru:	
Nor. S.S. Varg, for Callao	802

Hampton Roads Pier Situation

	Week Ended July 6	Week Ended July 13
N. & W. Piers, Lamberts Point:		
Cars on hand	2,481	984
Tons on hand	144,528	61,352
Tons dumped	137,209	167,627
Tonnage waiting	30,000	20,000
Virginia Ry. Piers, Sewalls Point:		
Cars on hand	1,893	1,522
Tons on hand	122,000	83,950
Tons dumped	95,177	128,640
Tonnage waiting	25,000	38,000
C. & O. Piers, Newport News:		
Cars on hand	1,756	1,090
Tons on hand	94,000	76,000
Tons dumped	70,114	92,728
Tonnage waiting	18,000	5,015

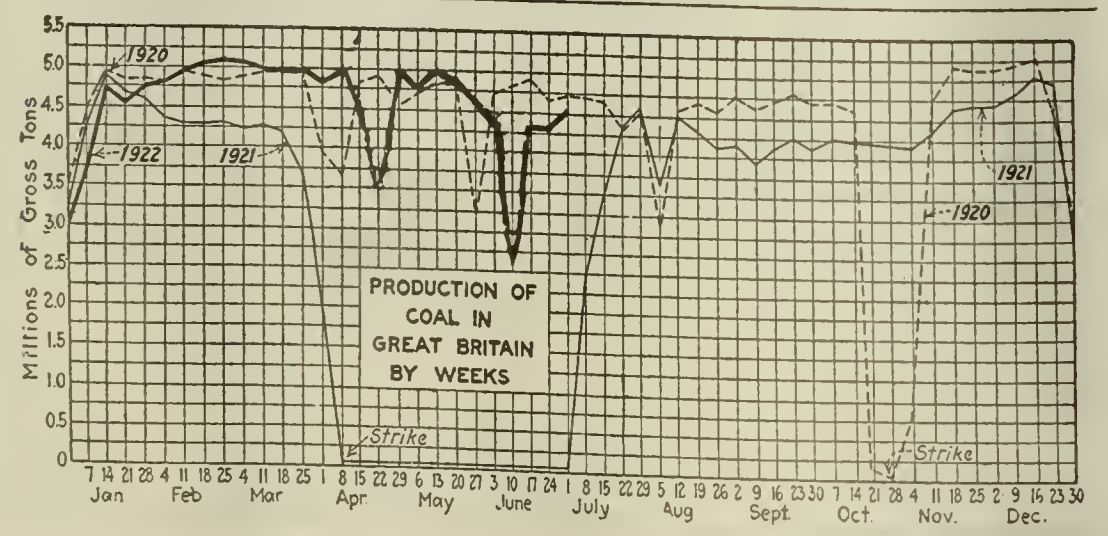
Ruhr Mine Strike Is Averted

An agreement was reached on the eve of a general strike of coal miners in the Ruhr Valley after a conference between the Minister of Labor and the miners' leaders and mine owners. This, however, will require final ratification by the miners' district convention before it becomes effective.

The Ruhr coal output, including that of the collieries left of the Rhine, in May amounted to 8,081,951 metric tons (7,512,646 tons in April), or 310,844 tons (326,637 tons) per working day. In the same period, 2,075,238 tons (2,032,679 tons) of coke and 298,964 tons 302,657 tons of briquets were produced.

The price of unwashed coal has been raised to 1,208 m. per ton. In June 2,000,000 tons of English coals were imported. Unless the Reparations Commission grants an added period of grace to enable her to catch up in coal deliveries, Germany will be obliged to make heavy purchases of English coal for distribution among the Allied States. The Cabinet discussed the situation in the course of a special council meeting at which it was admitted Germany is heavily in arrears in her deliveries.

Production of coal in the Ruhr district during the week ended July 1 was 1,320,000 metric tons, according to a cable to *Coal Age*.



Rail Strike Cuts Supply at Roads

The strike of railway employees has spread to the clerks of the N. & W., and C. & O., with the result that the movement of coal from the mines to piers, impeded when the shopmen went out July 1, is being more seriously held up.

Less than 200,000 tons was on hand at the local piers at the end of the week. The N. & W. has notified shippers it will accept coal only for indefinite delivery.

The coal trade is in a state of mild turmoil, with prospects of further unsettled conditions next week. Prices quoted at the local piers went up to $6.50 @ $7 for all grades, no distinction being made between them.

Coal Paragraphs from Foreign Lands

ITALY—The price of Cardiff steam first is now quoted at 36s. 6d., according to a cable to *Coal Age*.

BELGIUM—Domestic coals are being put into stock and only the classified descriptions continue to be sold in proportion to the production, the greater part going to France and Holland. The industrial market seems to show a slightly better tendency. Half-bituminous and steams are in demand, in particular slack for making briquets.

Pier and Bunker Prices, Gross Tons

PIERS

	July 8	July 15†
Pool 11, New York	$7 00@$7 25	**$7 50@$7 75**
Pool 9, Philadelphia	7 60@ 8 20	**7 75@ 8 30**
Pool 10, Philadelphia	7.50@ 7 75	**7 60@ 7 90**
Pool 71, Philadelphia	8 50	**8 60**
Pool 1, Hamp. Rds.	6.25@ 6.40	**6 50@ 6 75**
Pools 5-6-7 Hamp. Rds.	6.25	**6 25@ 6 75**
Pool 2, Hamp. Rds.	6.25	**6.25@ 6 75**

BUNKERS

Pool 11, New York	$8 00@$8.25	$8 00@$8 25
Pool 9, Philadelphia	7 75@ 8.35	**8 00@ 8 50**
Pool 10, Philadelphia	7 60@ 8.15	**7 75@ 8 35**
Pool 1, Hamp. Rds.	6.25@ 6.40	**6 50@ 6 75**
Pool 2, Hamp. Rds.	6.25	**6 25@ 6.75**
Welsh, Gibraltar	43s. f.o.b.	43s. f.o.b.
Welsh, Rio de Janeiro	57s.6d.f.o.b.	57s.6d f.o.b.
Welsh, Lisbon	43s. f.o.b.	43s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	42s. t.i.b.
Welsh, Messina	39s f.o b.	39s. f.o.b.
Welsh, Algiers	38s 6d f.o.b.	38s.6d.f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s f.o.b.	65s. f.o.b.
Welsh, Maderia	42s.6d.f.a.s.	42s.6d.f.a.s.
Welsh, Teneriffe	40s.6d.f a.s.	40s.6d.f.a.s.
Welsh, Malta	44s.6d.f.o b.	44s.6d f.o.b.
Welsh, Las Palmas	40s.6d.f.a.s.	40s 6d.f.a.s.
Welsh, Naples	38s f.o.b.	38s.f.o.b.
Welsh, Rosario	52s 6d.f o.b.	52s.6d.f.o.b.
Welsh, Singapore	55s. f.o.b.	55s. f.o.b.
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Port Said	49s. f.o.b.	49s. f o.b.
Alexandria	43s. f.o.b.	43s. f.o.b.
Capetown	35s. 3d.	35s. 3d.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	July 8	July 15†
Admiralty, Large	24s.6d.@25s	24s. @24s.6d
Steam, Smalls	17s.6d.@18s.	**17s.6d.@18s 6d.**
Newcastle:		
Best Steams	24s.	23s.@24s
Best Gas	21s.6d.@22s.	**21s.6d.@22s.6d.**
Best Bunkers	20s.6d.	20s.6d.

†Advances over previous week shown in **heavy type**: declines in *italics*.

North Atlantic

Stronger Demand, as Usual, Follows Curtailed Receipts

Shortage Conditions Prevail, with Less Than 500 Cars at N. Y. Piers on Monday—Rail Trouble Hits Flow of Southern Tonnage—Carriers Take Large Share of Pennsylvania Fuel Mined.

SHORTAGE conditions have followed the curtailed receipts which have prevailed for the last ten days. On Monday there were less than 500 cars at the New York piers, while the flow of Southern coals via Hampton Roads was reduced by the transportation disability caused by the railroad labor trouble. So far, the Pennsylvania mines have been given a good car supply, but the carriers have insisted on a large share of the loadings to meet their requirements.

Coincident with the reduced movement of coal has come a stronger demand, as reserves have been depleted to a point where replenishments are imperative. Prices have advanced, especially on line business and if the scarcity continues price will be no object.

NEW YORK

Coal is becoming scarcer here. There were less than 550 cars at the loading piers on July 14 and most of it was Pool 11 or poorer quality. The line trade was strong although spotty, and quotations were higher than on the Tidewater basis.

It is reported that plenty of empty cars are at the various railroad distributing points but that the companies refuse to put them in at the mines unless assured they would secure a large percentage of the tonnage loaded.

Buyers are buying "coal" in most instances, ignoring the pool number. The poorer grades of low-volatile coals were quoted $4@$4.25 f.o.b. mines and the better grades $4.50@$5. High-grade gas screened coals were scarce but were held at around $5. B. R. & P. coals were quoted $4.25@$4.50.

Southern coal was being brought here in large tonnages, most of it on consignment. Free lots of these coals were quoted $8@$8.50. The number of loaded boats in the harbor is being steadily reduced, quotations ranging $7.40@$8.

PHILADELPHIA

Users of fuel are more anxious recently, especially those who have had coal on the run for some time and are finding delivery retarded. Inquiries have increased greatly during the last few days, but with hardly enough coal available to meet the spot demand. The railroad situation is such that even when orders are placed no one would give any kind of assurance of time of delivery. In this respect shipments originating on the B. & O. have been particularly hard hit, and as a result gas coals from the Fairmont district are difficult to purchase.

There is much dissatisfaction among the operators over the suggested plan for resumption of mining and there is much adverse comment heard. This feeling has been communicated to the consumer and has in itself added much to the urgency for more coal. The chief objections to the President's tender are from union mine owners, who say if they accept they will be at a distinct disadvantage, because the mines in non-union territory, working at the lower wage schedule, will be able to produce coal at a much lower cost and will practically have the entire market to themselves.

Prices have stiffened considerably and very little talk is heard now about an agreed price for this State. High-grade coals remain extremely difficult to procure.

CENTRAL PENNSYLVANIA

The daily output is now averaging 600 cars. Production was somewhat curtailed by the July 4 holiday and the organization of the miners at Colver, where the Ebensburg Coal Co. had been in full operation until last week. United Mine Workers were successful in forming a local union at Colver on July 9, and called out a majority of the miners.

Prices are slightly higher. Pool 1 is ranging $4.25@$4.75; Pool 10, $4.25@$4.50, and Pool 11, $4@$4.25.

There is no enthusiasm among operators in this field over the President's proposal. They express the thought that if accepted, it will be only because of a sense of duty. Operators generally think the plan would only continue the high prices.

BALTIMORE

With the stocks of the larger industries here at last depreciating at a rate that has caused alarm, there has developed a rush of buying which has quickly wiped out the available coal awheel. At present it is not a question of price, although the advance is not marked as compared with a week ago.

Even bunker coals, which are almost wiped out, when available at all are under $7.30 at the piers. The majority of general cargo vessels loading here are now going to Hampton Roads for bunkers.

There is practically no Pennsylvania line coal offering at this point, all-rail. It is easy to command $4.50 f.o.b. mines when such coals are offered. Even B. & O. coals which have been in better supply since the start of the coal strike have fallen off. There was not as much difference in grade quotations, as had been the case for some time.

Shipments of Pocahontas and New River continue to be received from Hampton Roads by barge. Total receipts under this method have probably been close to 100,000 tons during the past six or eight weeks. While the move for a new tariff on New River coal of $3.65 was established July 5, on shipments direct from mines to Baltimore all-rail, no considerable movement has taken place in this direction as yet.

UPPER POTOMAC

The Davis Coal & Coke Co., having secured an injunction to restrain strikers from interfering with the operation of its plants at Thomas and Henry, this company has made preparations to resume operations. Field conditions approached somewhat nearer normal, with many of the plants in operation, some of them on a normal basis. Shipments were not affected by the strike of shop workers, inasmuch as the Western Maryland has had a force of strike breakers at work for some time.

FAIRMONT

Reduced operations before and after the July 4 holiday tended to lower the output. Train service was not as smooth as it had been before July 1. More coal was being sought by industries, the demand exceeding the supply. Prices were at the maximum, particularly on mine run.

South

BIRMINGHAM

While the steam demand is not quite as strong from outside territory, inquiry is still good and orders taken on from foreign and local consumers are sufficient to move all the free coal obtainable. Industries in Arkansas, Mississippi, Louisiana and Georgia bought a good deal of coal in the aggregate, nearly all business, both railroad and industrial fuel, being for prompt shipment. Quotations range from $2.20 per ton for Big Seam mine run to $2.60 for the better grades, the washed product ranging $2.25@$2.75, or practically the same as prices for the previous week.

Domestic coal is moving fairly well, a slightly better demand being reported for Carbon Hill grades and other medium qualities, the better grades being well sold up for several months ahead. As a rule sales were made on basis of the July schedule as given last week.

Production is holding up well, although interfered with to some extent by car and labor shortage and inability on the part of the railroads to give prompt and efficient service. The output for the week of July 1 was 360,000 net tons, as reported to the Alabama Mining Institute. Preparations are being made to start several more furnaces in the district, which will necessitate increased production in this direction.

VIRGINIA

Production continues in an upward direction, insofar as labor and the car supply permits. With coal in strong demand, little effort is being made to increase the coke output, which is now averaging about 5,000 tons a week. There are few idle mines in this territory. Prices are stronger as the result of a better demand, the steam market being especially active.

Anthracite

Wholesale Orders Flow In; Householder Still Apathetic

Washington Conference Creates Feeling That Mining Will Be Resumed Soon—Effect of Rail Strike Seen—Retailers Make Deliveries Only Where Need Is Pressing.

WHOLESALE dealings are confined to pea coal and river barley. With so much being heard of the strike situation in Washington, there are many orders flowing in, as the feeling prevails that mining may be resumed before long. This attitude of placing "applications" is shared, but to a lesser degree, by the retail consumer.

Some of the late business is attributable to the effect of the rail strike upon the buyer. However, the old attitude of the householder has been jarred but little from the indifference he has shown all summer. Retail stocks are being watched more jealously than ever and unless there is urgent need for the coal, retailers are not making deliveries.

NEW YORK

Dealing in anthracite is confined almost wholly to pea and river barley. The other coals have nearly all disappeared from the wholesale market. Retail dealers outside of Manhattan and Brooklyn have fair stocks of all sizes while most of the dealers in the two Boroughs named are entirely out of the larger sizes.

Those in short supply are deeply interested in the outcome of President Harding's proposal to the operators and miners. They realize now that there is bound to be a scarcity of coal this fall and winter and that they will be forced to take in their needs piecemeal.

Storage piles of pea coal are rapidly disappearing, and in Pittston, the heart of the anthracite fields, it is being sold for $8.50 per ton, as compared with $7.40 previous to the suspension. Some independent pea was reported as being quoted here at $6.75 f.o.b. mine, during the past week.

There was some river barley quoted during the week $2@$2.50, and it was also reported that an offer of silt at $2.10 f.o.b. place of loading had been made to local dealers.

BALTIMORE

The principal feature of the market at present is that consumers are now growing restive and are calling up their retail supply connections in an effort to assure deliveries. The fact that a number of dealers are telling their customers that they can give no assurance of supplies, even when cold weather arrives, is causing a stir. The sudden turn of interest of the public was undoubtedly the result of the rail strike of shopmen and its complications.

ANTHRACITE FIELDS

The main topic of conversation in the region is the President's endeavor to secure a resumption of mining. There is a feeling among the men that they will soon be at work again. Recently it was reported that the railroads were distributing empties, which the miners take as a sign of early resumption. There was no disorder in the region last week.

PHILADELPHIA

Retailers are quite confident that the resumption of mining is not far off, although it cannot be said this feeling of confidence is shared to the same degree by the producing end of the trade. The public also seems to feel that it will soon be able to buy coal, which is shown by the number of orders which the dealers are asked to accept for future delivery.

There is a belief among some that even though the mines do get back to production under the President's plan, there is every chance of another suspension should the report of the commission be unfavorable to the men. With this in mind there is no question that every dealer will order in as much coal as his yard can possibly hold.

There is still considerable effort to lay in supplies, caused by the more serious aspect of the rail strike. As all dealers have pea coal, and can easily replenish their supplies, this is the one size that is being sold. A number of the larger dealers are replacing their stock of pea almost car for car. The shippers are also moving a slight amount of pea for steam use, but this demand has not developed to much extent so far. River barley remains the only steam coal on the market, with price inclined to become firmer, $2@$2.75.

BUFFALO

The belief that the strike is to be lifted soon may be the reason for the continued light demand. A little more call for it exists than formerly, but it is nothing remarkable. Consumers have not been accustomed to buy much coal in summer and they are going on now much as if nothing had happened.

The complaint now is that if the government is able to propose or to force a measure for settling the strike it should have done so months ago.

BOSTON

The public continues apparently quite indifferent to the prolonged suspension and all its implications. Householders seem content to put in their "applications" and set out for their vacations with little thought for next fall and winter. Reserves in the hands of retail dealers have now dropped so low that the Massachusetts Fuel Administrator has decided to attempt nothing of a regulatory nature for the present.

Meanwhile, the originating companies have nothing but pea for shipment. For this size there is a reasonably steady demand among dealers in the larger cities, but there is no special inquiry that would in any way justify an advance in price.

Coke

CONNELLSVILLE

Offerings of coke have decreased farther, chiefly on account of some fresh striking, commonly attributed to the proposal at Washington of a plan for ending the coal strike, which the workers in the Connellsville region consider decidedly in their favor. There is also an increased demand from foundries and miscellaneous consumers. There is practically no demand for Connellsville coke for blast furnace use, both because prices are altogether too high to justify furnaces in taking hold and because the offerings are in quantities too small to interest a blast furnace.

Even $10 seems now to be out of the question, reports being of recent sales at $10.50@$11. The coke is usually sold simply as "coke," since selection is difficult nowadays, but the buyers include foundries.

The advance in prices is of little practical importance, on account of the small tonnage involved. Production of the region is light, 80 per cent is by furnace ovens and of the remaining 20 per cent much is moving on old contracts.

The *Courier* reports production during the week ended July 8 at 43,790 tons by the furnace ovens and 10,130 tons by the merchant ovens, a total of 53,920 tons, a decrease of 16,290 tons, the decrease being attributed to the holiday.

UNIONTOWN

The shopmen's strike is an active deterring factor upon coal production only upon the B. & O. where no cars have been placed for loading since the strike began two weeks ago. The Pennsylvania and Pittsburgh & Lake Erie continue to supply maximum car demands to operators in the lower Connellsville region.

The conviction is slowly sinking in among striking miners that the Washington conference gives all appearances of ending the strike without considering what grievances they may have. Operators have taken advantage of the low morale of the strikers and have issued a general "work or move" notice with the result that the county court is flooded with eviction notices, more than 400 being served this week.

The coal market is reacting strongly to the combined coal and shopmen's strike. Buyers are numerous, with steel and railroad interests the big purchasers. The car shortage spectre is hovering over the entire situation.

Prices quoted are steam, $4.50@$4.75; byproduct, $4.75@$4.90.

BUFFALO

The supply is still less than the demand, but it appears to be met by some sort of fuel that can be made to answer the purpose. Anthracite consumers are looking at it, as something that may have to be put into the place of hard coal.

Chicago and Midwest

Western Kentucky Coal Is Market's Headliner

Climbs a Dollar and More in One Week with Higher Prospects — Railroad Troubles Keep Flow of Fuel Down— Midwest Wants to Work.

A GENERAL scramble for coal of any description has continued throughout most of the Midwest region during the past week. This has been especially true around Chicago where prices have topped those of any other market. Western Kentucky reached $6.50, with distinct signs of going on up, though it was selling at $5.50@$5.75 simultaneously in St. Louis.

Not much coal was shipped out of the eastern Kentucky or West Virginia fields into this region because of the various transportation difficulties. A little got through, however, some of which sold at the Hoover prices, but most of it topped $4. The situation is embarrassing the few eastern Kentucky operators who are keeping within Hoover's level as the car supply is so meager that they are scarcely making both ends meet.

Buying throughout the region was so keen, supply so short from everywhere and delivery failures have been so common of late, that every buyer demanded car numbers. Enough consumers have failed to get coal for which they hold short-term contracts, that buying has been much upset by sudden rushes for fuel by excited men willing to pay anything to get enough coal to tide them over a low spot. Railroads are on the verge of fuel exhaustion. Some are not "good" for more than a week.

Dealers in this region have been feeling, for several days, a stiff demand for threshing coal—a demand greater than anybody anticipated. In many cases they have been unable to satisfy it. Anthracite business is dead.

Everyone has so lively an interest in what is going on at Washington, and a plan for resumption of mining has been expected hourly for so long, that the strain hereabouts is growing almost unbearable. Nobody knows what to plan, yet everybody is trying to plan. Most operators are keen to get back to mining.

CHICAGO

Western Kentucky coal remained the unchallenged headliner on the Chicago market during the past week. Quotations ascended a little more than a dollar to a height of $6.25 by Saturday. And not satisfied with that, this coal was poised at the close of trading Saturday for a further flight into more rarefied market atmosphere. "We'll have seven dollar coal right away" was the flushed prophecy of the few favored jobbers who were able to get a firm hold on coal from the western Kentucky field, and almost everybody in town seemed to agree with them. But few if any actual sales had crossed the $6.50 mark by the end of the week, in spite of the hectic reports which fluttered around Chicago.

While the market level on western Kentucky coal was astonishingly buoyant, the volume of coal was insignificant so that the total amount of money changing hands was small. Demand was keen enough at one time or another during the week in spite of the rise and fall of hope that a strike settlement was coming out of Washington, but the delivery of fuel from the field was greatly reduced by all sorts of transportation obstacles.

Eastern Kentucky operators have, in some instances, stuck to the Hoover levels of price, but most of the coal from that region got out of hand as to price so that the average quotations on this market, for what little coal changed hands, is just above $4. Smokeless, also in infinitesimal volume, has attained about the same level. Practically no coal from any other fields was heard of on this market during the week.

ST. LOUIS

The storage piles at the smaller steam plants in St. Louis are getting dangerously short. There is some coal moving in every day but very little and the demand continues to grow. The market is quoted at $5.50 to $5.75 for all sizes of western Kentucky. Prompt shipment cannot be promised on any road.

Some coal is moving from Alabama, but it is unsatisfactory. The prices range from $2.25 on mine run up to $3.50 on screened coal, with a freight rate of $3.67. A little Missouri coal is coming in from Moniteau County to the St. Louis switching limits at $5@$5.50 at the mine, with a rate of $1.87½.

The domestic situation is quiet locally but country demand for steam is good. Throughout the central part of Missouri, the territory is being supplied in a way by local mines and strip pits.

LOUISVILLE

Louisville sees a general improvement of transportation conditions in the eastern Kentucky fields which have been so tightly tied up for lack of cars and motive power. In Louisville the railroads are making progress toward better service, which has a vital effect upon the coal market.

Reports received indicate that some of the eastern Kentucky mines are sold out to August or later, but investigation shows that most concerns can fill orders on hand quickly if they can get cars. Other than Lake and a little railroad, there has not been much contract business accepted.

Demand is chiefly from public utilities, railroads, and, increasingly, from retail and general industrial buyers, while Lake movement is steady. Prices throughout the state show an increase of about a dollar a ton over last week, as eastern Kentucky is quoting from $4@$4.50 and western Kentucky, $6.00 @$6.25 a ton, according to size. Screenings are carrying a premium.

INDIANAPOLIS

While there appears to be a fair coal supply in the city and a reasonable amount being offered, prices have broken loose from the Hoover maximum and the law of supply and demand rules the prices. Public utilities and big consumers in Indianapolis have been offered both Kentucky and West Virginia coal at $5 a ton for mine run. This with the revised freight rate of $2.16 from Kentucky and slightly higher from West Virginia, brings the price close to $7.50.

Indianapolis is far from being short and while some of the larger consumers who did not buy far ahead are being compelled to pay for their experience, they have sufficient coal on hand to keep running for some time.

SOUTHERN ILLINOIS

"Calm" is the shortest word to describe the condition in the southern Illinois field at present. Throughout Williamson and Franklin County things are unusually quiet. The United Mine Workers' officials sent word to the miners in this field that the reputation of the entire organization has been damaged too much already. As a result, the miners in this section are trying to overdo themselves in keeping within the law, although a little local trouble develops occasionally when a miner meets one of the men employed in pumping out or keeping up the mine, but nothing serious has happened.

All the coal in the southern Illinois field is cleaned up and both sides are marking time until the trouble is over. There is still some poverty at places but in the last few weeks the miners seem to be able to get more credit than formerly, which indicates that the merchant feels normality is near.

Much the same condition prevails in the Duquoin, Jackson County and Mt. Olive fields. Throughout the Standard district there are places where the miners are having a hard time making both ends meet.

WESTERN KENTUCKY

As a result of the railroad strike stopping production in some other fields, demand on western Kentucky has been greater than ever, and this district, not being checked much by the rail strikes, is producing at a good clip, while prices are climbing. Orders have been coming from all parts of the North and West, with some tonnage moving East as well. Today it is a question of getting any kind of coal at any price with many consumers.

Operators of western Kentucky are quoting prices over a dollar a ton higher than quotations of last week, and there is reason to believe that next week's prices will be still higher. A week ago Western Kentucky was quoted $4.25@$4.50, while this week the cheapest coal quoted was $5@$5.10 with the market ranging as high as $6.25. It is reported that car service on the I. C. lines has been good.

Eastern Inland

Acute Market Conditions Intensified as Stocks Shrink

Rail Strike and Congestion Further Entangle Situation—Prices Boom, $5 for Non-Union Coal Likely Soon—Lake Situation Is Critical.

MARKET conditions are more acute. Coal stocks are either dangerously low or entirely depleted and fresh supplies are extremely difficult to obtain. Rail congestion and strike troubles are delaying coal deliveries. Prices are booming and non-union coals will soon go over the $5 mark unless the strike can be settled and much needed production released. The market belongs entirely to the bidders and the urgency for fuel is daily growing more pronounced. The Lake situation is critcritical, and priorities are likely later on this summer as the only solution to safeguard the Northwest's winter supply.

PITTSBURGH

There is no operation at any of the union mines in the Pittsburgh district. Late in June plans were completed for an attempt at resumption at several mines, but President Harding's inception of efforts to end the strike caused the operators to postpone their efforts, while it stiffened the attitude of the miners. The Washington proposal also had the effect of strengthening the non-union striking in the Connellsville region.

The President's proposal of terms for a resumption of mining has been roundly criticized. The non-union operators have also joined in, for the language of the proposal is not clear, leaving it as a possibility that the non-union operators who have strikes on their hands are expected to participate in the union settlement. As the United States Steel Corporation is notoriously on an open-shop basis an important issue is involved.

Trading has been lighter in the past week, offerings being diminished. Prices are higher. Westmoreland gas has been going at $4.75 and Connellsville steam coal at $4.25@$4.50. Demand, in general, is greater on account of reduced deliveries of West Virginia and Kentucky coal arising out of railroad congestion, which has been accentuated by the strikes of railroad shopmen.

BUFFALO

As a rule consumers have lost out by failing to buy a little more generally, but they cannot be made to understand and are only buying a little, to enable them to wait until coal is in full supply again. A jobber reports making sales lately at $4.35 for ¾-in. lump to a consumer who in April refused to pay him $1.90. The popular idea is that President Harding's reported plan, to have the men go back to work will be rejected by the operators. The idea is that it would be preposterous to go back to war wages, paying the men $7.50 for eight hours' work.

Quotations are hard to make, as there is really no regular price. Sales as high as $4.25 @ $4.50 for ¾-in. and $4 @$4.25 for mine run and slack have been made.

Only three cargoes of bituminous coal have come in from Ohio in the past seven days, total 17,500 net tons. The Buffalo furnaces have bought 200,000 tons more of this coal.

CLEVELAND

Conditions are becoming more acute. Railroads, brick plants and industrial users of all descriptions are flooding the market with inquiries. The main bulwark of the industrial situation is the Cleveland Electric Illuminating Co. This company supplies about 75 per cent of the factories in this community with power. It still has sufficient coal reserve to last until Aug. 15. Plants not buying power, however, are suffering. As a result prices are advancing, with every indication of higher prices if the strike settlement is not made soon.

A survey made of coal supplies in public utility plants in Ohio shows that the electric railroad companies have sufficient stocks to last to the middle of August. Artificial gas plants are virtually barren of stocks, while electric power plants have sufficient stocks to run until the last of July. The Cleveland municipal water works is inquiring for coal. The school board of Cleveland has asked for bids for 21,000 tons of slack and smaller amounts of other grades. Specifications are so exacting for this business, however, that operators are going slow in offering bids in view of the uncertainties of the situation.

The Lake situation is getting daily more critical. Shipments are not increasing and priorities loom as the only method of solving the problem later in the summer. Another phase of the matter which is worrying operators in this district is the possibility that Illinois and Indiana rail coal will be drawn upon largely to meet the needs of the Northwest. This will contribute to the car shortage.

COLUMBUS

With the strike continuing unabated and the railroad situation getting worse, there are many indications of an acute demand for fuel. Hoover prices are being disregarded more and more and operators and jobbers to a certain proportion are asking as high as $4@ $4.25 for lump and mine run. But in the main a large number of the producers are asking the Hoover levels only and with the jobbers' commission this is slightly higher to the trade.

Retailers have cleaned up pretty well on stocks and as a consequence are coming into the market more and more. This, together with steam and railroad demand, is making a bidder's market entirely. Pocahontas lump is retailing around $7.75@$8, while West Virginia splints are quoted $7.25@$7.75. Only a limited amount of Ohio-mined coal is available at present.

During the week ended July 12 the H. V. Docks at Toledo loaded but 96,688 tons as compared with 170,160 tons the previous week. The total tonnage handled by these docks since the opening of navigation is 1,398,338. The T. & O. C. Docks at Toledo have not opened for Lake loading.

EASTERN OHIO

Reports reveal an impending fuel scarcity, especially among the larger consumers. The ultra conservative stocks laid by prior to April 1, notwithstanding additions made to them by purchases of non-union coal, are nearing the point of absolute depletion. For example, it is asserted that Lake shipping may shortly be curtailed because of the scant supply of coal for fuel purposes at the various docks. Within the past few days, the Detroit & Cleveland Navigation Co. is said to have wired Mr. Hoover with a view to obtaining relief.

The quantity of coal available in the spot market has precipitously declined during the past 10 days and buyers who have been slow in safeguarding their fuel requirements now find themselves in a position of considerable apprehension.

Another deterrent factor is the curtailed operation of eastern Ohio stripping mines because of labor difficulties. It is estimated that the aggregate output of these mines at this time is between 30,000 and 35,000 tons per week, as compared with 50,000 tons 30 days ago. Spot prices during the week rose above the Hoover level.

Receipts of bituminous coal at Cleveland during the week ended July 8 were the smallest in 10 weeks. Total quantity arriving was 838 cars; 721 cars for industries and 117 cars for retail yards, as compared with a total of 1,145 cars the preceding week.

DETROIT

Buying is proceeding very slowly. Jobbers are inclined to regard as fortunate the fact that a greater disparity between supply and demand does not exist, in view of the circumstance that the quantity of coal available for the Detroit market has been greatly reduced within the last few weeks.

Many of the factories and industrial plants are reported to have a fair supply of coal remaining in reserve piles. Quotations on all descriptions are holding at about the level fixed by Secretary Hoover, with lump and egg at $3.75, run of mine $3.50, nut and slack $3.25.

NORTHERN PANHANDLE

Production continues on a large scale. There are only about three plants in this region now inactive. Not only is there a strong demand for railroad fuel but the buying of commercial coal is on a large scale. The rail strike greatly stimulated the demand. Prices are firm with mine run bringing the maximum.

Northwest

Minnesota in Travail May Seize Trusty Axe

"Cut Timber" Is One Emergency Scheme That Fuel Surveyors May Propose—Whole Region Fears Future—Prices Climb—Receipts Pitiful.

REPORTS indicate this week that part of the Northwest is getting more and more flighty over the coal crisis but that around Milwaukee there is still some confidence that the situation nationally will straighten itself out and that enough fuel will reach the region to hold down prices and prevent anything like a famine. Receipts by vessel at upper docks continue pitifully small and in Minnesota they are taking an official state canvass of the coal status which may result in a recommendation that the state turn to the forests for much of its fuel.

Prices are steadily advancing in most parts of the Northwest though so little coal is on hand that few except old customers are getting any, and delivery to even those is carefully restricted.

DULUTH

The coal situation at the Head of the Lakes is indeed serious. Free stocks on docks are at the low ebb. Orders are being refused by local dock companies and coal is allotted to old customers.

An official statement of the soft coal on docks shows that railroads own 600,000 tons and industries 409,000 tons and that free coal totals 478,000 tons.

Shipments from the local docks for the month of June aggregated 26,634 cars. In June of last year but 9,557 cars were shipped and during May this year only 18,587 cars went out. The shipments last month were the heaviest in eighteen months, with the exception of last October, when 28,722 cars were shipped.

Receipts have been pitifully small. In June there arrived 155,034 tons of bituminous. The season's total is 4,562 tons of anthracite and 284,174 of bituminous. This is 445,516 tons of anthracite and 3,510,971 tons of bituminous less than last year. An anthracite shortage this winter seems impossible to avert.

Prices have advanced. Lump is quoted at $7.50 by the majority of docks, run of pile at 50c. less and screenings as high as $6.50, with the level around $6.

MILWAUKEE

The coal business is at a standstill. Wholesalers and retailers are filling their spikes with orders which they cannot fill until coal begins to be mined again and the railroads resume running.

Milwaukee is receiving coal by Lake almost daily, but the coal goes out about as fast as it comes in. Dealers are optimistic, however, and are inclined to cry down all talk of a coal famine and high-priced coal the coming winter. President R. H. Aishton of the American Railway Association wired the Milwaukee Association of Commerce that if the coal strike is settled by Aug. 1, the railroads will have sufficient cars to carry the necessary coal tonnage from the mines to Lake Erie to make up the deficit on the docks in the Northwest.

There has been no disturbance of prices since the recent advance of 50c. in soft coal.

Thus far in July, 14 cargoes of soft coal aggregating 88,570 tons have been received, making the season's receipts to date 694,831 tons, against 1,375,653 tons last year up to this time, a shortage of 700,822 tons from last year's record. No hard coal has been received as yet, the 700 tons of anthracite screenings being of little account as fuel. Last year 435,200 tons of hard coal had been received up to now.

MINNEAPOLIS

General public apprehension over a coming coal famine grows throughout this region. The governor of Minnesota has started a fuel survey which may result in a recommendation that wood be cut as a coal substitute and distributed all over the state. This, naturally, would be an extreme measure for in few cases could wood take the place of steam coal; but it indicates the straits in which the state feels itself to be in with the Lake season so far advanced.

Many eyes are turned toward the lignite fields of North Dakota. It has been suggested that those fields could deliver to Minnesota 200,000 tons—a mere drop in the coal bucket. However, Dakota has its own fuel troubles and this source of supply is considered decidedly unstable. One expert has estimated that 6,000,000 tons of soft coal are needed here this winter. This region, always dependent upon outside sources for its fuel, probably will have to depend upon the national settlement of the coal strike, for its salvation.

The lower freight rates effective July 1 have given 20c. reduction in the cost of hard coal at the Twin Cities, this being the reduction on the haul from the docks to these cities. But that is on the basis of the old cost of coal. What the cost of new coal will be, when it comes, is very uncertain.

New England

Buying Interest Shown, Spot Prices Tend to Stiffen

Business Improving, Trade Is Less Insistent That Consumers Take Delivery — Rail Strike May Mean Trouble, but Local Traffic Has Not Been Upset—Cars Disabled and Delay in Repairs Reported.

BUYERS have shown more concern over purchases the past week than at any time for several months, and to a degree spot prices have stiffened. Rehandlers at this end have had reasonably good business the past week and in the trade there is less disposition to press deliveries on the consumer than was the case a fortnight or so ago. It is realized that the striking shopmen can cause trouble somewhere along the route, although in New England the men who walked out were replaced to a considerable extent without much difficulty. Traffic here has been unaffected, but reports are coming through of disabled cars in transit from the mines and of indefinite delays in repairing them.

At Norfolk and Newport News there has been a notable change in the situation, especially at the Norfolk & Western terminal. On July 15 it was stated that only about 26,000 tons of Navy standard coal was available for dumping, and that this tonnage belonged to twenty-three different agencies. On top of holiday suspension the shop troubles have further cut down output that had been kept for a considerable period on a 110 per cent basis.

Prices for spot delivery have already responded to the reduction in tonnage available and as high as $6.72 has been rumored as a sales figure, f.o.b. vessel at Hampton Roads. Until railroad congestion is relieved it is likely there will be advances all along the line and the slowing down of deliveries to the West may be the means of bringing the Government more actively into the controversy. Opinion here is very pronounced over the way railroad and coal troubles have been allowed to drift. The contrast with the Government's attitude in 1894 is everywhere the subject of bitter comment.

Water receipts thus far have been maintained on the June average. By far the greater proportion have been on contract, few factors having cared to take the chance of shrinkage in values at this end that were occasional a month ago. All-rail shipments have dropped off somewhat, the largest part being pretty well confined to contracts for railway fuel. More British coal has been entered at Boston for locomotive supply, but it is not yet known whether there are to be continuing shipments of the same kind.

Coastwise freights show no material change.

The relatively few mines that are in operation in Central Pennsylvania are struggling to keep up their daily average. It is up-hill work, in most instances, and takes a sturdier kind of resolution than is in evidence elsewhere in these troubled times.

Cincinnati Gateway

Buyers Hot After Tonnage, Prices Take Sharp Ascent

Premium Process Used to "Get Around" Hoover Price Schedule—$5 Coal Appears — Strike of Rail Workers Serves as an Excuse — Tonnage Movement Slumps Heavily.

THE strenuous days that coal men associate with the war and the months that followed were vividly brought back in Cincinnati and the non-union fields adjacent thereto during the past ten days. The handy deviation from the Hoover prices by applying the "premium" process having led to the exaction of larger profits, smaller operators and a class of jobbers and wholesalers are now out in the open and $5 coal has been chalked up.

The strike of the shopmen and other employees of the railroads has played a part, in that it has offered an excuse for pyramiding the price. The buyers, principally steel men, have been hot after any or all tonnage that was available and since the beginning of the week prices have shot upward. The tonnage hauled through this gateway has dropped fully 50 per cent recently, and from a transportation standpoint the situation is the worst in years.

CINCINNATI

The vast majority of the direct sales offices, old line wholesalers and others are still sticking to the Hoover price and are going without spot business rather than engage in evasions. The result is that there are two separate and distinct price lists on the market, one for the coal that is in transit and close enough for connecting line delivery, and the other for coal that must take its turn in order to start moving.

All three lines engaged in heavy coal traffic, the L. & N., the N. & W., and the C. & O., have been failing in their ability to cope with the transportation problem. The tonnage passing over the bridges here has dropped fully 50 per cent from the peak that was established three weeks ago. The strike of the N. & W. clerks at Portsmouth has called a number of clerical coal men from the Pocahontas field in order to keep some of that tonnage moving to the West and the Lakes. The situation admittedly has resolved itself into the worst state of affairs that has been faced from a transportation standpoint for years and there are those who profess to believe that $5 coal isn't a marker to what it may be a few days farther along.

Cincinnati is holding to her faith in the river transportation for her own immediate needs. Even with the upturn to the wholesale market the retailers have shown no disposition to take advantage of the flurry except that where $8.50 was quoted as high for Pocahontas lump, $7 for mine run and the bituminous lump, and $5.50@$6 for screenings last week, these are now the minimum prices. In other words, where a few retailers were undercutting the prices a week ago, they are now all to that level. Mine prices are steadily rising and are shown in the Weekly Review. The market is extremely sensitive.

HIGH-VOLATILE FIELDS

Kanawha

July 4 tended to curtail production. Furthermore, congestion in yards and on sidings has tended to restrict the car supply to some extent, but as the need for cars in this region is not as urgent as in some other fields where more coal is being produced, the supply has not affected the output to an appreciable extent. There was a brisk demand for steam coals in Western markets and Lake demand was reaching larger proportion.

Logan and Thacker

Logan production was affected by inability to secure empty cars, production falling behind at the rate of 300 cars a day at times. Consumers have been buying on a larger scale and have been urging prompt shipment for fear the rail strike may affect delivery. There is also a growing demand at the Lakes. Shipments to the steel centers are large.

The heavy movement of Kenova-Thacker coal is preventing capacity production, owing to the difficulty of getting empties back to the mines. However, labor shortage losses are still running higher than those from car shortage. There is a ready market for all the steam coal produced. A large tonnage is being sent to the Lakes.

Northeastern Kentucky

Since July 1 the demand has been augmented not only by lower freight rates but also by the fear among consumers of having shipments curtailed at any time by the rail strike. Prices on all grades are at the maximum. The greatest obstacle in the way of capacity production is the difficulty in getting more equipment to the mines, congestion delaying the delivery of empties.

LOW-VOLATILE FIELDS

New River and the Gulf

There would have been additional gains in the New River output in the first week of July but for the intervention of the holiday. A congestion of traffic has followed in the wake of an unusually large production. With rates reduced, Tidewater is taking a little more coal but much of it is going to New York, Baltimore and Philadelphia instead of New England. Mines continue to increase their output as more men return to work.

Gulf mines are being handicapped by a serious congestion on the Virginian, there being more than 5,000 cars awaiting unloading at various points owing to the failure of the public to purchase. Car shortage losses are now twice as large as labor shortage losses, which for a time were the principal factors in holding back production. Much of the product is consigned to Tidewater.

Pocahontas and Tug River

There is an ample market for the large output of the Pocahontas region, which continues in excess of 400,000 tons a week, despite certain handicaps, such as a labor shortage and the difficulty of securing equipment, due not so much to any shortage of cars but to the impossibility of moving loads and empties with more celerity. Yards and trackage facilities are taxed to the utmost. When Tidewater became congested, there was a heavier movement westward for which there is now a better market than there was before July 1. Prices have stiffened again.

Tug River mines are still producing in excess of 110,000 tons a week, not having been bothered much by a shortage of mine labor, although now beginning to feel the effect of a shortage of equipment. The principal movement from this field is to Western points.

West

SALT LAKE CITY

Business is still quiet. Probably nothing short of filling up the bins free would arouse the public to the necessity of getting in winter coal now. There is likely to be a rather serious car shortage this year and anxiety is felt in operating and retail circles. Salt Lake City has today about 30,000 tons of coal in its yards.

Figures showing the coal produced in the state for the first six months of the present year show a gain over the same period of 1921 amounting to 370,795 tons, the total tonnage being 2,100,251. Production, however, is well below that of the first half of 1920.

KANSAS CITY

The coal situation is more unsettled than ever due to the railroad shopmen's strike, which has curtailed transportation to some extent and caused a spirited demand for such coal as is available. Prices have gone up as a result. Kansas mine run is selling as high as $5 per ton for the better grades and production appears to be on the increase with no labor trouble.

Local dealers are advising their customers to put in coal now and as the prices are higher than last year, it is hard for the users of coal to understand, but no doubt it will be made plain to them if last year's wage scale for the miners is continued, as the prices will be based on the wage scale and as nearly all the dealers lost money last year, they will have to get more for the coal they handle or continue to lose money.

There is a little coal being mined now in Arkansas and while as a rule there is little demand for this grade at this season, it is moving freely; in fact the storage coal is about all used up and anything that will make steam is in demand.

News Items From Field and Trade

ALABAMA

State convicts will be used in mining coal at Aldrich for another three months under a contract between the state and David Roberts, trustee of the **Montevallo Mining Co.** Announcement has been made at the executive department that the contract had been agreed upon and had been approved by Governor Kilby. An experimental contract for one month was made recently at the price paid by the Montevallo company for convict labor before the company passed into the hands of the bankrupt court.

Among the recent incorporations was the **Lens Coal Co.**, with offices at Henry Ellen, capitalized at $25,000, with $12,700 paid in. Incorporators were A. C. Payne, W. L. Simmons and John R. Boyle.

COLORADO

The Leyden mine, near Denver, is operating normally, according to officers of the **Leyden Coal Co.** This mine has been operating on the open-shop basis for 20 years. Miners on the payroll now in most instances have been with the company a good many years and do not appear to pay attention to strikes in other fields.

The Colorado Fuel & Iron Co. has been able to increase its output half a ton per man per day this summer as a result of a campaign to stimulate men to do their best. The campaign methods include schemes of pairing up mines and districts and pitting them against each other with daily reports "from the front" which are posted where men can see them frequently.

ILLINOIS

The Groveland Mining Co. has sold an issue of $300,000 first mortgage 7½% serial gold bonds to John Burnham & Co., Chicago. The company operates a mine at Hilliards, seven miles southeast of Peoria, in Tazewell County, and is on the line of the Peoria & Pekin Union Ry., which is a belt line connecting eleven railroads serving Peoria.

Horace Clark, of the Clark Coal & Coke Co., of Peoria, was in Chicago recently.

D. W. Buchanan, of Chicago, president of Old Ben Coal Corporation, spent several days, including the Fourth of July, at Oconomowoc, Wis.

George B. Harrington, of Chicago, president of the Chicago, Wilmington & Franklin Coal Co., has returned from an Eastern business trip.

The Dixie Fuel Co., of Louisville and Nashville, has arranged to open a branch sales office at Chicago, which will be in charge of John H. Rhodes. A. C. Lackey, producer and also president of the Dixie Fuel Co., and H. H. McBratney, vice-president of the Dixie Fuel Co., were in Chicago recently, arranging for the opening of the office there.

The Orchard Coal Co., of Marion, of which Charles Gent of that city is general manager, recently acquired the mine and property of the **Harrisburg Fuel Co.**, near Dorrisville, Saline County. The Harrisburg Fuel Co. was composed of R. A. Parks and John W. Gray.

James Forester, general superintendent of the Paradise Coal Co., of Paradise, is on a long vacation in the West.

KENTUCKY

J. B. Dills is now superintendent of the Miners' Elkhorn Coal Co., Riceville. He was formerly with the Collins Mining Co., of Lackey.

M. D. Nidiffer, formerly with the Melcroft Coal Co., is now mine superintendent of the Harlan Fuel Co., Harlan.

The strike of shopmen on the lines serving the coal fields of Kentucky and Tennessee is threatening to tie up the entire mining industry, as a result of the severe congestion at terminals where freight trains have been stopped with no prospect of continuing. There are many dead engines in the L. & W. yards at Corbin, the great junction point of the Kentucky, Cumberland Valley and Knoxville divisions, as the roundhouse men are out. Western Kentucky is not having quite so much trouble as the eastern section.

The mines of the **Producers Coal Co.** at Waverly, as well as the coal and equipment, have been sold at public auction. The company made an assignment June 25, 1921, and has not been operated since. The property consists of 1,700 acres of coal rights and a mine electrically operated.

NEW YORK

D. C. Ashmead, anthracite editor of *Coal Age*, is broadcasting a talk on the anthracite situation from the following stations:

July 17—7:45 p.m., Philadelphia, Pa.—John Wanamaker—WOO.

July 18—7:45 p.m., Springfield, Mass.—Westinghouse Elec. & Mfg. Co.—WBZ.

July 19—8:45 p.m., Medford Hillside, Mass.—American Radio Corp.—WGI.

July 20—8:00 p.m., Schenectady, N. Y.—General Electric Co.—WGW.

July 21—8:00 p.m., Pittsburgh, Pa.—Westinghouse Elec. & Mfg. Co.—KDKA.

July 23—8:00 p.m., Newark, N. J.—Westinghouse Elec. & Mfg. Co.—WJV.

July 24—9:00 p.m., Wilkes-barre, Pa.—WBAX.

After an association of twenty-two years **David W. Allen** has retired from William C. Atwater & Co., Inc., New York. He is succeeded as sales manager by George H. Lachnicht.

Announcement is made of the appointment of **Harrison G. Ecker**, as general manager of W. H. Bowater, Inc., 66 Broadway, New York.

The Rome Wire Co. announces that it has taken an interest in the Atlantic Insulated Wire & Cable Co., which will continue to manufacture high grade rubber covered wires and cables.

OHIO

The Cincinnati branch of the American Wholesale Coal Association has appointed **Fred Legg**, president of the Logan and Kanawha Coal Co., **E. F. Bardin**, of the MacBard Coal Co., **W. T. Francis**, of the Tildesley Coal Co., **R. H. McCormack**, of the Kearns Coal Co., and **Elmer Weirhake**, of the Kentenia Coal Co., a committee to look into the establishment of a credit bureau for the jobbers in coal for that section.

Major E. S. Helborn. Senator J. F. Bosworth, and J. D. Fitzpatrick, owners and operators of several mines in Bell County, Ky., and large acreage there were in Cincinnati recently going over the details of a big merger that will take in several of the going operations in that section of southeastern Kentucky. The plans call for the consolidation of eight mines and the opening of others.

PENNSYLVANIA

The Anthracite Oil, Gas & Coal Co., Northumberland County, has notified the State Department at Harrisburg of an increase in its capital from $5,000 to $32,000. Charles E. Jones is the treasurer.

The State Department of Mines has just compiled figures showing the **production of bituminous coal in 1921** in Pennsylvania. The total production of coal was 114,447,132 tons and of coke, 4,876,322 tons. Coal shipped to the market was 102,881,909 tons; coal used at the mines, 2,738,723 tons; coal sold to local trade and used by employees, 1,734,365 tons and coal used in the manufacture of coke, 7,092,135 tons.

The miners at Colver employed by the **Ebensburg Coal Co.** have been pretty thoroughly organized and the new union men have struck. Eviction notices are being served on those living in company houses by the company. Evicted workers will be added to the tent colonies.

The tipple of the **Shade Coal Co.**, at Hagevo, was destroyed by fire recently, entailing a loss of $10,000. The origin is thought to be incendiary.

Notice of dissolution of the **Basin Coal Co.** has been filed with the secretary of internal affairs, Harrisburg.

Cosgrove & Co., with headquarters in Johnstown, and with sales offices in Chicago, St. Louis and Minneapolis, have been made sole distributors for the **New River Collieries**, a Guggenheim subsidiary. The plants producing this low-volatile coal are located at Eccles and Sun, in Raleigh and Fayette counties, and are in the heart of the New River smokeless coal district. The coal which the Cosgrove company will sell is what is known to the trade as "Admiralty," and has gained widespread popularity in the Eastern part of the country, and was used largely by the Navy during the war.

The territory over which the Cosgrove company will sell the coal is embraced in Ohio, Indiana, Illinois, Michigan, Wisconsin, North and South Dakota, Iowa, Nebraska, Kentucky, Missouri and Canada, west of Toronto.

Samuel S. Lewis, auditor general of Pennsylvania, has notified all coal companies which have failed to make returns or to pay the anthracite tax to the state, pending appeals of the constitutionality of the act of 1921, that they must file specifications of objections to the sum determined to be due and furnish bond in double the amount of the tax contested and make cost provisions for the collection. The tax is on production for the last half of 1921, and more than $3,100,000 is due for that period.

UTAH

It has been announced that the **Columbia Steel Co.**, headed by Wigginton E. Creed, of San Francisco, has acquired the coal and iron properties of the **Utah Coal & Coke Co.**, in Carbon and Iron counties. The **Columbia Steel Corporation**, capitalized at $15,000,000, will be formed to work the joint properties of the new organization, which will take over the steel foundry and rolling mills of the former Columbia interests at Pittsburg, Cal., and the steel foundry at Portland, Ore., also a Columbia holding.

WEST VIRGINIA

The New River Company, largest producer in the New River field, has announced that several of its mines have been able to resume owing to the fact that a good many of its miners have returned to work after having been on strike.

A resumption of operations at the No. 34 mine of the **Davis Coal & Coke Co.**, at Thomas, was possible a short time ago, when about 44 men reported for work. This had been closed down since April 1 as the result of the strike. Resumption of operations at the mine is regarded as a favorable development owing to the fact that the union has held frequent meetings at Thomas, the largest mining center in the Upper Potomac region.

The United Mine Workers' organization has been sued for $1,000,000 by the **Willis Branch Coal Co.**, in the New River field, to cover damages inflicted by members of the U. M. W. during the period which this mine was under constant attack between Sept. 1, 1919, when it started to operate on an open-shop basis, and May, 1921. In order to make certain that it secures damages in case it should win the suit, the coal company has indicated that one of the first steps taken by it will be to attach district headquarters of No. 17 at Charleston and the district headquarters of district 29, at Beckley, it being estimated that the aggregate value of these properties is $150,000.

Approximately 3,000 acres of coal land in Brooke County have been secured by **J. C. McKinley and associates**, of Wheeling, this coal property being near Cliftonville. The land was secured from the Sawtell-Ferguson interests, the consideration not being made public.

The tipples and approaches of the **A. L. Black Coal Co.**, near Maidsville in Monongalia County, were totally destroyed by fire of incendiary origin a short time ago, the loss entailed ranging from $10,000 to $15,000. The mine had been leased to Richard Poland who had a force of men cleaning up the "dead work," but who as-

serts that he had no intention of operating his mine at this time. He believes that a union sympathizer thought he was preparing to resume operations and set fire to the tipple.

William Gantz, state mining inspector for the 4th district of West Virginia, has been transferred to the 16th district and will have his headquarters at Mullens, in the Wyoming County field.

Benjamin Bissell, general manager of the Century Coal Co., with headquarters at Baltimore, was a visitor at Fairmont during the latter part of June, making the trip to attend a meeting of the Northern West Virginia Coal Operators' Association.

John F. Phillips, head of the Delmar Coal Co., with headquarters at Fairmont, spent the latter part of June on a fishing trip, going to the Trough Club in Hampshire County.

Comparatively few coal concerns discontinued their corporate existence during May, the following being in the list of companies dissolved. **The Pollock Coal Co., Nolin Asphalt Coal & Navigation Co.; Fred Coal Co; Penn American Coal Co.; Electric Mining Co., Inc.**

Only eight new coal companies were launched as resident corporations in West Virginia during May, there being two non-resident coal corporations formed in the state. The aggregate capitalization of the resident coal corporations organized was $605,000, the capitalization of non-resident corporations amounting to $35,000. In the list of new concerns organized were the **Behler Coal Co.,** of Fairmont, with a capital stock of $50,000; **Washington-Etkins Coal Co., Inc., capital** stock of $300,000; **Iaeger Fuel Co.,** Iaeger, $25,000; **Wacomah Coal Co.,** Amigo, $150,000; **Cherokee Coal Co.,** Charleston, $10,000; **Will-Earl Coal Co.,** Clarksburg, $10,000; **Poland Co-Operative Coal Co.,** Morgantown, $10,000; **Spencer Fork Coal Co.,** Beckley, $50,000. Non-resident coal corporations organized were the **Quality Coal Co.,** Charleston, with chief works in Ohio, $10,000; **Triangle Coal Co.,** Bluefield, with chief works in Kentucky, $25,000.

The following companies have increased their capital stock: **McKeefrey Coal Co., of West Virginia,** from $300,000 to $500,000; **Elkhorn Gas Coal Co.,** from $100,000 to $250,000; **Carry on Coal Co.,** from $75.000 to $200,000. The following concerns have reduced their capital stock: **Kimball-Pocahontas Coal Co.,** from $100,000 to $50,000; **MacGregor Coal Co.,** from $300,000 to $5,000; **Sugar Creek Coal Co.,** from $125,000 to $100,000.

Winding Gulf mines have been able to secure a new through rate from the Gulf region to Baltimore, being set $3.65 per ton. This is expected to afford a better market for Gulf coal at the Baltimore port. As yet, however, but little movement has been noted.

Striking miners are continuing their efforts to stop production at the mines of the **Hudson Coal Co.,** in Harrison County, by resorting to sniping. Guards at the Lewis mine of the company at Reynoldsville were fired upon by strikers who occupied points of advantage on neighboring hillsides. When the strikers opened fire guards returned it and between twenty and thirty shots were exchanged. No one was injured.

WASHINGTON, D. C.

The Bureau of Internal Revenue is making an effort at this time to secure mining engineers who are qualified to make valuations of all types of mining properties, including oil and gas operations. Applications for that examination will be received until Sept. 1.

The Canute Steamship Co., of Great Britain, has requested the United States Supreme Court to review the decision of the Circuit Court of Appeals, Second Circuit, in its case against the **West Virginia Coal Co.,** involving breach of charter parties and the bankruptcy law. Involved in the case are several other coal companies, including the **H. M. Crawford Coal Co., the Boulder Coal Co., Co.,** and the **Diamond Fuel Co.** A total of $162,677 is involved. In this case coal to the credit of the coal companies held by the Tidewater Coal Exchange at Baltimore was attached and sold. $110,000 proceeds of which are held by trustees. In 1921 the Pittsburgh & West Virginia Coal Co., the Crawford Coal Co., and the Boulder Coal Co. filed a bankruptcy petition. The District Court entered an order of adjudication but did not state whether or not the Pittsburgh & West Virginia Coal Co. was a creditor of the Diamond Fuel Co. The Circuit Court affirmed this decision, review of which is sought by the petition to the Supreme Court.

The naval appropriation bill carrying funds for the Navy for the year beginning July 1, allows $16,000,000 for fuel for the Navy this year and $700,000 for fuel for the Marine Corps. An appropriation is also made for prizes for economy in fuel consumption.

The improvement of the harbor at Beverly, Mass., at an expense to the government of $98,000 in addition to funds already authorized, is conditioned by the river and harbor bill reported by the Senate Committee, on the contribution of $25,000 by coal and oil or other local interests which will benefit by the improvement. Another improvement is to Green Bay Harbor in Wisconsin at a cost of $110,000. On this harbor 80 per cent of the commerce is in coal, handled by vessels of 19 to 20 ft. draft, which is 1 or 2 ft. greater than the depth of the channel. A $4.000,000 improvement at Milwaukee Harbor is proposed, which will include facilities for handling coal and ore in a scheme of terminal development on the Great Lakes for handling bulk freight, providing for its later expansion under modern and economical practice.

C. D. Avery has returned to Washington from Wyoming, where he has been making oil investigations.

The War Department appropriation bill, as agreed to by the Congressional conference committee, limits the Army fuel allotment for the year beginning July 1 to $3,500,000.

QUEBEC

As a result of the American coal strike fuel is now being brought to Montreal from the Cape Breton mines by six vessels, directly owned and operated by subsidiary companies of the **British Empire Steel Corporation** at the rate of 21 cargoes per month. Other shipments are also coming in by chartered steamers. It is expected that at this rate 1,500,000 tons will have been shipped to Montreal before the close of navigation. The best season's record of the Dominion and Nova Scotia coal companies St. Lawrence shipment was approximately 2,000,000 tons.

Traffic News

The Anaconda Copper Mining Co., in a brief filed with the I. C. C. in the Western coal rate case asks the commission to hold that the rates on coal between producing points in Montana, Wyoming, Colorado and New Mexico and states west thereof, and destinations in the same states and El Paso, Tex., to be unreasonable and to order rates on mine run, nut and slack coal which shall be less than those on lump coal. In this case the Kemmerer Rock Springs operators ask that the commission hold that the differential adjustment of rates to the territory north and west of McCammon is prejudicial to the Kemmerer district and preferential of the Castle Gate district because the differentials in favor of the former are less than an average differential of 85c. per ton.

In the complaint of the American Fuel Co., of Utah, the company asks the commission to prescribe rates on coal from Sego, Utah, to points in California, Nevada and Utah, west of Castle Gate, which are 12½c. per ton less than the rates from Thompson, Utah, and also rates from Sego to Cisco, Green River and Floy, Utah, and Fruita, Grand Junction, Mack and Durham, Col., that are no higher than the rate from Thompson. The railroads in this case ask that the proceeding be dismissed as the fuel company is seeking to extend to Sego the Castle Gate rate.

The Nokomis Coal Co., of Chicago, has complained to the I. C. C. against the rates on mine timbers from Missouri to Illinois coal mines.

The case involving rates on coal from the Southwest to Omaha and related points has been assigned for argument by the I. C. C., at Washington, Sept. 14.

In the complaint of the **Meyersdale Smokeless Coal Co.,** the commission on reargument and further consideration, affirms its original finding to the effect that the refusal of the B. & O., during the period from May 1 to Dec. 28, 1917, and under Federal control from that date to August, 1918, to furnish the company with cars for transportation of bituminous coal, while furnishing other mine owners similarly located with cars, subjected the coal company to undue prejudice and disadvantage.

In the complaint of the **United Paperboard Co.,** an examiner of the I. C. C. recommends that the rates on birdseye coal from group A, B and C mines in Pennsylvania to Thomson, N. Y., be declared reasonable.

The Illinois Coal Traffic Bureau has filed a brief before the I. C. C. in the case brought by the **Northern States Power Co.** It requests that if the commission makes any change in the rates on coal screenings from mines in Illinois to Sioux Falls, S. D., that it apply such new rates in accordance with the differentials fixed in the Illinois coal cases. It is also suggested that the differentials should apply on fine coal as well as on large coal.

In the complaint of the **Grasselli Chemical Co.,** the I. C. C. has recommended that the question of the reasonableness of the charge for the use of the motive power and cars of the railroads in the carriage of coal and coke from the plant stock pile, intra-plant over the plant tracks, to various points of use, is not within the jurisdiction of the commission.

Obituary

Joseph Hallier, a well-known mining man in the Birmingham district, died at Baltimore recently, where he had gone for treatment of a throat cancer. He was a prominent figure in United Mine Worker circles for years, and at one time was national organizer. He was connected with Alabama Coal Operators' Association for several years and at the time of his death was manager of the employment department of the Woodward Iron Co.

J. L. Middleton, sixty-six, one of the best known coal operators of southern Illinois, died recently at his home in Sandoval, Ill. He had been connected with southern Illinois coal fields since 1882.

Coming Meetings

American Chemical Society's annual fall meeting will be held Sept. 4-9 at Pittsburgh, Pa.; divisional meetings will be held at Carnegie Institute of Technology and general meetings at Carnegie Music Hall.

American Mining Congress. Twenty-fifth annual convention and exposition of mines and mine equipment will be held at Public Hall, Cleveland, Ohio, Oct. 9-14. Executive offices, the Hollenden Hotel; E. C. Porter, convention manager.

The Rocky Mountain Coal Mining Institute will hold its next meeting at Glenwood Springs, Col., Sept. 6-8. Secretary, F. W. Whiteside, Denver, Col.

New York State Coal Merchants' Association will hold its annual meeting at Richfield Springs, N. Y., Sept. 7-9. Executive secretary, G. W. F. Woodside, Arkay Bldg., Albany, N. Y.

National Safety Council. Eleventh annual Safety Congress at Detroit, Mich., Aug. 28 to Sept. 1. Executive secretary, W. H. Cameron, North Michigan Ave., Chicago, Ill.

Coal and Industrial Exposition under the auspices of the Huntington Chamber of Commerce will be held Sept. 18-23 in the Chamber of Commerce Bldg., Huntington, W. Va. **The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers** will again hold its annual meeting in the same building during the exposition.

National Exposition of Chemical Industries will hold its eighth national exposition at the Grand Central Palace, New York City, Sept. 11-16. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Institute of Mining and Metallurgical Engineers will hold its fall meeting during the week of Sept. 25 at San Francisco, Cal. It is proposed to arrange for a party to leave New York on Sept. 10, stopping at different cities en route. Secretary, F. F. Sharpless, Engineering Societies Building, New York City.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

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The Vital Aspect of Price

SECRETARY HOOVER'S plans to distribute current coal production and to hold the price within reason are as timely and will be as well received as the conferences on prices in May that resulted in holding quotations in check from June 1 until last week.

Necessity for some control over distribution has been increasingly evident since the first week of July, and as always when acute distribution problems arise price troubles begin. Mr. Hoover has again stepped in at a critical juncture. With truly remarkable foresight he anticipated the details of the approaching crisis and when the time to act arrived he was ready with a fully developed, workable plan. He has co-ordinated the Interstate Commerce Commission, the departments of Justice, Interior and Commerce, the railroads and the coal operators. He has so laid his plans that the usual protesting voices in the Senate are quiet. His plans will produce results, for he is of the type that will shape the details to the practical objections as they arise.

As to the urgency of directing the restricted flow of coal in the direction of transportation, public utilities and certain other essential users there can be no question. On the equally, if not—to the operators—more important question of prices some would hold back approval. The two cannot be separated in any practical working program. Price has been directing distribution, as for instance last week when the more than doubling in price of western Kentucky coal in Chicago acted as a magnet for large consignments of Pennsylvania high-volatile coal, the offering of which on that unusual market served to check the upward rise in quotations. When the government takes over, in effect, the current production of coal it must have a great deal to say as to the price that will be charged for that coal.

There is a larger and more vital aspect of this price question. Price is the evidence to the public of how the industry is functioning. The public is interested in wages of coal miners only as these wages are interpreted into prices of coal. The public has stood on the side lines while this strike has been in progress, quite apathetic at first, then patiently tolerant, now aroused. It has put up with the inconvenience of the strike (and will if necessary put up with more than inconvenience) because it has appreciated that the operators are trying to liquidate wages of union coal-mine labor and that the basis of the policy of the United Mine Workers is opposition to wage reductions. But what is the public saying about an industry that stages a strike to lower the wages of its workers and at the same time extorts huge prices for coal? There is no fairness in that.

An indication of how the people feel on this question is found in the action this week of the Governor of Colorado, who, when advised that certain operators in that state had increased prices one-third, warned them that he would withdraw the support of the National Guard at once unless prices were restored to their former level. He said that he had put troops at the mines in the interest of the consuming public that needs the coal and to provide work for willing miners, and not to protect anyone's pocketbook.

Price is the sore spot. The race for coal may be largely responsible for the flight of prices last week, but if the coal operators are not able—and they are not—to save themselves from this source of condemnation, the government is more than warranted in stepping in. Whether some producers like it or not they must be protected from themselves, and those producing the greater part of the current tonnage who have and will continue voluntarily to maintain a fair price are entitled to protection from those who will not.

Unreasonable wages and unreasonable prices are in the same category. The country wants neither and the government is looked to for protection from both. Mr. Hoover has said that no operator intent on robbing the public can get a car in which to load coal. And he has taken the responsibility of saying what price is reasonable. He is right. And with his usual decisiveness he has not temporized with the situation. The administration might consider the same line of policy with respect to union coal-mine wages when planning a resumption of mine operations.

A Sympathetic Strike In the Hard-Coal Region

WHAT the anthracite operators have always feared has come to pass. The union is using the suspension in the anthracite region as a club to hold over the bituminous operators. Unless the demands of the union for the old-time four-state conference in the bituminous region are granted the strike in the anthracite region will be allowed to continue indefinitely.

There is a part of the public that is not in industry and that sympathizes but little with the woes of the manufacturer (who uses soft coal) but has, nevertheless, a keen interest in the filling with anthracite of its own domestic coal bin. The union is desirous of so sorely distressing all the people of the United States, soft-coal and hard-coal users alike, that they will be driven to give the miners just what they ask—an interstate conference in which union and non-union regions will be conjoined and a check-off that will make the operators in every part of the country pay dues to the union.

When the union talks high prices it trots out the hard-coal field, because hard coal is expensive to mine, to pump and to prepare and has a wider and stronger appeal; when it talks strike it calmly forgets the anthracite mines and introduces the bituminous region, where it wants a renewal of the old conditions—the con-

tract with the Central Competitive region or something even more in restraint of trade. It asks no change in the districting of the anthracite region. There it already makes a 100-per cent collective bargain embracing all three districts, but it is nevertheless as ill-disposed to bargain there as it is elsewhere. Loudly as it calls for the collective bargain, it would have none just at present in the anthracite region, where what might be termed a sympathetic strike is going on.

The anthracite operators have asked for arbitration. The miners reject it because, forsooth, they cannot get a reinstatement of the Central Competitive agreement in an entirely different and relatively non-competitive region. They give no reason for their rejection of Mr. Harding's proposition as to the arbitration of the anthracite difficulty, and Mr. Harding apparently lumps the anthracite and bituminous fields together in his thinking and makes no effort to direct public opinion to the vast difference in the two or to the game John L. Lewis is playing.

The anthracite region has become a vassal to the bituminous districts. The operators in it are permitted to make no treaty with their own men till the union wins or loses in the soft-coal field.

An Acceptable Settlement

POINTEDLY and forcefully the New York *Tribune* asks why Washington does not drive the miners and operators, either or both, into the open and make them face the square issue of what sort of settlement is acceptable. The miners are assailed because they ask "not arbitration but prejudgment." The operators' offer of arbitration by districts instead of on a national basis is characterized as absurd. "The coal industry is a national one. Every operator competes to some extent against every other. There must be a national wage base if there is to be industrial peace," says the *Tribune*.

This is all true as far as it goes, but it should go farther. What is a national wage base? Does anyone conceive for a moment that a national wage base means that a miner who undercuts the coal, shoots it down and loads it into cars, whether he work in a 9-ft. bed or in 3-ft. coal, whether he gets 300 days or but 150 days' work per year as a regular thing, whether in one mine he must lay room track, push cars and dig ditches and another not, must have the same compensation per ton of coal regardless of conditions? Does anyone maintain that the day laborer at a mine in a community where living costs are low should receive the same wage per day as one working where living costs are relatively high? Of course not. That would be absurd. The miners' union would be the last to agree to such a scheme, for the necessity and opportunity of fighting for more favorable differentials has given the union life and many an official a job.

What the *Tribune* is thinking about is indicated by the wording. "Suppose the arbitral board in one district decided wages should come down and in the adjacent district that wages should go up!" it says, adding "Divergent decisions would make district arbitrations no arbitration at all. As matters stand they are for arbitration in words but against it in fact."

What the *Tribune* really is arguing for is a national wage policy for the bituminous-coal industry—that is to say, such unified control by the operators on the one side as is exercised by the miners through the United Mine Workers on the other. Such in fact was the practical effect of the old Central Competitive Field conferences and agreements. The interstate contracts broadly set a general rate of increase—they were never successful in producing a decrease—a percentage to be applied to existing rates. The contracting parties were obligated to return to their respective districts and write the terms of the general conference into district contracts, but in no case could any provisions be added to the agreements that would increase the cost of production or decrease the earning power of the mine workers. In other words, no opportunity was offered—in fact it was expressly denied—that differentials between fields be changed. Marginal organized fields awaited the outcome of the negotiations in the Central Competitive Field before setting their wage scales. Their decisions were largely but not entirely influenced by the larger decision to which the operators were not a party though the miners were, through their international officers.

The outstanding advantages of a method of determining broad changes in wage levels such as resulted from the old interstate conference are self-evident. This process tends to work even-handed justice and to stabilize the coal industry. But a national conference is no place to solve local problems. So long ago as March 8, 1916, Mr. Moorshead, a scale committeemen from Illinois, introduced a resolution into the joint conference pointing out that "serious inequalities between the four districts" had been disclosed in years of negotiations, and that these had caused "serious conflicts, because of the many inequalities and injustices that have been forced on miners and operators alike," and asking that a commission be appointed to inquire into the setting up of new machinery for redetermining differentials.

A large part of the record before the President's Bituminous Coal Commission in 1920 is occupied with discussion of differentials. Both sides sought changes. The commission pleaded lack of time for consideration and instead suggested a new commission of miners and operators to take up the problem. Nothing has ever been done about either of these recommendations. Why? Because the operators East and West are wide apart in their desires and necessities and the miners see no advantage in raising the question, especially as it usually has the check-off problem pinned to it.

Sitting with Illinois and Indiana and the miners, Pittsburgh and Ohio, having but two votes in eight, have no chance in the Central Competitive conference to adjust their differentials to meet the more potent competition of West Virginia. Central Pennsylvania follows the lead of Pittsburgh as the Southwest does that of Illinois. A regrouping of districts with the State of Pennsylvania and Ohio in one; Illinois, Indiana, and western Kentucky in another, and the Southwest, Iowa and Texas a third, would give modern expression to the group idea, wherein differentials could find their proper solution and the miners lose nothing in strength and power as compared with the older and—from the standpoint of competitive conditions—obsolete Central Competitive Field. The largest of these groups would set the pace for the others, until very soon a way of getting together nationally would be found.

Why do the United Workers refuse to consider any group save the old one? Because John L. Lewis set that as his policy in this strike, and he dare not deviate a hair's breadth from the letter of his first dictum, else Frank Farrington find excuse to break away for a separate settlement in Illinois.



Belt Conveyor Supported by Suspension Bridge Used To Bring Coal Across River in Logan Field

Coal Is Dropped from Drop-Bottom Cars Into 500-Ton Bin, from Which It Is Fed to Retarding Conveyor—Coal Is Picked Clean and Fed to Belt Conveyor, Which Carries It to Tipple

By A. D. Carr*
Cincinnati, Ohio

TWO seams of coal are operated by the Guyan Mining Co., a subsidiary of the Jewett, Bigelow & Brooks Coal Co., of Cincinnati, Ohio, at Wilbur, Logan County, W. Va.—the Eagle seam, a gas coal which lies approximately 100 ft. above the level of the Guyandot River at that point, and the No. 2, or Island Creek, seam, which is about 200 ft. higher in the hills. Both coal beds cover a large area.

As will be seen on the left in the frontispiece, a 500-ton storage bin has been erected on the side hill, and coal is discharged into this by the drop-bottom cars from the workings in the Island Creek seam. This bin is 200 ft. long and 20 ft. wide and over it passes a double mine-car track. Thus two trips of cars can be dumped at the same time. There are two slots in the top of this bin. These are made about 60 ft. long and consequently the cars can be and are dumped without stopping. Thus they are promptly returned to the mines. The readiness with which they are discharged makes possible a large output with but few cars.

A feeder shown at the foot of the conveyor pulls coal out of the bin and discharges it onto a retarding flight conveyor, the shed of which can be seen on the side of the hill. This conveyor is 365 ft. long and has a pitch of 35 deg. It carries the coal down to another bin that has a capacity of 100 tons, where coal from the Eagle seam is dumped from the mine cars.

The coal is removed from this bin by a 36-in. x 15-ft. plate feeder and is discharged onto a single revolving disk screen that removes the slack or fine coal, which falls directly onto a 30-in. belt conveyor, 504 ft. long. This conveyor passes under the full length of a 54-in. x 15-ft. picking table. Here the coal is well cleaned, the freedom from slack making inspection easy.

The coal discharged from the surface of the picking table falls on the same 30-in. belt. Thus the coarse coal is delivered on the top of the fine, and in this manner the belt is protected against cutting. The conveyor line and shed are supported by two 2¼-in. lock-coil cables which have a combined capacity of 200 tons safe load.

The belt operates on gradual-troughing ball-bearing carriers. It has a capacity of 250 tons per hour when running at the present speed, which is 250 ft. per minute. This can be increased to about 350 ft. per minute, thereby increasing the hourly capacity of the belt from 250 to 350 tons per hour. It is operated by a 30-hp. motor which is wired so that it can be controlled from either end of the conveyor. The structure that supports the belt is suspended from the cables by means of ⅝-in. steel rods at intervals of 5 ft. To these rods is fastened a 4 x 6-in. crosspiece on which the conveyor or gallery is built. This, of course, is made of light material and is bolted together. It has



SUSPENSION BRIDGE ACROSS GUYANDOT

As seen from the side of the river on which the mines are opened and looking toward the railroad.

*Chief engineer, Jewett, Bigelow & Brooks Coal Co.



BELT CONVEYOR AND SUSPENDED SHED COVERING IT

The shed slopes in the main toward the direction in which the heaviest winds come. The belt is 504 ft. long and 30 in. wide. Its capacity can be raised to 2,800 tons per eight-hour day if needed. At present it is delivering about half that quantity.

a walkway on the up-river side which is used in crossing the river and in inspecting and oiling the machinery. The roof of this gallery slopes toward the down-river side, the purpose being to lessen the wind pressure, all the heaviest wind storms coming from down the river. The gallery is covered with corrugated iron of No. 20 gage. There are windows at intervals of about 20 ft. in this gallery. At this point the river is 300 ft. wide, and the conveyor is 75 ft. in the clear above the stream. Reinforced-concrete blocks each containing 60 cu.yd. of concrete and weighing 100 tons serve as anchorages.

The discharge tower is 87 ft. high. At this point the coal falls into a chute down which it slides into a 75-ton receiving bin. This tower also serves as a support for the cables.

From this bin the coal is drawn by lift gates and loaded into cars. At present a bar screen is being used which separates the steam coal from the lump, the two being led to different tracks. The plant now produces 1,500 tons per eight-hour day, but the purpose of the company is to raise the output to 2,000 tons soon.

The erection of the suspension bridge saved the owners of the mine the high cost of a steel bridge, and the success in operating the flexible structure is believed fully to justify the substitution.





Scenes *in* Minden Strippings *of* Missouri



Where the coal mined by open-cut methods is probably as thin as can be found being thus worked in any other strip-pit region

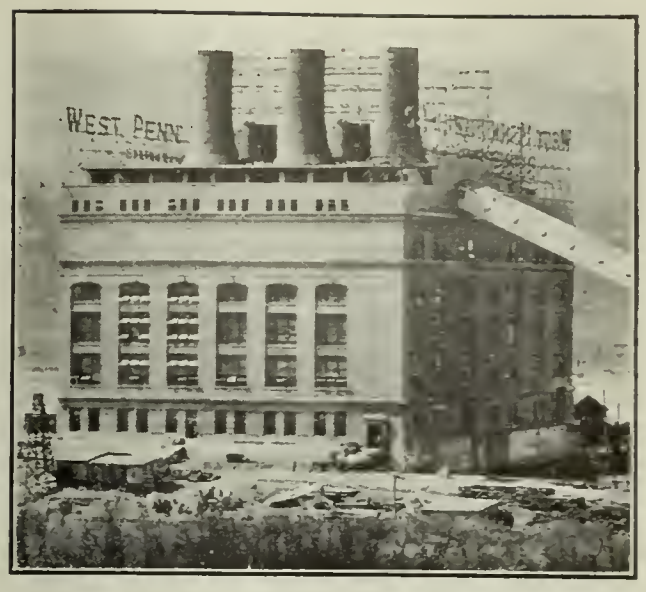




Fig. 1 shows the center cut that has to be kept open as long as the pit is extended. Where to store the spoil along the sides of this center cut is a difficult problem to solve. Fig. 2 is a picture of the type of 6-cu.yd. stripping shovel most generally used. Fig. 3 is a view of the tipple, power house and tanks at the same mine as is depicted in Fig. 1. Fig. 4 exhibits a steam coal loader and Fig. 5 is a flume built to carry a stream across a strip-pit track as the simplest way to avoid flooding.

Considerations Which Should Govern When Deciding Whether to Generate or Buy Power*

By W. C. Adams†
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Groups of Mines Should Be Able to Generate Electricity for 1.8c. per Kilowatt-Hour Power-Plant Expense—At Some Mines Home-Generated Power Costs 25c. per Ton

IT IS impossible to make a general classification of mines which should or should not purchase power because so many variables enter into the problem. Mine power requirements depend upon the tonnage produced, the depth of the shaft, the underground conditions, the system of working and the equipment installed. The power consumption per ton of coal mined varies with the number of days during which the mine is operated, but it must not be forgotten that the fan, pumps and some of the hoisting and general work require power irrespective of the coal output.

Fully electrified mines using electric hoists, a motor-driven fan, tipple equipment and miscellaneous mechanical appliances, pumps, locomotives, gathering motors, mining machines, etc., will have a power requirement under average mining conditions when working 180 to 200 days per year of from 2.75 to 3.5-kw.-hr. per ton. The effect of additional idle days will be to increase the power consumption per ton, which during extremely slack periods may reach 150 to 160 per cent of the normal rate.

All mines, however, are not provided with mechanical equipment for performing every one of the operations noted. Such plants may use steam surface equipment, gather coal with mules or dig coal with hand picks. The power requirements obviously would depend upon the number of operations for which power is furnished and may vary from 2 to 5 hp.-hr. per ton for average mining time, with increases for additional idle days.

Mines in Midwest Have 25c. Power Charges

Most of the mines in the Middle Western coal fields that operate on power generated at the mine have extremely inefficient plants. The power costs for fully equipped mines with such generating stations is as high as 25c. per ton when fixed charges are taken into account.

Mines that have similar power requirements and use central-station current under similar conditions have a total cost of 7 to 14c. per ton of output. This includes all items chargeable to power, such as investment in, and operation of, auxiliary equipment made necessary by the installation of purchased energy. This estimate is based on Illinois power rates.

With this possible saving of from 6 to 11c. per ton in view it is evident that if the coal operation is to use power generated at the mine, the plant to produce it should be designed with a view to economy.

Some of the larger operators have rehabilitated their plants, and the resulting operations are provided with power equipment suitable for economical operation. These plants will furnish power at a cost comparable with purchased energy and ranging from 6 to 12c. per ton, depending largely on the tonnage produced. When such plants are suitably situated and arranged to furnish power for two or more large mine operations, the cost per ton can be brought well below that paid for purchased power.

Power Costs as Low as Two Cents a Ton

Generating stations at operations having a capacity of approximately 5,000 tons per day, when economically designed and with a mine operating time of 200 days per year, should produce power at a total cost chargeable to mining of from 2 to 2½c. per kilowatt-hour when coal is charged at $2.25 per ton. Stations serving two or more such operations would have a lower cost and with mines having an aggregate capacity of 3,000,000 tons per year the total power-plant expense should be approximately 1.8c. per kilowatt-hour, including all plant charges. To this figure should be added investment costs and charges for lines, substations and such auxiliary equipment as are made necessary at those mines which are remote from the station and receive energy over a transmission line.

Some operations have been laid out with a view to using not only purchased electric energy but also steam power generated at the plant, the purpose being to avoid the investment necessary for an equalizing hoisting unit. This arrangement does not take advantage of the lower power increment of either system and cannot be recommended for general installation except in cases where the life of the operation is short. The power costs at such an installation will always be higher than could be obtained by generating all the power at an economical power plant at the mine or by purchasing all the current necessary from a central station.

*Paper, entitled "The Use of Purchased Power for Coal-Mine Operations," read before the joint session of the Western Society of Engineers with the Chicago branches of the American Institute of Electrical Engineers and the American Institute of Mining and Metallurgical Engineers, at Chicago, May 22, 1922.

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With mines having a life of 20 to 25 years or even more and a daily output of 3,500 tons or better, it is generally justifiable to expend capital enough to provide such a generating station as will lower the power cost to that charged for electric energy by Illinois central stations. Mines of shorter life or lower outputs almost without exception will show operating economies in favor of purchased power.

The source of power chosen should not affect the output of a coal-mining operation provided the available sources of supply are equally reliable. Coal production costs, however, do depend on the source of energy, but the difference is not directly proportional to the costs of power delivered from the several sources, because with certain of these special equipment is made necessary and the fixed charges on this investment modify the costs that must be borne and, furthermore, direct and indirect costs inevitably result from the interruptions which arise when certain sources of supply are used.

Alternating current should be used for distributing energy from the delivery point to the converter substations at load centers, except where the operations are small and are expected to have a short life. Whether the power is furnished by a central station of a public-utility company or by a generating station at the mine site and operated by the mining company does not alter the design of the system by which the power should be distributed, except in the case, possibly, of small existing operations having direct-current generating stations. In such installations some advantage might be gained in the distribution system by an arrangement of underground converter substations made possible by the purchase of power. In a discussion of the proper source of electrical energy, however, only mines having reasonably efficient distribution systems should be considered, as it is impossible to classify or give general estimates of power consumption or costs for operations that waste a large part of the delivered current.

Power Costs Not the Sole Consideration

Whether the power required for a coal-mining operation should be generated at the mine or purchased from a central station of a public-utility company can be decided only after a study of each individual problem, if the decision is to be based solely on a comparison of operating economies. There are, however, certain other facts and conclusions in connection with such an analysis that should be taken into consideration. Their proper evaluation may render a decision possible without making a comparison of the power costs.

It is not always good policy to place a coal-mining operation in a position where the operator cannot control the power supply. Especially is this true if a doubt exists as to the reliability of the public-utility power available, for it is not logical to consider making the output of any industrial enterprise dependent upon a power supply that is liable to frequent interruptions of uncertain duration.

Opinions as to what degree of continuity of service should be expected from public-utility plants may vary. We know, however, that it is possible to design and build power plants for mining operations in which interruptions are rare, and it would seem that an operator has a right to expect the same service from the public-utility company. There are, of course, certain interruptions which lightning, heavy storms and the like are apt to cause and which no commercial type of construction can prevent. With interruptions of this character included, however, such shutdowns should not occur on an average more than once a month.

Furthermore, the power supply must have uniform characteristics. Voltages, frequencies or steam pressures that vary are not conducive to satisfactory and economical operation of equipment and must not be permitted if the best results are to be realized.

If real service were demanded by all operators who use central-station power, or contemplate its purchase, it doubtless would be supplied, for though coal-mine loads may not be the most attractive from the central-station viewpoint, yet for the utility company operating in most coal fields such a load aids in obtaining the operating characteristics favorable to economy.

Such a demand by the power users would force the utility company to restrict its connected load to the capacity of its plant and system instead of seeking to secure all the load possible in the hope, and with the promise, that at some time, more or less remote, both would be developed to meet all requirements.

The operations at the plant are regulated by a schedule, expressed or implied, and any delays or interruptions of even short duration cause confusion and affect the morale of the men. The return of power often causes secondary interruptions which are due to the heavy combined load arising when pieces of equipment are started simultaneously. Such interruptions aggravate a situation already bad and slow up operations. The resultant loss of tonnage always equals the production of a period many times as long as the duration of the actual shutdown.

Miners Leave Mine When Power Goes Off

Where an interruption is unduly extended the miners as a rule leave their places and quit for the day. This dereliction of duty may not appear reasonable but it is one of the conditions with which a coal operator has to contend. All interruptions therefore reduce the coal output but do not remove the necessity of paying wages, operating and fixed charges during such shutdown periods. This results in an unproductive expense that increases the cost of coal getting. Interruptions not only reduce the margin of actual profit but deprive the operator of the profit he would have made had he produced a full run of coal. This applies to mining operations with greater force than to any other industry except, perhaps, those where a shutdown means ruin of product.

There are many instances where mines have failed because the car supply has not been reliable. An uncertain power source can produce the same result. Power sources that cannot be relied upon result in an undependable mine production. This handicaps the operator in obtaining contracts for time delivery, or if such contracts are carried the quantity of "free coal" is cut down, and upon this the mine owner often depends for his profit.

Mining operations, to be assured of power supply from a central station, should be provided with a loop system of transmission whereby power can be furnished from two or more sources. Some line trouble must be expected with any transmission system, but failure of supply from two sources because of such difficulty should be exceptional.

When central-station energy is used at a mine it is advisable to insure the steadiness of the supply of power for the fan and hoist by installing auxiliaries

which can be put in operation when the purchased power fails. This is especially true in gaseous and deep mines, for under such conditions it is not advisable to allow the ventilation to cease, even temporarily, and means must be provided for bringing men out of the mine.

Where the record of service given by the central station in the particular field in which the operation is located has not been satisfactory and where it appears that a station and transmission capacity will not be maintained ample enough to insure a continuous power supply in times of stress the purchase of power is not justified and not advisable, provided, of course, it is possible to install a generating plant at the mine.

Hauling Water Negatives Power Economy

Where an adequate water supply for plant operation cannot be obtained it is impractical to provide an isolated generating station. It is just as unreasonable to equip a mine with a generating plant that must depend during dry months on water being hauled to it as it is to put one's trust in a public-utility company which cannot be relied on to furnish a continuous and satisfactory supply of power.

The financial condition of the operating company may not permit or justify the installation of such a generating station as will afford desirable economies. The investment necessary for such a station would increase the capital expenditure for a modern, well-equipped mine from 20 to 45 per cent, depending on the capacity of the mine. If this capital is not available and if, in order to have power generated at the mine, it is necessary to erect or continue to operate with a plant such as is found at many mines—horizontal-return tubular low-pressure boilers, non-condensing engines and similar equipment—the only excuse for not purchasing power would be its unreliability.

Hoisting equipment may be affected by the power source, as it must conform to the requirements of the public-utility company which furnishes current. In some cases these companies have a ruling that regulates the maximum size of induction-motor hoists, and this imposes a heavy investment burden on mines of small or medium capacity which require from 200 to 500 hp. Equalizing equipments between these sizes entails a cost which may run from three to four times that of the induction motor and its control.

Mixed operations using steam hoists in addition to purchased power for the purpose of avoiding this additional investment have proved highly unsatisfactory both in operation and resultant power cost. In considering the energy supply for existing mines having a remaining life of from 20 to 25 years the choice should be based on the results of an analysis of the problem presented. This choice lies between the rehabilitation of the existing power plant to meet the total requirements of the mine and the purchase of power from a central station. If decision is made in favor of a generating plant at the mine the retention of the steam hoist and the employment of mixed-pressure turbines with regenerators probably would entail the least investment. With purchased power the hoist should be electrified. The only justifiable deviation from this course would be in the case of mines having the prospect of only a short life.

A comparison of the operating cost as calculated for the two systems, other factors being equal, should determine whether a mine should use purchased power or energy furnished by a generating station at the mine site.

Knowledge of general underground conditions and the details of mine operation usually will give sufficient data to determine the power requirements with a reasonable degree of accuracy. This forms the basis for calculation of the power costs based on central-station current or on a generating station of any particular design.

Installations at the mine using purchased power usually are simple. They consist of a transformer substation and the connection to the distributing buses. The purchase of power makes necessary some auxiliary equipment that would not be required or embodied in the plant design if power were generated at the mine. In any comparative power-cost statement the investment, fixed, operating and maintenance charges in connection with such equipment should be included as a charge against central-station power.

Included under this item would be the general heating plant, auxiliary man hoist and fan drives, as well as such other equipment as would be ordinarily embodied in the power plant but requred as separate installations if current is purchased.

Charges for interest and depreciation on the investment and for fixed and maintenance expense should be included as a charge against central-station power to offset similar charges included in generating-station costs.

The cost chargeable to purchased power should include: (1) Cost of power delivery, calculated on the basis of established rates of the central station; (2) interest on investment required for lines, substation and other equipment necessary to power delivery; (3) maintenance and fixed charges on lines, substation and other requirements up to the point of delivery; (4) operating labor chargeable to purchased power up to the point of delivery; (5) interest on investment for auxiliary equipment made necessary by the purchase of power; (6) maintenance and fixed charges on auxiliary equipment made necessary by the purchase of power; (7) labor chargeable to auxiliary equipment made necessary by purchasing power; (8) interest on investment for hoisting equipment; (9) maintenance and fixed charges on hoisting equipment; (10) interest and fixed charges on abandoned equipment.

Sometimes Raises Load Factor 300 per Cent

Public-utility power plants serving numerous mines, delivering energy to industrial enterprises and supplying current for lighting throughout the territory over which their systems extend have a varied load, resulting in an annual load factor seldom less than 40 per cent. The annual load factor of a single mine varies between 11 and 25 per cent. This can be increased by combining two or more mines so that both may be served by one power plant. This is advisable where a group of mines is operated under one management.

Larger capacity and its better load factor give the central station an operating advantage which offsets any superiority that the generating plant at the mine may enjoy as a result of the elimination of the freight and handling charges on coal.

A generating station at the mine cannot make power at a cost comparable with a central station unless special attention is paid to so design and operate such a plant as to obtain economies in operation such as are usually attained at central stations. The power plant

should be designed to give such economies as are justified by the character of the load, but in general the investment should not exceed 40c. per ton of annual capacity.

Consideration should be given the possibility of burning such low-grade fuels or sizes of coal as can be sold only with difficulty in the commercial field. Capacity of units should be so selected as to give economical operation under low and idle-day load requirements, as such periods normally constitute not less than 63 per cent of the total operating time. The hoist should preferably be electric, although there are cases, especially in the rehabilitation of a power plant for an existing operation, where a steam hoist with regenerator and mixed-pressure turbines is justified.

In calculating the operating cost of a generating station at the mine it is necessary to understand fully the operating conditions imposed. The low yearly load factor increases the cost of power generation materially. This being the case it is necessary to give this factor careful consideration if the expense of actual operation is to meet the calculated cost.

Coal operators differ much as to the proper method of charging fuel to their power plants. It would seem that the only proper charge is the prevailing market price of the class of coal used. The cost chargeable to power generation should include:

(1) Power-plant cost. This embraces under (a) operation: Coal, (charged to the plant at the prevailing market price), water (including cost of treatment and labor), engine-room labor, boiler-room labor, coal- and ash-handling labor, ash removal, electrical labor, miscellaneous engine- and boiler-room supplies; (b) maintenance costs: charges for engine room, boiler room, coal- and ash-handling apparatus, electrical apparatus; (c) fixed charges, which covers investment cost, amortization cost, administration cost, insurance and taxes.

(2) Interest and fixed charges on disused equipment.

(3) Interest on investment for hoisting equipment.

(4) Maintenance and fixed charges on hoisting equipment.

As has been pointed out frequently, the production of coal and the generation of power are two distinct enterprises. Coal-mining officials generally are men having coal-mine experience and little knowledge of the economic generation of power. It is essential, therefore, that a separate department with proper talent be instituted if power is to be generated economically. This adds to the burden of the management. There is a tendency, moreover, among most coal operators to defer appropriations for plant improvement in favor of those for mine operation. This makes it difficult to maintain a low power-production cost.

In general, from an economic standpoint, if the cost of purchased power exceeds the calculated generated-power cost by 10 per cent it would still be advisable to purchase power. In other words, it is believed that the value to the operator of eliminating the necessity of building and operating a generating station at the mine can be capitalized at 10 per cent of the calculated power cost.

Dust Off the Leather Medals; Here's a Winner

IN THE old days out on the baked plains they used to attempt "rain making." Somehow it didn't work so well. Elsewhere at various times humanity booners have striven to create perpetual motion. Results: Ditto, if not more so. But why be discouraged? "In perseverance there is purse," or something like that. So now comes F. F. Affelder, assistant to the president of the Hillman Coal & Coke Co., with a double-back-action case-hardened grown-on-grandpap's-farm-in-Virginia form of contract to be used in the purchase of electric power for coal mines. It is guaranteed to be squabble-proof. With it in effect, violence cannot arise concerning quantities of power delivered, rates, meter accuracies or anything else.

Mr. Affelder has had lots of fun with it at dry engineering meetings here and there. It won eight full octaves of guffaw on May 22 in Chicago at a joint meeting of the Western Society of Engineers with the Chicago branches of the A. I. E. E. and the American ng and Metallurgical Engineers. It D.F." (three guesses at the ini-

existing ... available, for it is ... output of any industr... power supply that is liable, respectfully submitted:

uncertain duration.

DULE D-F

Opinions as to what deg... should be expected from pu... *the Sale of Electric Power*

We know, however, that it s to furnish power to the con- build power plants for minin... rms and conditions:

terruptions are rare, and it wou... contained herein to the has a right to expect the same ... ay to the producer such a utility company. There are, of c... in the opinion of the pro- tions which lightning, heavy st... e producer. This amount apt to cause and which no commer... demand. constitute any and all futile requests on the part of the consumer whereby he shall request better service or lower rates.

3. The consumer shall pay to the producer the full amount of the producer's demands and in addition thereto shall pay for the power consumed at the rate of 8c. per kilowatt hour when the crooked line on the meter chart forms a convex curve, 6c. per kilowatt hour when the line forms a concave curve, and 4c. per kilowatt hour when the line is so badly blurred that neither the producer nor the consumer is in a position to bet real money on the shape of the line, it being specifically understood and agreed that under no circumstances shall the consumer question the accuracy of the producer's meter or other apparatus.

4. The diversity factor shall be anything that shall divert the attention of the consumer from making complaints to the producer. If, for instance, the consumer's chief electrical engineer shall allow his diversion to take the form of playing golf and his average score on the four Saturday afternoons in any one month shall be less than par for the course on which he plays, a reduction of 1 per cent shall be made in the producer's bill for power in that month for each stroke that the aforesaid average shall be under par.

5. In recognition of the fact that the consumer could produce his own power more economically with good coal than with a poorer grade, the producer agrees that a test shall be made four times a year of the heat value of the consumer's coal. If such tests shall show that the consumer's coal is of higher heat value than that which the producer uses at his power plant, the producer may, if he feels so inclined, make such a rebate to the consumer per 100 B.t.u. as to convince the consumer that it is more economical to buy power than to make it.

6. Recognizing the fact that the rates per kilowatt hour, as stated in the third paragraph, are entirely too high, the producer agrees to rebate 5 of the first $100, $25 of the next $100, $50 of the next $200 and as much of the remaining amount of the bill as is necessary to make the net cost to the consumer equal to an amount of between 1½c. and 2c. per kilowatt hour, the producer agreeing that he will get all he can without giving the customer any real cause to figure on generating his own power.

Study of Stresses and Design Of Head Sheaves For Coal-Mine Shafts

By J. S. Watts
New Glasgow, N. S.



Excessive Weight, Especially in the Rim of Head Sheaves, Causes Slip in Rope—Effect of Lead—Cooling Action of Spokes in Casting Rim—Design of Bosses—Fit of Hub

SHEAVES used on the headframes of mine shafts to support the hoisting rope ordinarily are made with a cast-iron rim and hub, and wrought-iron or steel spokes cast into place. This type of construction is practically universal. It affords a neat and economical pulley and has proved very successful with the low speeds and light loads formerly used. Unfortunately the stresses imposed on the various parts are not well understood and have not received the consideration that they require.

This has resulted in pulleys being used for speeds and loads that soon wear out both themselves and the rope. In the past small pulleys, intended for light loads and low speeds, could be designed with more or less success by rule of thumb, but now that the ropes used are becoming much larger, and consequently require pulleys of greater diameter, it is necessary to reduce the rotating weight of the pulley to the lowest safe limit consistent with the strength required, in order to decrease the inertia.

Even when a pulley of the type described is made as light as is consistent with safety the high velocities and rapid acceleration and retardation now demanded sometimes render it impossible to prevent the rope from slipping a little on the pulley at the beginning and end of each trip. The hoist is brought to rest so quickly that the inertia in the rim of the pulley is sufficient to keep it revolving after the rope has come to a stop. Unless this inertia can be reduced, by cutting down the weight in the pulley rim, this slipping cannot be prevented.

The evil effect of this slippage is obvious. It wears the rope always at the same point or at any rate so long as the rope is not moved on the drum of the hoist. The wear on the pulley rim is continuous and rapid, as it occurs four times during each round trip—that is, during both the two acceleration and braking periods.

Some engineers have attempted by fitting wood, leather or other soft material into the groove of the pulley to prevent this wear on the rope. This expedient doubtless reduces this wear, partly by reason of the increased friction between the rope and the pulley and partly because the softer material takes all the abrasion. Nevertheless, it has been found that this packing wears out so rapidly that it must be replaced frequently, making a sheave thus packed costly to maintain. Only in the event that the weight of the pulley cannot be reduced sufficiently to eliminate this slippage should this expedient be adopted.

By careful calculation it can be determined whether the rope will slip on the sheave. To avoid this slipping the energy in foot pounds stored in the rim of the pulley when revolving at the maximum velocity must be less than the force required to overcome the friction between the rope and pulley, in pounds, multiplied by the distance travelled by the rope, in feet, during the braking or acceleration periods. The energy in the pulley rim in foot-pounds will be Wv^2 64.32 where W = the weight of the rim in pounds, and v = the maximum peripheral velocity of the rim in feet per second. this latter being practically equal to the speed of the rope.

Sheave Travels Slower or Faster than Rope

During the acceleration period the rope must supply this energy to the rim through the friction between the two and it must be returned from the rim to the rope by the same medium. This friction will equal Lf pounds. Where L = the load on the rope at the pulley during the period under consideration. f = the coefficient of friction between the rope and the pulley. The distance through which this force acts equals the length of rope wound or unwound during the acceleration or braking period under consideration. This expressed in feet we will term S.

To prevent slipping, therefore, Wv^2 64.32 must not exceed LfS, or the maximum weight that the pulley rim should have, if slippage is to be avoided, is $W = 64.32\ LfS/v^2$.

The coefficient of friction, f, may be taken as 0.1, the rope usually being greasy and the groove in the pulley smooth. Care must be taken in using the above formula

to select figures applicable to the worst condition or that usually existing when the cage is being lowered empty.

If the weight of the rim as designed by this calculation proves to be much too heavy, it may be reduced most readily by decreasing the diameter. This reduction, however, increases the wear on the rope, which suffers severely when bent around too small a pulley. The velocity, v, is not altered by reducing the diameter as it must perforce be the same as that of the rope.

Finding Diameter That Will Reduce Wear

The point to be decided, then, is with what diameter will the sum of the wear due to slipping and that due to bending be a minimum. In general the diameter should be as large as it can be made without danger of slipping. Consequently the rim should be as light as the load will permit because when such is the case the allowable weight may be used to increase the diameter of the sheave as much as possible. The wear and tear on the rope that slipping causes will be much more destructive than that resulting from bending. The total wear will be at a minimum when the pulley is as large as it can be made, still keeping the weight below the point at which slippage would commence.

The procedure, therefore, to be followed in designing a new pulley should be to determine the maximum weight from the above formula and to calculate the section of the rim. Then, ascertaining the weight of this section per foot, we can arrive at the maximum diameter desirable.

If it proves impossible, under the speeds and loads specified, to obtain a pulley of reasonable diameter without inevitable slipping of the rope, an effort should be made to lengthen the periods of acceleration and retardation, because as the allowable weight of rim increases so does the length of these periods.

Generally speaking, this slipping of pulleys has been given little consideration by those responsible for their design, although its effect upon the rope and upon the sheave is extremely destructive and therefore deserves to be classed as the main consideration.

Sheave-rim sections are generally "designed" by rule of thumb or in proportion to some other dimension previously selected. I purpose to show later that they are almost always made much too heavy, and it is important to recognize that this excess weight merely shortens the life of the pulley.

Rim Should Be Designed to Meet Conditions

The shape of the rim as usually constructed is as shown in Fig. 1 and is evidently not susceptible of much improvement. The dimensions are dependent upon so many variables that it is impossible to give any empirical rules by which they may be calculated, meanwhile keeping the weight to the minimum. It is common practice to use the same pattern under any and all circumstances. This is, however, obviously a mistake, considering the higher speeds now in vogue.

Where the speed is so low that no slippage occurs, the weight of the rim is not of great importance, but under modern conditions it is essential that this weight be reduced as much as is safe. Each pulley, therefore, should be designed to suit the actual conditions under which it is expected to work. As the rims are swept in the foundry, no pattern is necessary and consequently the expense of casting a rim of new design is little more than that involved in using an old one.

The considerations which determine the section of the rim are as follows: The bottom of the groove should be machined to a radius slightly greater than that of the rope section. To avoid undue wear on the rope, even when it does not slip, the grooves should be smoothly machined from the bottom to a point about half way up the sides. Another good reason for machining this groove is that the rough casting always will warp and run somewhat out of true sideways. If this is not corrected by machining it may cause rope sway and result in the cage vibrating and rubbing hard on the guides.

The depth of the groove as well as its width at the top and the slope of the sides must be such as entirely to remove all danger that the rope will leave the groove, as such an eventuality, of course, would be disastrous. The width of the groove at the top and the slope of its sides must be such as to provide for the maximum lead angle of the rope. This is a function of the width of the hoisting-engine drum and of the distance from its center to that of the pulley.

This also usually determines the depth of the groove, but in cases where the cage is landed, and all stress taken off the rope, the groove must be deep enough to prevent the rope when slack from getting out of place. When the hoisting engine is well removed from the pulley, an additional allowance must be made for a possible swaying of the rope in windy weather.

Side of Rim a Casting Problem in the Main

The determination of the thickness of the metal in the sides of the rim is not based on strength but on the thinness with which it can be cast satisfactorily. The bead on the edge is for the purpose of insuring that there will be a rim in every part of the circle. If this bead were omitted and the flange of the rim run out to a comparatively thin edge, the metal would be quite likely to fail to fill the mold all around. In consequence the inequalities in the casting thus resulting would catch the rope and soon destroy it. The bead also stiffens the rim and reduces its liability to damage when being machined and erected. The size of this bead usually is left to the discretion of the foundryman, who decides how light he can make it and yet be sure of a good casting.

To determine the thickness of the rim at the bottom of the groove we must calculate the stresses imposed upon it and, if necessary, add metal at this point over that essential for the making of a good casting. The additional weight may be added with less injury at this point because most of the wear that takes place will occur here and also because weight at this point will have less energy when revolving than that located further from the center of the sheave.

At the same time the practice of making this thickness much greater than is required, in order to allow for wear, is wrong, as it defeats its own purpose by adding to the inertia of the pulley. Furthermore, it commonly causes sponginess in the casting, due to the thickness at this point being so much greater than that elsewhere. This sponginess does not usually become evident until the groove is slightly worn. Whenever it appears on the surface, however, the wear on the rope becomes so rapid that the pulley must soon be condemned.

The rim is subjected to the following stresses: A tensile stress due to centrifugal force, a compressive stress resulting from the load on the rope and tending to crush the rim, and a bending stress caused by the rope tending to take a straight line from the top of one

spoke to the top of the next. The centrifugal force is $C = \frac{Wv^2}{32.16\ R}$ where R = the radius of the rim in feet. The stress due to this force will be $C_f = C/A$ where A = area of rim in square inches.

The compressive stress due to the load on the rope will be $L_f = L/A$.

The tensile and compressive stresses due to the bending moment can be calculated from the formula for a beam uniformly loaded and supported at each end. This is:

$$W = 8B_fZ/l \text{ or } B_f = \frac{wl}{8Z}$$

Where B_f = the stress due to bending moment Z = the modulus of the section of the rim and W = the load imposed by the rope, which is determined from the triangle of force, as indicated in Fig. 2, where, as will be seen, the rope tends to take a straight line from one spoke to the next, but is prevented from doing so by the curvature of the rim. The downward thrust on the rim, w, is equal to the pull on the rope, L, multiplied by b/a. (See Fig. 2.)

Centrifugal stress opposes the compressive stress when the pulley is running, but not when it is standing. The two compressive stresses B_f and L_f must be considered together. The two tensile stresses B_f and C_f also should be so treated, and whichever pair is the greater in proportion to its safe working stress will be the one that will govern the design.

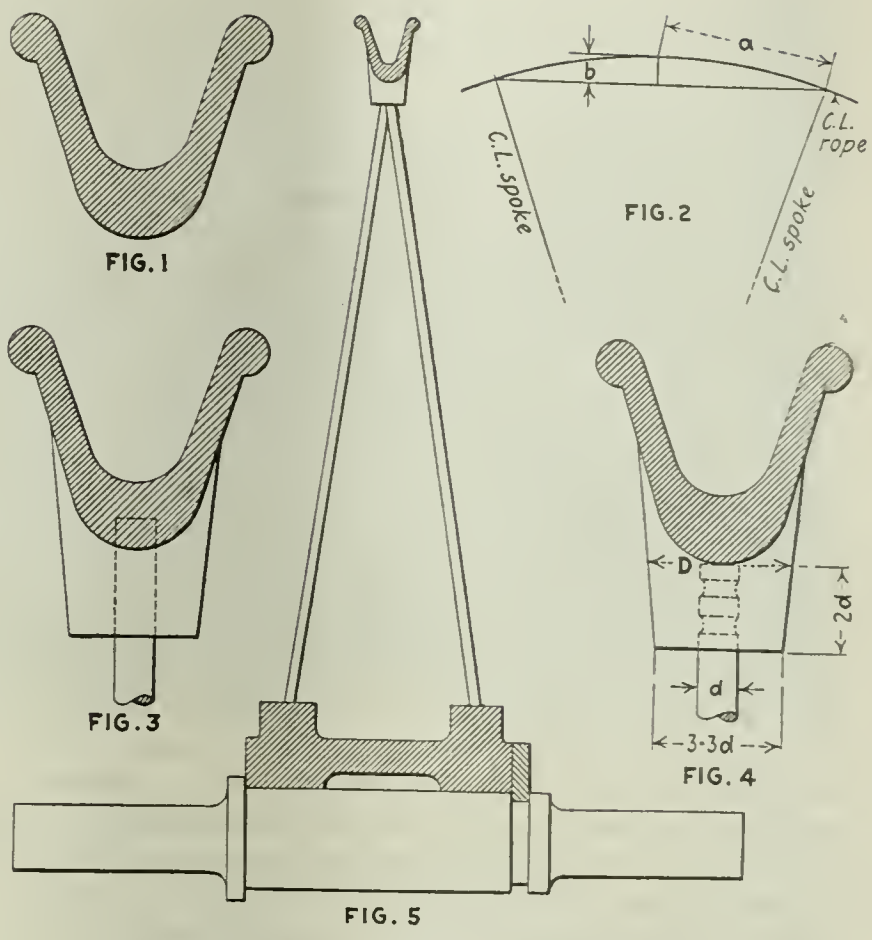
The stresses B_f and L_f vary from maximum to zero during each revolution, and are therefore live loads. C_f is a stress gradually applied and gradually removed. The safe working stress for a cast-iron rim, under these conditions, may be taken at 4,000 lb. per square inch in compression, and 1,000 lb. in tension. The spokes should be calculated to carry their respective loads as columns fixed at both ends. This calculation needs no further comment here.

If Spoke Enters Rim Bubbles Are Formed

The connection between spokes and rim is often made as shown in Fig. 3, and is ill-advised, as the molten iron will almost always, when it comes into contact with the cold spoke, bubble and boil, and on solidifying, that portion around the end of the spoke will be full of blowholes. These do not show in the finished casting, but a little wear in the groove soon brings them to the surface. The effect of such flaws, in wearing out the rope, is disastrous, and will compel the scrapping of the pulley after only a short period of usefulness. Blowholes are caused by moisture from the molding sand, being deposited on the spokes. This turns to steam when the molten iron strikes it.

Polishing and tinning the spokes will reduce this deposition of moisture, but it is practically impossible to escape having blowholes at these points, and therefore the spoke should not project into the rim, but stop at its lower edge, as shown in Fig. 4. Even if there were no danger that blowholes would be formed at these points, the iron will be chilled at the end of the spoke, and when the groove is worn down to the hard spot thus formed undue wear on the rope will result. The shape of the spoke end is not of much importance, as it carries little load in tension. Probably the neatest way of insuring a mechanical hold is to swage grooves around the ends of the spokes as shown in Fig. 4.

The function of the boss cast around the spoke is to hold the end firmly, the spoke being considered as a column, fixed at each end. The boss must be rigid in order to do this. The actual stress that will come upon the boss is indeterminate, but as the total weight of the bosses can be only a small percentage of the weight of the pulley, an excess of metal at this point will do little harm. To make certain that the spoke will be held as a column, fixed at the ends, the end connection must be made sufficiently rigid to prevent any movement between spoke and rim at this point. This condition will be met if the connection is made such that its strength will be equal to the tensile strength of the spoke.



CROSS-SECTIONS OF SHEAVES AND THEIR RIMS

Fig. 1 shows a usual form of cross-section of a pulley rim; Fig. 2 the relation between the downward thrust on the rim and the pull of the rope, the latter being equal to b/a times that pull. Fig. 3 shows a form of connection of spoke and rim which causes blowholes, and Fig. 4 one that is much to be preferred. The grooves swaged around the spoke give a strong hold. Fig. 5 shows a hub and two adjacent spokes. The hub is held in place by a collar and a split collar bolted to the hub which fits into an annular groove in the shaft.

Boss Must Embed Spoke for Ample Distance

First, the bearing surface of the spoke in the boss must be made ample. Taking the crushing strength as twice the shearing, this condition will be fulfilled if the bearing area of the spoke in the boss is equal to one-half of the sectional area of the spoke—that is, the spoke must enter the casting for a distance equal to 0.5 of its diameter. In use this length would be insufficient to resist vibration, and it would be wise to make the connection strong enough to develop the full strength of the spoke in tension. Tests that I have made show that if the spoke projects into the casting for a distance equal to twice its diameter the grip of the casting on the spoke will be greater than the strength of the spoke in tension, even without any grooving of the end.

The diameter of the boss should be such as to give it the same strength in tension as the spoke. Taking the safe stress in tension for cast iron as 1,000 lb. and for steel as 10,000 lb. the area of cross-section of the boss must be ten times the area of the cross-section of

the spoke. This will require that the diameter of the boss be 3.3 times the diameter of the spoke.

The boss, for constructional reasons, into which it is not necessary to enter, should taper from 3.3 to 3.6 times the diameter of the spoke. The same dimensions, of course, will be necessary for the connection of the spoke to the hub.

Head sheaves frequently fail because the pulley becomes loose on the shaft and travels sideways along it. The cause of this difficulty is the side pull of the rope imposed as a result of the rope leading off the pulley at an angle when it is coiling on one or the other end of the drum. The side pull on the pulley rim is small, but it has a leverage equal to the radius of the pulley and, being reversed as each layer of rope is wound on the drum, it has the cumulative effect of a reversing stress.

This will be more clear from a study of Fig. 5, where it will be seen that any resultant force sideways on the rim has to be resisted by a reaction at the end of the hub on the shaft. Unless the hub is comparatively wide and the fit of the shaft in the bore is practically perfect the metal in the hub will crush slightly, the bore will become bell-mouthed, and ultimately the pulley will become loose on the shaft. If the shaft deflects under the load even if only a few thousandths of an inch, this crushing of the hub will be accentuated. Shaft diameters, therefore, should be carefully calculated to carry the load as a beam, with a stress not exceeding 6,600 lb. per square inch. As this stress on the shaft reverses during each revolution from a maximum compressive to a maximum tensile quantity any stress greater than that above mentioned will cause too great a deflection and ruin the fit of the shaft in the pulley.

For these reasons the hub of the pulley should be as long as possible and great pains should be taken to make certain that the bore of the hole be parallel out to the very ends. The tendency in machining a hole of this kind is to bell-mouth it slightly, and unless the bore is a good fit at each end of the hub at the start the pulley will soon become loose.

An effective method of preventing a movement of the sheave along the shaft which may happen even with a fair fit is to leave a collar turned on the shaft at one side of the pulley hub and to provide a split collar bolted to the hub and fitting into a groove in the shaft at the other side. On the other hand if the pulley is split a solid collar may be left on the shaft at both ends of the hub. The first of these methods is shown in Fig. 5, and the second does not need any further explanation.

Disk Coal Cutters Installed at Windber Mines

By A. S. Brosky*
Pittsburgh, Pa.

At Eureka No. 35 mine of the Berwind-White Coal Mining Co., at Windber, Pa., a cutting machine has been placed in operation which differs radically from those in use in other mines of the United States. It is an adaptation of the rotary-disk coal cutter which is extensively employed in Great Britain for longwall mining. This rotary cutting machine was designed by Harris T. Booker, mine manager of the company, and his son, R. E. Booker. At present other machines of this type are being built in the shops of the Eureka No. 35 mine.

The rotary cutter is a compact, wheel-mounted machine that weighs about 500 lb.—a surprisingly small weight for a machine of its class. Electric or air-operated coal punchers, adaptable to the same working conditions as this machine, weigh far more. Like the coal puncher, this cutter is adaptable to thin seams, especially those with rolling bottom, where chain machines cannot be used. No claims are made of its being practicable for use in thick beds except where the roof being bad timber must be set close to the face or where ribs and stumps in squeezed sections are to be withdrawn.

Minimizes Lost Motion and Vibration.

The principle of the mechanism is simple and the moving parts have ample bearing surface, so that there will be no unnecessary lost motion or vibration. Motive power is furnished by a standard 2-hp. series-wound direct-current motor inclosed in a cast-iron housing and controlled by a standard boxed-in snap switch. Although the motor covering is not provided with air ducts the temperature of the machine within has never risen beyond a safe limit. The motive power is transmitted through a 1-in. steel shaft incased in a substantial, finned bearing tube that is firmly secured to the motor housing.

Because the shaft is underslung, its center line being but a few inches from the contact point of the carriage wheels, the machine is well adapted to undercutting. The resulting vertical flexibility increases its possibilities on a rolling bottom. On the motor end the shaft is actuated through a small cut-steel pinion and gear. On the head end the rotary motion is transmitted to the cutter plates through a small cut-steel bevel pinion and two gears that rotate in opposite directions. These gears are centered and bolted onto the cutter plates.

The cutter head proper is secured to the shaft tube by means of a sleeve held rigidly in place by two setscrews. This arrangement permits the head to be set horizontally for undercutting or vertically for shearing, this change being accomplished in a few moments by loosening the setscrews, swinging the head through 90 deg. and retightening the screws. The cutter plates



FIG. 1. CUTTER DISK AND CONNECTION TO SHAFT
Bits are secured in radial slots of rectangular cross-section by means of setscrews. Each cutter plate has three outside clearance bits and two center bits.

*Bituminous editor, *Coal Age*.

FIG. 2

Disk Coal Cutter

This machine is wholly different from that used in Great Britain, which has a much larger disk and is not set on wheels. Lightness, low cost, safety and simplicity are the qualities that are most apparent in this machine. It is interesting to see the old machine board return again as an adjunct in coal mining.



are provided with bronze bushings that bear upon a heavy shaft and are held in place by washers and countersunk screws. This arrangement readily permits the removal of one or both cutter plates.

The bits used are similar to those of a chain machine and they are placed in the same relative position to one another. As shown in Fig. 1, the bits are secured by means of setscrews in radial slots of rectangular cross-section. Each cutter plate holds three outside clearance bits and two center bits. The bevel pinion imparting opposite rotation to the two cutter plates lessens the muscular effort on the part of the operator in directing the machine. The bits of the respective plates move toward each other and grip the coal.

Two marked advantages result from this action. The gripping tends to pull the machine toward the face, making the feed almost automatic. Practically no recoil is set up because the machine is held to the face by its own action. Consequently, as shown in Fig. 2, where the machine is set up for operation, no foot blocks are required. This removes one difficulty ordinarily encountered by the operator and enables him to concentrate his attention upon cutting. It must be conceded that hand-directed cutters may be handled more intelligently than those mechanically fed, and this advantage obtains to a greater degree where foot blocks are absent than when they are present.

Cutter Mounted on Eighteen-Inch Wheels.

When undercutting, the machine body rests upon a 1½-in. axle fitted with 18-in. truck wheels. Of course, for the purpose of shearing, wheels are provided that are of large diameter. The axle is located directly under the center of gravity of the body so that a perfect balance is obtained.

The designers of this machine contemplate several minor changes in the mechanism. These will include guards on the cutter head to prevent dust from getting into the gears, and a large shaft and supporting tube so that the depth of cut may be increased. The cutter plates will be made of larger diameter and the number of bits will be increased to eight on each plate. After these alterations the machine will cut with greater efficiency because of the increase in the number of blows or incisions per revolution of each cutter plate and the establishment of a longer fulcrum. The action then produced will more nearly approach that of a hand pick. The bits together with their slot arrangement also will be changed. The pronged center bit will be discarded and the pick-pointed cutter used exclusiveiy. The bit stems will be straight instead of bent, the necessary side clearance being secured by slanting the bit slots.

Little Dust, No Recoil and Light Weight.

This machine has many merits hitherto unattained by other devices intended for the same purpose. These may be enumerated as follows: (1) It stirs up no dust and gives off no smoke or objectionable heat; (2) there are only four places to lubricate; (3) it makes cuttings similar to those produced by hand picks, there being no fine bug dust; (4) the control and operation is simple; (5) there is no recoil and consequently foot blocks are not required; (6) the weight is comparatively small.

By the aid of this machine headings may be driven with great rapidity, as the cuts can be made and loaded out in rapid succession, the loader of the coal also operating the cutting machine. In such work it will do the cutting about as fast as eight men with coal picks could do it. A simple construction and the entire absence of all electrical resistance, the motor being thrown directly across the line by means of a snap switch, render this machine peculiarly adapted to operation by unskillel labor, of which there is an abundance about the mines.

H. H. Stoek, of the University of Illinois, has been engaged by the Bureau of Mines to assist F. R. Wadleigh with the investigation of coal storage being made jointly by the Bureau of Mines and the Department of Commerce. While one of the objects of the survey is to have more exact data with regard to existing storage facilities, the main purpose of the work is to develop facts which will demonstrate the advisability of coal storage and thereby encourage it.

COAL AGE INDEX

The indexes to "Coal Age" are furnished free to all who ask for them. The index for the first half of 1922 will soon be ready for distribution, and a copy can be had by addressing a postcard to the subscription department of "Coal Age."

Book Reviews

Practical Mine Ventilation

MINE ventilation has too often been treated from the point of view mainly of mine gases and of distribution of air, and the matter of production of air pressure has been left to the manufacturer. A few pretty pictures of fans have lightened the text of many former volumes on this subject, but the author, not being a fan expert, satisfied himself, or rather tried to rest satisfied, with the most meager details regarding the originating means for ventilation, mauger, it is true, of several pages on steam jets, furnaces and the trompe, which are wholly inadequate means of inducing an air current.

This book, written by J. R. Robinson, gives the fan its appropriate place without in any way being a catalogue of types. It supplies calculations in connection with the selection of fan size that will be of value to any reader who has to ventilate mines.

Interesting among his remarks are those on the correction of friction of air. Giving Atkinson's, Fairley's and Murgue's coefficients (k) as 0.0000000217, 0.00000001 and 0.000000009 respectively, Mr. Robinson adds: "These coefficients are the result of experience and are practical, but they can be used only by those who have a wide experience and knowledge of mining conditions. It will be observed that Atkinson's coefficient is nearly 2½ times Murgue's, and unless the engineer has a wide experience he does not know which coefficient to use on the particular mine that is the subject of the calculation. The author has had some mines come under his observation wherein the coefficient k=0.000000069 and others where the coefficient=0.000000006, the last figure being less than 10 per cent of the former. The coefficient k=0.000000006 will apply to airshafts that are well lined."

The book clearly shows the disadvantage of having a fan ill-fitted to the mine conditions. This is an important subject, and little has been written about it. It is fully time to get books written by manufacturers of fans to supplement those the authors of which are mine engineers, professors and theorists. The point of view is one that cannot be neglected with safety. Too often the manufacturer of mine equipment fails to publish what he knows about the practical problems of the mine, and the industry is the loser.

Interesting statements are that excessive quantities of air absorb the moisture of mine surfaces and make the mine dangerous, that large cavities in the roof of roadways simply result in baffling the air, that regulators are a great source of power loss, that the use of auxiliary fans is preferable and that these "boosters" serve to lengthen the life of primary fans. The use of regulators, so to speak, lays a tax on the whole mine so as to protect and make possible the ventilation of a split that is unusually difficult to ventilate. It is better to aid the air through that split than to burden the whole mine with an excessive water gage for that purpose.

In the case of the Federal Coal Co.'s mine at Grant Town, where it would have been necessary to use 11.87 in. of water gage to pass the 300,000 cu.ft. per minute needed in place of the 132,000 cu.ft. which 2.3 in. of water gage permitted to be passed, the management found a way to cut in an airway, and through this an air current circulated, reducing the pressure 25 per cent. Other practical instances are given where attention to ventilation has made great economies.

A most valuable table is provided by W. H. Hall, of Coalwood, W. Va. He shows the most economical size of shaft to deliver 100,000 to 600,000 cu.ft. of air by 100,000 cu.ft. increments. Thus 100,000 cu.ft. of air calls for a 10 x 10-ft. shaft; 200,000 cu.ft., a 14 x 14-ft. shaft; 300,000 cu.ft., a 16 x 16-ft. shaft; 400,000 cu.ft., an 18 x 18-ft. shaft; 500,000 cu.ft., a 20 x 20-ft. shaft, and 600,000 cu.ft., a 22 x 22-ft. shaft. The depth of the shaft is taken as 100 ft., excavation is figured at $15 per cu.yd., concrete lining at $30 per cu.yd., life of mine at 50 years and power at 2c. per kilowatt hour.

Mr. Robinson has allowed himself to be a little discursive. He has several pages on the mechanical and historic development of the coal industry from its earliest beginnings. The story is well told and exceedingly interesting, for the coal industry is the mother of the mechanical arts. The steam engine, the pump, the railroad, the locomotive, and the fan were built largely for her service and by her engineers. The only misfortune is that having done so well in earlier years, mining engineering has been willing of late to be boosted from outside instead of by the exercise of her own activity.

This little volume, entitled "Practical Mine Ventilation," contains 225 pages measuring 5½ x 8½ in. and may be obtained from its publisher, J. R. Robinson, 6027 Jenkins Arcade Building, Pittsburgh, Pa.

Gas and Fuel Analyses

AS PART of the International Chemical Series appears a second edition of the book by Alfred H. White, professor of chemical engineering at the University of Michigan, on "Gas and Fuel Analyses," a book of 319 pages measuring 5½ x 8 in. The main stress is placed by the author on gas analysis, liquid fuel having only 20 pages and coal, which is last in the train, having 86 pages committed to it.

Mr. White points out the difference in the heating value of coal which passes over a ¾-in. screen and of that which goes through. The screenings gave, in all but one of the ten cases instanced, less heating value than the larger coal. In one instance—Blockton, Ala.—the screenings gave 1,646 B.t.u. less heat than the larger coal and in the Oak Creek (Col.) coal 1,366 B.t.u. more heat than the lump coal would give. The difference in each case is attributable to the impurity of the coal that has the lower heat equivalent. Screenings in the first instance ran 14.91 per cent ash, whereas the lump had only 4.41 per cent. In the second instance the lump had 15.67 and the screenings 6.97 per cent only. Where the coal is cut in the clean part of the seam the fine coal is quite likely to be of superior purity, especially if floor and roof are of a character that they can be kept out of the coal.

The chapters on coal analysis give instructions regarding care in sampling, analysis, drying and the ascertainment of heating value, using Parr or other bomb calorimeters.

Housing for Coal-Mine Workers

INDUSTRIAL housing has made large advances in recent years and the art of building suitable villages for operatives is a study in and by itself. Too many wander into it without any equipment for the work and may welcome a book by Morris Knowles on this subject entitled "Industrial Housing." The volume contains 408 pages measuring 6 x 9 in. It contains a historical review, chapters on fundamental preliminary considerations, on the selection of a site, on the development of the town plan, on streets and pavements, on water supply, on sewerage and drainage, on collection and disposal of town wastes, on gas and electric service, on houses for families, on other buildings, on the administration and supervision of construction and on the management of industrial towns.

The practice is to regard the cost of the house as the cost of housing. In three tables it is shown that the houses cost 70, 81 and 81 per cent respectively of the whole investment in three separate housing developments. Taking one instance—the first—the land cost 1.6 per cent; street grading, the same; street paving (tar-bound macadam), 3.7 per cent; concrete sidewalks, 1.7 per cent; waterworks, 3 per cent; sanitary sewers, 2.6 per cent; storm sewers, 1.1 per cent; supervision and engineering, 8.6 per cent, and interest during construction, 5.7 per cent—a total of 100 per cent. It is just as well to face the fact sooner or later that the house is only three-quarters of the problem.

Inspectors' Institute Advances Art of Mine Safety

Proposes Uniform Underground Danger Signals—Urges Standard Methods of Sealing Off Abandoned Areas and of Gas Testing—Elects R. M. Lambie of West Virginia, President

By E. W. Davidson*

SOME definite contributions to the art of making coal mines safe and to the business of keeping them so were made at the thirteenth annual meeting of the Mine Inspectors' Institute of America, held in Chicago, July 11, 12 and 13. The Institute, after careful consideration in committee and after much earnest and expert discussion, made four recommendations for standardized methods which it hopes will be adopted and made uniform throughout the land. Also it adopted resolutions of sorrow upon the deaths, during the past year, of two charter members of the Institute, Thomas K. Adams, of Pennsylvania, and Walton Rutledge, of Illinois, father of Dr. J. J. Rutledge, mining engineer, U. S. Bureau of Mines.

Before final adjournment, the Institute selected Pittsburg, Kan., over Pittsburgh, Pa., as the place for holding the next meeting, July, 1923, and elected R. M. Lambie, chief mine inspector for West Virginia, president for the coming year, succeeding C. H. Nesbitt, chief inspector for Alabama. Twenty-two members of the Institute attended the meeting, many of them declaring at its close that the gathering had brought out its usual quota of good ideas and concrete results.

Recommends Standardization of Methods

The four definite recommendations of the Institute of methods that should become standard were the following:

(1) That a new type of underground danger signal proposed be adopted.

(2) That worked-out and abandoned portions of mines either be thoroughly ventilated or sealed off with a masonry wall provided with a valve permitting periodic tests of the atmosphere within; and that such areas have vents drilled through from the surface.

(3) That tests for gas be made with a non-luminous flame, using a flame safety lamp of one of the types approved by the U. S. Bureau of Mines, and burning fuel also approved by the Bureau, for each specific type.

(4) That in cases where machine runners are equipped with electric lamps, men possessing certificates of competency as gas inspectors test every working place before a machine starts to work in the place, and make another test either during the machine run or immediately thereafter.

During the discussion that preceded the first recommendation much was said about the confusion which exists between parts of the country in the matter of underground danger signals. There are so many "codes" that men transferring from one region to another might easily misunderstand them, with disastrous results. There is a danger also in the effort commonly practiced to register the degree of danger that may exist, as "bad gas," "little gas" and the like. Since gas is gas and since a man's judgment of quantity may easily be in error and lead some foolhardy soul into deep danger where only slight danger is expected, the Institute held that the new signal proposed should be one that would make the nature of the danger unmistakable, but should not attempt to indicate its degree.

Hence the Institute recommended that in all mining regions an underground signal of the following description be made uniform: A square divided into four quarters by two lines drawn from opposite corners so as to cross at the middle. Each quarter of the square should be devoted to a single class of dangers: Thus, the upper left-hand quarter should be devoted to gas; the lower left-hand quarter to bad roof; the upper right-hand quarter to electric wires and the lower left-hand quarter to "blackdamp."

With this arrangement made uniform it would be possible for any man who is capable of making a cross to chalk up a danger warning that all would understand. If a man's ability to write the English language was too limited to enable him to write "gas" or "bad roof," or "electric wires down," or "blackdamp" on the sign, he would merely need to put a cross in the proper quarter of the sign and the warning would be complete.

The sign could appear in any number of forms, either commercially manufactured or "home-made" of metal or wood, or merely painted or chalked or scratched on any prominent surface. The committee which brought in the recommendation for this sign consisted of V. E. Sullivan, of West Virginia; James Dalrymple, of Colorado, and Thomas Back, of Illinois.

In the discussion on how best to handle abandoned parts of mines the members of the Institute reviewed the laws and practices of various states and finally endorsed the present Pennsylvania practice, which is essentially that recommended to the whole country by the Institute. The committee which reported the plan for adoption was Dr. J. J. Rutledge, of Illinois; John G. Millhouse, of Illinois, and Frank Hillman, of Alabama.

The Institute continued its discussion of last year on standardization of inspection forms and received from a committee a model form containing a schedule of discounts based on the mining laws of Kansas. This schedule, of course, would have to be modified in accordance with the provisions of each state for use in that particular state. Ralph C. Becker, of Pittsburgh, Pa., told the Institute that the committee on standardization of coal-mine equipment of the American Mining Congress is advancing its work steadily and wants the wholehearted co-operation of coal-mining men everywhere. This committee, whose herculean job will last for about five years, will make an annual report at the next meeting of the Congress, to be held at Cleveland, Ohio, in October.

Reaffirms Stand on Use of Mixed Lights

The Institute reaffirmed its position taken last year on the use of mixed lights in mines. It holds that portable electric lamps should be used for general lighting and flame safety lamps always for testing. C. L. Colburn explained a uniform plan for the collection of data on mine accidents and proposed a uniform report form for all states for the use of inspectors, compensation commissions and other such officials. After a discussion on the relative importance of subject matter in mine inspectors' annual reports the Institute decided that statistics and conclusions on accidents and accident prevention were by all odds the most important, that production should take second place, and men employed, third.

A lengthy discussion on the relative merits of water and rock dust as preventives and restricters of explosions did not result in any definite recommendations by the Institute.

The full list of officers chosen for the year 1922-23 follows: President, R. M. Lambie, chief mine inspector of West Virginia; First Vice-President, W. E. Holland, district mine inspector of Iowa; Second Vice-President, James Sherwood, chief mine inspector of Kansas; Third Vice-President, James Dalrymple, state coal mine inspector of Colorado; Secretary, J. W. Paul, mining engineer at the Pittsburgh Experiment Station of the U. S. Bureau of Mines, and who has been secretary since the conception of the Institute 14 years ago; Assistant Secretary, J. G. Millhouse, district mine inspector of Illinois; Treasurer, Frank Hillman, former district mine inspector of Alabama; Editor-in-Chief, J. T. Beard, associate editor of *Coal Age*, New York.

*Western editor, *Coal Age*.



Problems of Operating Men

Edited by James T. Beard



Timbering in the Pittsburgh Seam in Ohio

Nature of Strata Overlying Coal—Avoid Breaking Topcoal—I-Beams Set in Hitches Cut in Drawslate Support Roof—Use of Concrete Blocks for Timber

REFERRING to the inquiry of "Mine Engineer," entitled "Timbering in the Pittsburgh Seam," published in *Coal Age*, May 25, p. 886, allow me to suggest a method of timbering that has been found satisfactory by some of the larger coal companies operating in the Pittsburgh coal, in Eastern Ohio.

Before proceeding, however, it would be well to specify more definitely the nature of the strata overlying the coal. The inquirer has given but a partial description of the character of the upper strata, which would hardly enable operators in other fields to fully appreciate the situation.

As has already been stated and as shown in Fig. 1, overlying the coal which averages 5½ ft. in thickness, there is a 12-in. drawslate that is taken down as the working face is advanced.

Above the drawslate is a thin seam of coal verying from 4 to 27 in., in thickness. In most cases, this topcoal is marketable. It is overlaid with from 16 ft. to 18 ft. of limestone and shale, above which is the well known "Redstone Formation." In working the Pittsburgh seam, what is of the first importance is to avoid breaking the topcoal, if that is possible. By that means, the air current is prevented from coming in contact with the shale and limestone. Experience has proved that if this thin upper coal can be held intact, the top will stay up without timbering from six to eight months. Where the mine is dry, indeed, the top has been known to stand for four or five years.

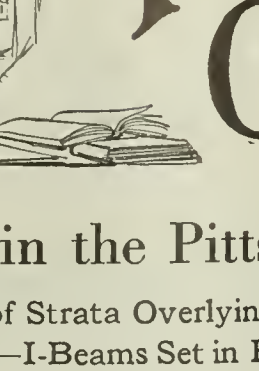


FIG. 1. SECTION THROUGH SEAM

There are times, however, when the roof conditions are so bad that it is practically impossible to avoid breaking the topcoal and, in that case, it is necessary to adopt a suitable method of timbering on the roads.

A method that has proved most satisfactory is that shown in Fig. 2. As there appears, hitches are cut in the drawslate 8 in. wide and 6 in. deep. A 6 in. I-beam is then placed in these hitches and built up to the required height, by placing beneath each end of the beam one or more courses of common brick resting on top of the workable coal.

The use of steel I-beams in place of timber has proved to be the most economical, in the long run, although the initial cost of the steel is about one-third greater than for timber. But, it must be remembered that the life of timber, in this connection, is from six

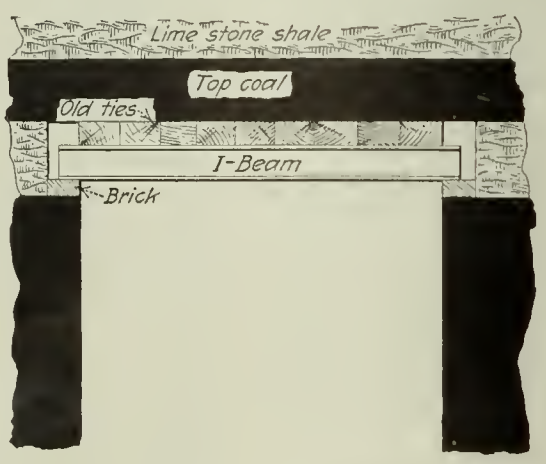


FIG. 2. SUPPORTING THE TOP COAL

months to a year, while that of the I-beams is practically indefinite, as at least 50 per cent or more of these beams are recovered, on retreating.

Lagging to Support the Roof

As shown in Fig. 2, lagging is used above the I-beams to give better support to the roof. For that purpose, second-hand track ties are often used. Ties taken from low damp places are generally found to last longer than dry timber, under the same conditions.

Where the height to be timbered is greater than 12 in. it is necessary to use more brick under the crossbeams. In many cases, concrete blocks varying from 6 to 18 in. in length are made and brought into the mine to serve as legs for the support of the crossbeams. These blocks are usually made in large numbers so that a sufficient supply is always on hand.

In this method of timbering there is nothing to decay except the lagging, which is readily replaced when needed. Regarding a more satisfactory method of cutting the hitches than the use of a pick, it should be stated that the latter is commonly used. It is possible however, that the use of a "Little-Giant" chipping hammer, such as that manufactured by the Chicago Pneumatic Tool Co., and advertised in the eleventh Annual Equipment Number of *Coal Age*, p. 131 of the advertising section, may prove useful in that connection.

H. J. GRIFFITH.

Piney Fork, Ohio.

ANOTHER LETTER

HAVING had considerable experience in handling roofs under the conditions described in the inquiry relating to timbering in the Pittsburgh seam, kindly permit me to offer a few remarks that may be of interest.

In this connection, my first thought is that when contending with a soft roof of this character, it is not advisable to drive the entries 10 ft. wide, as indicated by the sketch presented in the inquiry.

Two Plans Suggested

My observation is that, in cases of this kind, entries are never driven more than 8 or 9 ft. in width, and the timbers are set back into hitches cut in the ribs of the entry, where they will not be liable to be knocked out. I would suggest two methods, either of which would be applicable under the conditions described.

In the first place, steel I-beams could be used as crossbars for the support of the roof. Or, if available, heavy sections of old rails can be employed to advantage. These can always be recovered and used over and over again, when the road is to be abandoned.

A good plan is to make a hitch-hole, in the slate above the coal, and a slip hitch-hole, in the slate in the opposite rib, using a good cap-piece on top of the coal, as a rest for the I-beam. Another method, which is commonly employed, is to cut hitches in the ribs for the posts on either side of the road.

Use of Jacks in Timbering

Where a large amount of timbering is to be done it would, no doubt, be convenient and greatly reduce the cost, if the timberman is supplied with two portable light jacks made out of pipes. These can be made by any handy blacksmith and will save time and labor in placing the beams or sets of timber, as the jacks can be made to hold the crossbars in place while the cap-pieces are being driven under the I-beams, or the posts fitted under the timber collars, as the case may be.

Regarding the suggestion of cutting the hitches by some other means than

picks, it would be a simple matter to use a small puncher operated either by electricity or compressed air. Such a tool would largely reduce the manual labor and cost of timbering.

ANDREW O. BAIN.

McKeesport, Pa.

UNDER the conditions stated as existing in the Pittsburgh seam, in Eastern Ohio, it is my judgment that different methods of timbering must be considered and that form adopted which is found best suited to those conditions.

On all main and branch roads, I would recommend an electric mine-car compressor and air hammer, for digging the hitches in the drawslate above the coal. Coal should be placed in these hitches and tightened by driving small blocks or wedges beneath them and doing away with the posts.

On main roads, where the conditions might require or circumstances permit, I would use steel I-beams of a size suitable to carry the weight of the overlying strata. Where railroad ties were available, 6 x 8 in. or thereabout, these could be used for timbering on branch roads.

In every case, the distances of the timber sets or crossbeams must be determined by the strength and character of the roof to be supported. At times, I have used oak boards, for lagging above the collars. Where the width of the roadway will permit, it will often be found more economical to use full-length legs to support the collars, instead of cutting hitches and using short legs as mentioned in this inquiry of "Mine Engineer."

RICHARD MACDOUGAL.

Pittsburgh, Pa.

AFTER reading the inquiry of "Mine Engineer" and his description of timbering in the Pittsburgh seam, I realize that his chief difficulty is the expense of cutting the hitches in the ribs, for the support of the legs forming a timber set.

The suggestion made by the editor in his reply, namely, to incline the short legs toward the center, has the advantage of reducing the work of cutting the hitches about one-half. In this case, the coal being 5½ ft. thick gives a headroom of 6 ft. under the collar, which eliminates what objection there might be to inclining the legs in this manner.

In my opinion, the cost of cutting hitches can be further reduced by making the cut wholly in the drawslate and resting the collars on top of the coal, instead of using the short legs mentioned. The collar should then be tightly wedged to hold it in place.

In Tennessee we have tried most of the different forms of timbering. One that we have found well adapted to conditions of this kind is to cut a good hitch in the drawslate just above the coal, on one rib. Insert one end of the bar in this hitch and rest the other end on a leg notched into the bar.

Wilder, Tenn. OSCAR H. JONES.

Setting Post Timber

Need of setting posts firm—Conditions when roof and floor are hard—Effect of roof settlement.

REFERENCE was made in *Coal Age* some time ago, in answer to a question regarding the methods of setting post timber when both roof and floor are hard; and it was stated that one plan is to set the posts on a mound of dirt or other soft material that will yield when the post first takes the weight.

Long experience has taught me the need of setting a post firm. It strikes me that it would be impossible to do this when the timber is to be stood on any soft material such as dirt or slack. It has always been my practice to use a good cap-piece of soft wood that will enable the post to be driven tight and firm in its place.

THICK CAP-PIECES AND FOOT-BOARDS AVOID CRUSHING OF POSTS

For example, when setting a 6-ft. prop, 8 in., in diameter, in a mine where the roof and floor are hard, I would set the posts on a 4-in. footboard and use a good cap-piece of the same thickness, on top of the post. This would make the post firm and solid.

Then, when the weight comes on, it will squeeze the cap-pieces 3 in. or more before it will break the post. I find that we can count on a yielding of 5 or 6 in. in taking the weight, when a post is set in this manner, which appeals to me as a far better plan than to set the posts on soft mounds of dirt.

LAWRENCE CABODI.

Carbonado, Wash.

[In this connection, the reply to the inquiry of a timberman, explaining some of the basic principles of post timbering on the following will be read with interest.—EDITOR.]

Firebosses' Markings

Requirements of the Bituminous Mine Law—Purpose of making two marks in a place—Investigation made in absence of fireboss.

REFERRING to the discussion regarding the marks of a fireboss made on the face of the coal and destroyed by a fall of roof that occurred before the time for the men to enter the mine for work, allow me to refer to the Bituminous Mine Law of Pennsylvania, covering this point.

The law requires (Art. 5, Sec. 1) that the fireboss "shall examine for danger in all portions of the mine under his charge, and after each examination he shall leave, at the face and side of every place examined, the date of the examination as evidence that he has performed his duty."

The provision that a mark shall be made on the side of a place examined, in addition to the one made on the face, I believe is for the purpose of avoiding such a situation as is here presented. In my opinion, a fall of roof large enough to obliterate both marks could hardly take place within the three hours allowed, by law, for the morning inspection, without the place exhibiting some sign of danger at the time the fireboss made his visit.

Now, inasmuch as the law requires the fireboss to "examine for danger in all portions of the mine under his charge," no fireboss fulfills his duty, under the law, when he makes a test for gas and does not also make a careful inspection of the roof and the face of the coal and observe if any timbers have been discharged by the shots fired the night before, and note other dangers that may exist.

REPORT MUST SHOW DANGERS FOUND

In this instance, it may be assumed that a close inspection would have revealed broken timbers; or posts set contrary to the regulations of the mine; or an unsafe condition of the roof as revealed by sounding; or the presence of slips in the roof. Any of these dangers, if found, should be entered on the report of the fireboss and prompt measures taken to avoid accidents therefrom.

Assuming that both of this fireboss' marks were destroyed, it is my belief that his report should reveal some one form of danger such as I have mentioned, provided his inspection was properly made. The fact of any danger being noted in the report regarding the place would be sufficient evidence that the fireboss had been there the same morning.

While it is admittedly possible that a careful examination of the place did not reveal any apparent danger and the roof fell within the three-hour period following, such an occurrence would be unique, to say the least. In any event, justice to the fireboss demands the consideration of any circumstantial evidence there may be that he had examined the place in the regular routine of his duties.

The investigation that must follow such an occurrence should be made in the absence of the fireboss, who should not be premitted to enter the mine while the same is in progress. Every place in the district of which he has charge, should be examined in order, and his marks noted, as well as the condition of each place, in respect to danger. Assuming the investigation showed all other places properly examined and marked, I believe any jury of mining men would clear the fireboss of suspicion.

JOHN WALL, SR.

Bayview, Ala.

ANOTHER LETTER

REGARDING the question of firebosses leaving their marks in each place examined, as evidence that they had inspected the place, allow me to refer to some incident in my own experience along this line. It may not be policy for a fireboss to place his mark on the roof, at the coal face, unless it is hard and firm, but I have known many such instances.

In one case, which was told to me a short time since, a miner who had been injured by a fall of roof at the face of his room, attempted to recover damages from the company, claiming that the fireboss had not inspected his place that morning and he was not warned of his danger.

It so happened that the fireboss had been accustomed to mark the roof of each place examined, instead of placing his mark on the face of the coal, as is often done. To prove his case, the fireboss got busy and cleaned up the fall. When a large rock, lying on the pavement, was finally reached and turned over the mark was found, showing the date and the initial of the fireboss.

Some will claim that the roof is not the proper place for a fireboss mark. Many place their mark on the timbers. I have known some to stand a shovel upside down and put the mark on the back of the blade. It is the custom of many firebosses and safety inspectors to mark a cross on a piece of loose top to indicate that it must be taken down or made secure with timbers. For this reason, if a fireboss should mark the date of his inspection on the roof it may be confused with the mark indicating bad top, and it would be better to use other means of making the inspection mark.

Bulletin Boards in Working Places Serve Good Purpose

Some years ago, while firebossing, I had bulletin boards prepared to facilitate and make legible my record of inspection. These boards were 12x18 in. and had a hole bored at the upper end so that they could be hung on a nail on a post. Each miner was made responsible for the keeping of his board. It was his duty to move the board back four or five posts before firing his shots at the close of the day, so that it would be out of danger from flying coal.

When making his rounds in the morning, the fireboss would move the board forward, mark the date and hang the board on a post next to the face of the coal to show that he had examined the place and it was safe for work. This method proved highly satisfactory to everyone. Whenever there is a hole in the roof or other place where gas might accumulate, a mark should be made at the highest accessible point to indicate that a gas test has been made there.

Talk is cheap and life and health are valuable. Therefore, bad roof and other dangers should always be marked to indicate their presence. Every fireboss should see that his mark of inspection is where a miner will see it on entering his place. Again, another mark should be made at the coal face or at any point of danger, to show that such point had been reached and examined. A fireboss must arrange to remove any danger found and prevent the men from entering the place until that is done.

Thomas, W. Va. W. H. Noone.

Inquiries Of General Interest

Principles Relating to Post Timber

Initial Settlement of Roof Irresistible—Resistance to Crushing and Bending Equal in Post Timber—Means Employed to Avoid Destruction of Posts When the Roof Weights.

Conditions in the mine where I am employed as timberman have been such as to require their special study. In one section of the mine recently developed, much trouble has been caused, owing to timbers being destroyed by the roof pressure, soon after the posts were set. The coal is 6 ft. in thickness and the seam generally flat and overlaid with a cover of shale, slate and sandstone, varying from 250 to 300 ft. in depth.

For some time, I have been seeking information regarding the essential principles of timbering rooms. My chief trouble lies in dealing with a hard roof and bottom. It has always been my practice to use good cap-pieces when setting post timber, but these do not seem to serve the purpose as fully as they should when the timbers take the weight.

Timberman.

————, Ia.

One of the first principles that a timberman should learn to respect is the fact that when the coal is taken out from a portion of a seam, as in driving rooms and entries, there always follows a certain settlement of the overburden resting on the pillars. This is not a sagging of the roof over the opening, but a body settlement due to the weight of the overburden squeezing the pillars on which it rests.

This first or initial settlement of the roof is irresistible and no amount of

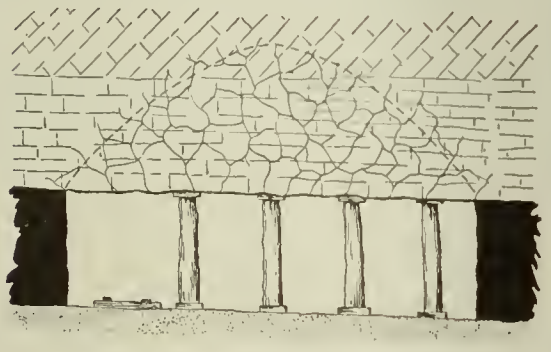


FIG. 1. OVERARCHING OF MINE ROOF WHEN DRIVING A ROOM

timber can prevent it. Its extent will vary with the depth of cover, thickness of seam, hardness of coal and ratio of pillar to opening. Calling the entire area, in a given section of a mine, A; and the area of opening, in the same section, a, the increase of roof pressure due to the taking out of the coal is in the ratio A : a, or A/a.

One thing to be remembered is that post timber is never intended to carry the weight of the cover above it, which is far in excess of the strength of the timber. In Fig. 1, we have attempted to illustrate the condition that results from driving an opening in a seam of coal. The strain resulting from the taking out of the coal has the effect to crevice the strata above the opening, and the loosened material then overarches the opening, as indicated by the dotted line.

This overarching of the roof acts to support the entire overburden above, throwing its weight on the pillars on either side of the opening, while the weight of the loosened material beneath the arch is held in place by the timbers set to support the roof. The height of the arching is wholly dependent on the character of the formation overlying the coal.

When setting post timber in a mine a practical timberman will never drive

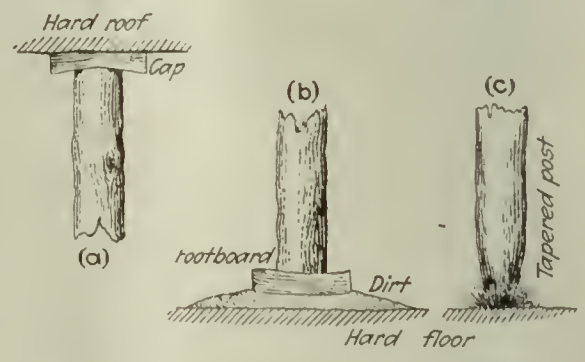


FIG. 2. MEANS USED TO PREVENT DESTRUCTION OF POSTS

a post tight, between the roof and floor, without providing a good cap-piece above, which will yield and prevent the crushing of the post, when the weight comes on the timber. This is particularly true when either the roof or the bottom, or both, are hard. If there is no yielding material provided to take up the first settlement of the roof, as here mentioned, the post will be destroyed by this irresistible pressure.

Some years ago, mine inspector Hepplewhite proposed a method of avoiding the destruction of post timber, by tapering the foot of the post. This method was very largely employed in England, but has never been used to any great extent in this country. A method that has been more commonly used in American mines, aside from providing a good cap-piece against the roof, is to set the post on a footboard placed on a low mound of

dirt or slack, an inch or two in thickness. This method has a particular advantage in enabling the quick removal of a post when desired, by digging out the slack with a pick.

In the accompanying sketch (Fig. 2), is shown, at (a), the effect on a good cap-piece caused by the weighting of the roof. At (b), is shown the bottom portion of a post resting on a footboard placed on a thin mound of slack or dirt. Again, at (c), is shown the effect of tapering the foot of a post, when the weight comes on the timber. The furring of the tapered end of the post provides the necessary yielding that prevents the destruction of the timber.

A good rule to apply in post timbering is to make the diameter of the small end of the post, in inches, not less than its length, in feet. Thus, a 6-ft. post should have a diameter not less than 6 in., at the small end. This makes the post present an equal resistance to crushing and bending. In other words, the post will not be crushed by reason of having too small a diameter for its length, or bend by reason of being too long for its size.

It is important in setting post timbers in a flat seam to set all posts plumb. Otherwise, any movement of the roof has a tendency to discharge the post. In inclined seams, the right position of the post is nearly normal to the strata, the timber being slightly inclined up the pitch from the normal. This is done to counteract the tendency of the strata to slip downhill, and prevents the loosening of the post should that occur.

Examination Questions Answered

Bituminous (Pa.) Mine Foremen's Examination, Held April 11-13, 1922

(Selected Questions)

QUESTION—(*a*) *How many workable seams of coal are there in the district in which you are employed?* (*b*) *Give the local name of each.* (*c*) *What are the characteristics of the roof in each seam?* (*d*) *What name is given to the coal measures in which they occur?*

ANSWER—(a, b, c) These questions must be answered according to the local conditions in any given district.

(d) The coal measures are known geologically as the "Carboniferous System."

QUESTION—*A ditch 18 in. wide and 12 in. deep is full of water. If the velocity is 2 ft. per sec., how many gallons are passing per minute?*

ANSWER—The sectional area of the ditch is 18 × 12 = 216 sq.in. A velocity of 2 ft. per sec. is 2 × 12 × 60 = 1,440 in. per min. The quantity of flow is, therefore (216 × 1,440) ÷ 231 = 1,346.5 gal.

QUESTION—*What are the requirements in regard to the following*: 1, *Restrictions placed upon voltage for use in mines;* 2, *Switchboards;* 3, *Transformer rooms, underground;* 4, *Branch circuits;* 5, *Lighting circuits in the mine;* 6, *Joints in conductors;* 7, *Power wires and cables in shafts;* 8, *Cables in haulage roads;* 9, *Underground trolley;* 10, *Bonding?*

ANSWER—1. No higher than medium voltage (300 to 650 volts) shall be used underground, except for transmission or for application to transformers or other apparatus where the high-voltage circuit is stationary. In gaseous mines, high-voltage (exceeding 650 volts) transmission cables must be installed on intake airways, only; and high-voltage motors and transformers must be installed in suitable chambers ventilated by fresh intake air. All high-voltage lines and apparatus must be clearly marked to indicate their danger, the danger signals being placed at frequent intervals. Curves or signal wires must not exceed 24 volts.

2. Main and distribution switchboards must be made of insulating, incombustible material such as marble or slate and installed in as dry a position as possible. All switches or other instruments used in connection with motors or apparatus of more than 50-hp. capacity, shall be installed on a suitable switchboard with a 3-ft. passageway in front. Similar equipment, not exceeding medium voltage, or 50 hp., may be separately installed if mounted on an insulating base of slate or other material.

With high-voltage connections behind the switchboard, the passageway there shall not be less than 3 ft. clear, the same being properly floored and kept locked by a door, at each end, that can be opened from the inside without a key.

With higher than medium voltage, there must be no live-metal work on the front of the main switchboard, within 7 ft. of the floor or platform, and the space before the switchboard must not be less than 4 ft. in the clear. Insulating floors or mats shall be provided for medium-voltage boards where live metal work is on the front.

3. Transformer rooms must be of fireproof construction. With higher than medium voltage, the entry circuit must be protected by an oil-break switch on each pole, equipped with an automatic overload trip. With medium voltage or less, each pole of the entry circuit may be protected by a switch and automatic circuit breaker; or fuses may be substituted for the latter, in case of lighting circuits and power circuits not exceeding 25-kw. All transformers must be provided with suitable ammeter, in either the primary or secondary circuits.

4. At the point where a branch leaves the main circuit, it must be provided with a switch of not less than 100 amp. capacity, on each pole.

5. Where incandescent-lamp wires are connected to the trolley circuit, the lug of the trolley hanger must be drilled to receive the lighting wire, which is secured by a setscrew. The lighting wire must not be wrapped or tied about the stem or stud of the trolley hanger, and must be grounded to the track circuit. All lighting wires must be adequately insulated and strung on porcelain or glass insulators, unless encased in pipes or other metallic covers. Separate uncased wires must be kept at least 3 in. apart, except where they enter the fittings and all metallic casings must be grounded efficiently.

6. All joints in conductors must be mechanically and electrically efficient and soldered, if possible; otherwise, a suitable screw clamp or other connector must be used. When the joint is complete it must be insulated to the same extent as the rest of the wire.

7. All power wires and cables must be well insulated and firmly fixed in position, being supported at intervals not exceeding 25 ft. where their strength is not self sustaining. Unless protected by boxing, space must be left between them and the sides of the shaft.

8. Conductors other than trolley wires, on main haulage roads, must be protected by proper guards, unless kept at least 12 in. from any part of mine car or locomotive. Unless provided with metallic covering, wire conductors must be hung on insulated fastenings.

9. On underground roads, trolley wires must be hung as far as practical to one side of the road and securely supported on insulated hangers, at points that will prevent a sag exceeding three inches, where the height above the rail is less than 5 ft. and the wire does not touch the roof when the trolley passes. All other wires except telephone, shotfiring and signal wires must be hung on the same side of the road with the trolley wire.

At all points where men must work or pass under trolley or bare power wires, less than 6½ ft. above the top of the rail, such wires must be properly protected. All branch trolley lines must be provided with an automatic trolley switch, or section insulator and line switch, or other device to cut off the current from the branch.

10. Both rails and main haulage roads must be bonded and cross-bonded, at points not to exceed 200 ft. apart.









Scenes at Salkeld Mine, Where Headworks Were Destroyed by Four Hundred Armed Strikers

At this mine, on July 17, four hundred well-armed foreigners attacked the men who were at work and killed the sheriff who, with deputies, was on guard. At least six of the attackers were killed. The mine is the property of the Richland Coal Co. and is located at Cliftonville, W. Va., near Avella, Pa., where most of the attacking party live. The picture on the top at the left shows the tipple and shed leading from the mine level. This was not destroyed. The illustration at the top on the right shows the drift mouth, which also apparently escaped injury. The two lower illustrations show the destruction wrought by the fire; that on the left shows the destroyed generator house. The attack was made on the sheriff, his deputy and twenty-one employees and deputy sheriffs, the first two having pistols and the others only riot guns and two rifles.

Pittsburgh Operators Announce Return to 1917 Scale Until Jan. 1, 1923

PITTSBURGH operators on July 20 posted notices announcing a wage scale effective until Jan. 1, 1923. The scale is that of 1917, known as the Washington scale, and is the one in effect during the months of 1919 prior to the strike of that year. In a statement given out by the association it is pointed out that under this scale loaders who worked steadily earned on an average $6.71 per day and that the average total earnings for nine months was $1,136.89. During the same period cutters had average earnings per day of $8.43 and the average total earnings for the nine months period was $1,491.16. These men worked 95 per cent of the time that the mine worked. Pick miners during the same period had average daily earnings of $7.60, and the average total earnings for the nine months period was $1,289.74. These men worked 92 per cent of the time that the mine worked.

Taking the first nine months of 1919 as a basis, it is found that for the corresponding period in 1920 the country produced 117.5 per cent while the Pittsburgh district produced but 83.8 per cent. In 1921 the country produced during the same period 85.4 per cent while the Pittsburgh district produced but 61.4 per cent, a great part of which was on contracts. The new scale will give the men steadier work and greater actual earnings at the end of the year than under the scale which was in effect during 1921, it is asserted.

Bituminous Coal Loaded Into Vessels at Lake Erie Ports During Season to End of June*

(In Net Tons)

Ports	Railroads	1922 Cargo	1922 Fuel	1922 Total	1921 Cargo	1921 Fuel	1921 Total	1920 Cargo	1920 Fuel	1920 Total
Toledo	Hocking Valley	1,179,017	29,241	1,208,258	1,661,310	42,441	1,703,751	430,429	6,306	436,735
	Toledo & Ohio Central	.....	.....	.....	452,256	12,487	464,743	273,447	18,074	291,521
	Baltimore & Ohio	1,433,897	31,949	1,465,846	930,561	26,178	956,739	166,456	7,924	174,380
Sandusky	Pennsylvania	768,563	17,986	786,549	505,505	14,594	520,099	205,543	3,791	209,334
Huron	Wheeling & Lake Erie	7,612	334	7,946	730,318	19,403	749,721	538,335	39,157	577,492
Lorain	Baltimore & Ohio	17,820	9,491	27,311	1,192,473	42,729	1,235,202	746,049	71,306	817,355
Cleveland	Pennsylvania	43,358	12,114	55,472	993,390	33,531	1,026,921	85,741	26,972	112,713
	Erie	.....	.....	.....	236,821	7,460	244,281	.....	.....	.....
Fairport	Baltimore & Ohio	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ashtabula	New York Central	31,083	9,163	40,246	630,706	24,347	655,053	204,936	59,783	264,719
	Pennsylvania	28,342	6,456	34,798	1,238,816	38,013	1,276,829	180,162	30,208	210,370
Conneaut	Bessemer & Lake Erie	42,257	743	43,000	412,201	5,887	418,088	709,702	14,033	723,735
Erie	Pennsylvania	28,607	13,789	42,396	476,619	21,642	498,261	26,050	27,028	53,078
Total		3,580,556	131,266	3,711,822	9,460,976	288,712	9,749,688	3,566,850	304,582	3,871,432

* Compiled by Ore & Coal Exchange, Cleveland, Ohio; H. M. Griggs, Manager.

Nearly All Coal-State Governors Pledge Aid to Harding

PRESIDENT HARDING sent the following telegram at 6 p.m., July 18, to the governors of twenty-eight coal-producing states calling upon them to maintain order and protect reopened coal mines:

"The proposal of the Federal Government to the United Mine Workers and the various coal operators, whose mines are under suspension, to submit all questions in dispute to a national coal commission for arbitration, has been declined. The mine workers declined as a body. The majority of the bituminous operators pledged unqualified acceptance. The anthracite operators filed unconditional acceptance. A minority of the bituminous operators accepted the principle of arbitration but made specifications which could not be considered.

"I had proposed that the operators and the mine workers in dispute should immediately resume coal production under the wage scales and working conditions which prevailed at the time of the strike on last April 1; that every question in dispute should go to a national commission to be composed of three representatives of the mine workers, three representatives of the operators and five representatives of the American people.

"It was proposed to make the commission the final authority on all disputes until next March, and meanwhile the commission was to inaugurate a searching inquiry into every phase of the coal industry, in order to recommend the way to maintained understandings between workmen and employers, to promote steady employment and assure a continuous and ample fuel supply.

"The failure to secure the acceptance of this proposal for a voluntary adjustment left me no other course but to invite the mine operators to return to their mines and resume activities.

"I trust you will find it consistent to second this invitation, if you have not already done so, with the invitation to all miners and operators to resume their work. This invitation should be accompanied by such assurance of maintained order and the protection of lawful endeavor as will give assurance to everybody concerned. I want to convey to you in this message the assurance of the prompt and full support of the Federal Government whenever and wherever you find your own agencies of law and order inadequate to meet the situation.

"Your State Government and the Federal Government are jointly responsible for maintained conditions under which free men, willing to work, may work in safety. We are responsible for the production and the transportation of a fuel supply ample for the necessities of the American people and the public utilities which serve them, particularly the railways engaged in interstate commerce. We must have ample coal to maintain industrial activity. We must have the coal necessary to the health, security and the activity of all the people.

"I recite to you these details because it is important to have it understood how far the Federal Government has gone in seeking a voluntary adjustment. Thus far there has been no challenge of the right of workers to decline employment, or the right of the employers to hire as they elect.

"Our present duty is to guarantee security in the exercise of these rights, security in all lawful operations, and afford a safe opportunity for the production and distribution demanded by the necessities of the American people.

"There has been no government assumption of a part in the dispute between organized workers and organized employers. I did offer the only available agency which I know to effect a settlement, and these good offices have not availed.

"It becomes necessary, therefore, in the name of common welfare, to invite protection in the fulfillment of that obligation which attaches to an American industry engaged in providing any public necessity, and to afford security to all men alike who are ready and willing to work and serve the common need. No cause is so important as that of common welfare, and there must be the suppression of every unlawful hindrance to the service of that cause. To the task of lawful protection and the maintenance of order the Federal Government pledges to you every assistance at its command."

In response to the President's request for full protection to operators in opening and operating coal mines in their states, Mr. Harding received replies from nearly all of the twenty-eight governors promising the fullest co-operation. Governor Morrison of North Carolina and Governor Ritchie of Maryland were exceptions. Governor Morrison said that it would be vain for him to invite the miners to return to work, and he would not do so, anyway. Governor Ritchie declined to take the action suggested, declaring that the traditions of the state are "those of a people who settle such matters without bayonets or rifles."

There is "no coal strike in Virginia," Governor Trinkle telegraphed President Harding. "Our mines are operating," the brief message concluded.

"Confirming my conversation with you," Governor Sproul, of Pennsylvania, telegraphed, "I again beg to assure you of the full co-operation of the Government of the Commonwealth of Pennsylvania in your plans as outlined."

"Indiana mine operators have been invited to resume operations," Governor McCray, of Indiana stated. "Ample protection will be given to protect life and property."

The message of Governor Morrow, of Kentucky, said: "Your position is unquestionably correct and should be unhesitatingly pursued. I will support and maintain it."

"All resources of West Virginia," wired Governor Morgan, of West Virginia, "have been and are available to afford protection to those who desire to engage in lawful employment."

Governor Davis, of Ohio, telegraphed: "The full authority of Ohio has been and is ready to be marshaled into action, including the employment of all military or civil measures that are requisite."

"All Kansas needs are being met," Governor Allen, of Kansas, gave assurance. "The Kansas Industrial Act forbids picketing of any kind, and there will be no difficulty in resuming full operations in the Kansas field."

Governor McRae, of Arkansas, thought "the President's message apparently requires no answer. Civil authorities seem to have the situation in the state well in hand."

"Co-operation with President Harding and the federal authorities to the fullest extent" was promised by Governor Shoup, of Colorado.

Governor Kendall, of Iowa, pledged "every resource of the state to the support of the program you have inaugurated for the relief of the coal situation."

"I am not apprehensive that any serious trouble will arise," wired Governor Taylor, of Tennessee. "Should necessity require, we are absolutely able and will take care of the situation."

Governor Robertson, of Oklahoma, said he would "cooperate fully" with the programme of the Federal Government.

"There is no trouble in this state," Governor Hart, of Washington, telegraphed, "and I have faith in the operators and miners that no condition precipitating a demand for Federal interference will arise."

"All coal mines are operating," according to the message of Governor Mechem, of New Mexico, "and production is sufficient for all present needs."

Governor Hardwick, of Georgia, pledged "full, prompt and wholehearted support."

"Only one mine in North Dakota is affected," the message of Governor Nestos, of North Dakota, stated.

Governor Hyde, of Missouri, promised to "take immediate steps to bring about production of coal in this state."

"I am satisfied Utah will be able to handle the situation," Governor Mabey telegraphed.

Governor Dixon, of Montana, wired: "There has been no disorder in Montana and I do not expect any."

Ogle Urges Immediate Selection of Non-Partisan Commission to Investigate Coal Strike

THE next important announcement on the coal situation expected from the White House is that covering the appointment of a coal commission to investigate the present strike and the coal industry in general. Decision of the President to name such a tribunal, notwithstanding failure of his recent mediation offer, was made by Mr. Harding in a letter to Governor Sproul, of Pennsylvania. The Pennsylvania Governor had urged the President to name such a commission.

Whatever opposition the coal operators may have had to an investigating commission in the past quite evidently has disappeared, for on July 23 A. M. Ogle, president of the National Coal Association, representing the producers of bituminous coal, telegraphed President Harding that the operators favored such a course, urged that it be started immediately and made certain suggestions as to its impartial constitution.

Governor Sproul, of Pennsylvania, sent the following telegram to President Harding on Thursday, July 20:

I wish to report strong public sentiment supporting your invitation to operators and miners to resume production. I trust, however, that you are merely withholding the appointment of your commission long enough to determine whether satisfactory production will result. If this does not occur within a reasonable time, I respectfully urge the prompt creation of your commission, either as originally proposed or in modified form. If voluntary production fails, Pennsylvania will welcome exercise by you of full executive authority. Meanwhile I renew my pledge of hearty co-operation.

The President's reply, also dispatched July 20, was as follows:

Your telegram relating to appointment of coal commission, notwithstanding mine workers and a minority of mine operators declined to accept such an arbitration, is received. Matters are temporarily in suspension because when arbitration was denied there was but one consistent thing to do, as I saw it, and that was to invite production. You may expect the selection of a commission, because America's welfare will not permit those who assume to serve it to deny for any reason the supply of such a necessity as fuel and thereby jeopardize American life and health and happiness. Moreover, there was a third party to submit its case to the commission—the great American public. The primary object was the prompt and just ending of a dispute. The broader purpose was a searching inquiry into the coal industry, to learn all the causes of dispute and find a way to avoid them in the future. It may be desirable to modify the form of the commission as originally proposed, because it was first designed to meet most promptly the exigency then existing. I wished a settlement at the conference table, where all could be heard and all be represented on the commission.

It has seemed to me that time to appraise the situation, the opportunity to measure the unquestioned fairness of the proposal and sense the obligations involved, and a period in which to resume production, would either avoid drastic steps on the one hand or clearly justify them on the other. The commission will come in due time. There is an authority above all workers and operators, and that authority—the American public—must have an agency of effective expression

Thank you for your renewed pledge of co-operation, and be assured of like cordial pledges from the executives of most coal-producing states.

Mr. Ogle's telegram, dated at Indianapolis, July 23, was as follows:

In order that there may be no misunderstanding in the minds of the members of your administration or in the minds of the public concerning the attitude of the operators who attended your Washington conference, toward the appointment of a fact-finding tribunal by you, I respectfully and strongly urge upon you the advisability of immediately selecting the men who you desire to act, so that the tribunal can proceed at once to investigate the questions at issue between the miners and operators in the union fields. As we have pointed out before, we strongly feel that this tribunal should be non-partisan—without either miners or operators being included in its membership.

If it is felt advisable by you to have technical advice for the benefit of the tribunal, I might suggest that one operator could be selected by the operators and one miner by the miners to sit with your tribunal in a purely advisory capacity, but without voice or vote. I feel and I know that a large majority, if not all, of the union bituminous operators feel that such a tribunal selected by you if immediately appointed could within a comparatively short time develop outstanding essential facts in regard to the situation.

With such facts before it, the tribunal would be able to give information to the public and to you that would strengthen your hand in carrying out your program to start the mines in accordance with your proclamation to the governors of the several states involved, on a basis of wages which inevitably must mean liquidation of costs and prices to meet the demands and requirements of the public and industry.

We also have in mind that a thorough investigation of all the facts relating to the union bituminous coal fields will be extremely helpful to the American public and to the coal industry as well and should lead to some constructive suggestions.

You may be assured that in the meantime the operators of Indiana are earnestly working with Governor McCray and the local authorities to determine the best and most effective plan under which production of coal can be resumed and I am informed that the operators in all other states are working to the same end. All operators in all districts, union and non-union, unite in supporting you in your determination to protect every man in his inalienable right to work.

Operators of Southwest Reiterate Readiness To Negotiate New Wage Scale

THE Southwestern Interstate Coal Operators' Association has addressed a letter to John L. Lewis and to George L. Peck, John Wilkinson and Arch Helm, district presidents of the union, asking for a joint conference. The letter, dated July 22, 1922, and signed by H. N. Taylor, president of the association, follows:

In view of the developments and final results of the Presidential conference at Washington and its failure to secure some method of procedure in the matter of negotiations of a wage scale for the West and Southwest, we wish to remind you that the Southwestern Interstate Coal Operators' Association, the Oklahoma Coal Operators' Association and the Iowa Coal Operators' Association, comprising the Trans-Mississippi Association, have each complied with the contract requirements in the matter of making every effort possible for the negotiation of a wage scale to succeed the scale expiring April 1, 1922.

The Southwestern Interstate Coal Operators' Association met your representatives in interstate conference March 29 and again on April 10 and were advised of the unwillingness of your representatives to negotiate a wage scale for the Southwestern states, and while the interstate conference was duly organized and is now in adjournment, subject to the call of the chairman and secretary, four different efforts have been made by telegram and letter to secure a reconvening of said conference for the purpose of finishing a wage scale based upon the physical conditions of mining in the Southwest and the economic and competitive conditions of surrounding states.

We believe that had the Mine Workers seconded the efforts of the operators to make a wage scale for the Southwestern district, the same could have been done and the Southwest would have been spared this long cessation of work, now entering its seventeenth week, but each and all of the efforts put forth by the operators for the convening of the wage conference have been persistently and steadfastly declined by officers of the Mine Workers.

The attitude of the members of the Southwestern Interstate Coal Operators' Association is not antagonistic to the United Mine Workers, nor to the principles of collective bargaining, but they feel that their efforts have been ignored by the officers of the United Mine Workers, contrary to the interests of the public, the operators and the mine workers themselves, all of whom have been called upon to bear the brunt and loss and suffering due to what appears now to be certain political animosities and manipulations that have influenced the United Mine Workers organization.

We are now confronted by circumstances and conditions no longer within the control of operators and miners, but have been commanded by our national government, through direction of the President, to resume operation of mines. As loyal citizens of our government it is the purpose of our association members to make every effort possible to make fitting and proper response to the call of the President in the production of coal to meet the needs of the nation and as far as possible prevent suffering and loss to the people during the coming winter.

The Southwestern interstate joint conference of operators and miners is still organized and in session under adjournment. We have repeatedly proposed negotiations of wage scale for the Southwest, which has been persistently and steadfastly declined and we feel justified in assuming that unless we hear from you to the contrary it is your intention to further decline the reconvening of the Southwestern interstate joint conference for the negotiation of a wage scale, and if this is so is it your desire that said conference be adjourned *sine die?*

Farrington and Lewis Come to Parting of Ways; Separate Settlement Seen

ST. LOUIS, Mo., July 25—Frank Farrington, Illinois mine union president, has called a meeting of his executive committee to confer with operators in this city on Wednesday, July 26. It is rumored here that the oft-reported break with John L. Lewis has taken place and that Farrington will arrange a separate settlement with operators in the Illinois field.

The Illinois operators' scale committee was in session in Chicago all day Monday. Rice Miller, president of the Illinois Operators' Association, said after the meeting that he saw no ray of hope for an early resumption. Farrington was in Chicago all day Monday but declined to make a statement.

Government to Control Prices and Regulate Distribution of Coal; Priorities Ordered

By Paul Wooton
Washington Correspondent of *Coal Age*

Washington, D. C., July 25.—A plan for the settlement of the coal strike in the soft-coal mines providing for the guarantee of a minimum wage to mine labor with a minimum of 280 days work per year has been offered to the miners and operators, it was stated by officials at the White House today.

It was not announced whether the miners or the operators had been given opportunity as yet to consider the plan and official announcement is withheld until both parties have been approached as to its workability. It will be recalled that a minimum wage guarantee was one of the suggestions made by John L. Lewis last autumn as a solution of the union miners' troubles.

Senator Borah, chairman of the Senate Committee on Labor, today introduced a resolution calling for a commission to be appointed to inquire into and make report to the Congress on the advisability of nationalizing the coal industry.

The Interstate Commerce Commission this afternoon issued two priority orders affecting coal, both part of the program of the government to control distribution. One provides that priority be given coal in the distribution and loading of open-top cars and the other provides that in the movement of freight coal must be given preference and be shipped by the most direct route to its destination. Both orders follow the style of those of 1920 and are numbered consecutively with those of that year.

Extracts from Service Order No. 23, effective July 26, follow: "That in the supply of cars to mines upon the lines of any coal-loading carrier, such carrier is hereby authorized and directed to place, furnish and assign such coal mines with cars suitable for the loading and transportation of coal in succession as may be required for the following classes of purposes and in following order of classes, namely: Class 1—For such special purposes as may from time to time be specially designated by the commission or its agent therefor, and subject thereto. Class 2—(a) For fuel for railroads and other common carriers, and for bunkering ships and vessels; (b) for public utilities which directly serve the general public under a franchise therefor, with street and interurban railways, electric power and light, gas, water and sewer works, ice plants which directly serve the public generally with ice, or supply refrigeration for human foodstuffs, hospitals; (c) for the United States, State, County or Municipal Governments and for their hospitals, schools, and for their other public institutions, all to the end that such common carriers, public utilities, quasi-public utilities and governments may be kept supplied with coal for current use for such purposes, but not for storage, exchange, or sale.

"Class 3—As to each coal-loading carrier which reaches mines in Pennsylvania, Ohio, West Virginia, Kentucky, Tennessee and Alabama for bituminous coal consigned to any Lake Erie port for transshipment by water to ports upon Lake Superior and subject thereto. Class 4—As to all such carriers by railroad, commercial sizes of coal for domestic use and subject thereto. Class 5—Other purposes. No coal embraced in classes 1, 2, 3 or 4 shall be subject to reconsignment or diversion except for some purpose in the same class or a superior class in the order priority herein prescribed."

DISTRIBUTION and rationing of the available coal supply by the government under the direction of Secretary Hoover and the Interstate Commerce Commission, along with plans to prevent profiteering by withholding cars from mines which charge exorbitant prices, having been declared legal by Attorney General Daugherty on Monday, July 24, the plan will be put into effect within a few days.

The plan tentatively drawn up follows:

(1) A committee in Washington, to be appointed by the President, of representatives of the Department of Commerce, the Interstate Commerce Commission, the Department of Justice, and the Department of the Interior, to be designated the Presidential Committee. This committee to have general supervision of the measures to be taken hereunder and to authorize the execution of such of these measures as may be necessary from time to time.

(2) The Administrative Committee, comprising representatives of the Presidential Committee together with representatives of operators, representatives of the railways, and, where necessary, representatives of the larger consuming groups.

(3) The Presidential Committee will establish a representative in each coal-producing district.

(4) The Presidential Committee will appoint a committee of operators in each district to be nominated by the district operators' association or independent operators (in case of failure of the operators to take such action the Presidential Committee may appoint such operators as they see fit on such committee). The members of these district committees may be changed as determined upon by the Presidential Committee.

(5) The Presidential Committee will co-operate with the Interstate Commerce Commission in carrying out preferential orders issued by the Commission.

(6) The governmental representatives in the districts with the co-operation of the district committees shall advise the agencies of the Interstate Commerce Commission as to local car movement to effect the purposes of this plan.

(7) The operators will proceed with their usual business until they are affected by preference orders.

(8) It is expected that the district committees under authority of the Presidential Committee will recommend the allotment of cars on the basis of those who conform to the fair prices to be agreed upon with the Presidential Committee.

(9) When the operators demand, then suitable guarantees shall be given for payment by persons buying under priority orders.

(10) The railroads will be requested to appoint a representative to deal with purchases of railway fuel.

(11) The basis of prices agreed upon between the operators and the Secretary of Commerce on June 1 are to be maintained, except where varied by the Presidential Committee, and this same basis of price determination shall be applied to all districts which are so far not co-operating.

The whole of the above is tentative, pending further consideration by the Interstate Commerce Commission, the Department of Justice, Department of Interior, and the Department of Commerce.

After agreeing to the government's tentative plan the representatives of the operators returned on Tuesday to their districts, where an effort will be made to obtain its endorsement by a majority of the operators of the districts. If a majority cannot be obtained a committee for the district will be appointed by the President's committee. The plan will apply to all districts where a consequential amount of coal is being produced and will include anthracite, if any production is obtained.

Secretary Hoover stated on Tuesday that the Attorney General is positive that it is entirely legal to give preference in the matter of car supply to those who treat the public right. No one intent on robbing the public can get a car, Mr. Hoover declares. He emphasized the point that a group of operators in the center of the western Kentucky field are adhering to the maximum price of $3.50, despite the fact that some of their fellow operators sold coal on Monday as high as $13.

Secretary Hoover pointed out that no money is available for the organization which the government has set up. He intimated that legislation may be required to furnish the necessary appropriation. He called attention to the fact that the priority plan would displace contracts.

C. E. Bockus was elected chairman of the operators' committee. The Department of Justice was represented at the conferences held at the Department of Commerce. Secretary Hoover presided. Commissioner Aitchison, of the Interstate Commerce Commission, and the Director General of Railroads Davis were parties to the conferences, as were officials of the American Railway Association. George Otis Smith, director of the Geological Survey, and A. H. Holbrook, acting director of the Bureau of Mines, also participated in the conferences.

Whether or not the administration asks it, there is certain to be an effort, before this session of Congress closes, to put through fact-finding legislation and possibly legisla-

tion giving the President special powers to be exercised in case of an emergency.

A question just now receiving the attention of administration officials is just how far the responsibility of the federal government goes in rationing coal. Some are of the opinion that when the needs of the domestic consumer, of the railroads, of the public utilities and of certain food industries are met there should be no further effort to apportion any remainder among other users, on the basis of their essentiality.

While regret is expressed that the President called the operators and miners together at the time he did, and that after getting them together he failed to outline definitely just what would be covered by his proposed arbitration, there is general support for his conduct of the situation since the first conference deadlock. Frequent claims were made during the conferences by some of the operators that the strike was about to begin to disintegrate when the federal government interfered, thereby giving the strikers encouragement. Some operators said they were just on the point of producing coal when the conference was called. Nearly all of them contended that protection was all that was needed to start up their mines. Since arbitration had been declined it is believed by many that the President was justified in sending the operators home to give them an opportunity to make good their claims that they could produce enough coal to meet the situation.

It is admitted that the chances were much against the operators being able to produce enough coal in union territory to tide over the situation even if there had been no railroad strike. Some contend that the time was too precious to gamble any of it on such a hopeless plan. The tightening up of the rail strike dissipated any such chance as may have existed and incidentally gives the operators a good excuse for not trying to carry out the hazardous plan to which they were committed.

The responses from the state governors are not encouraging. They show that public sentiment is with the President but they give little indication that coal will be produced. The most encouraging reply was from the Governor of Michigan, who tried moral suasion, only to be told that the mines could not be opened without the consent of John L. Lewis. The only alternative is to take over the mines, so the Governor telegraphed the President asking his advice as to how this could be done. The latest advices indicate that the mines cannot be taken over until after the Legislature has been called into session. In addition, it would be necessary to have appropriations to furnish operating capital. If the Michigan mines were taken over the principal value of the move would be in the establishment of a precedent, since the state produces only 6 per cent of the bituminous coal it consumes.

Governor Sproul, of Pennsylvania, acted promptly and sent troops but he emphasized the necessity for keeping the arbitration proposal alive.

The responses from the governors indicate clearly that the strike cannot be settled by force. Even were the federal government to comply with the request of the Governor of Iowa that troops be sent to protect the state's mines, it would be a dangerous thing to do, all admit. Indiscretion on the part of an irrresponsible federal soldier might precipitate a grave crisis.

Talk of taking over mines by the federal government has almost died out during the last few days. The realization that all the larger mines would have to be operated, if a supply of coal sufficient for the country's needs were to be produced, brought up a train of problems in addition to that of policing the vicinity of those mines. If the government were to furnish the working capital, arrangements would have to be made for the use of several hundred millions of dollars and the setting up of a gigantic business operation. The only other way to handle such a situation would be to co-operate with the mine owners and use their capital. Many objections to such intimate co-operation with one of the parties to the strike can be foreseen. Even the matter of protecting properties presents unusual difficulties in such fields as those of Illinois and Indiana, where there are no housing facilities at the mines. Before the federal government could even start to seize a mining property it probably would be necessary to declare martial law.

Production has been reduced to the point where the situation is hurrying to its climax. The one thing which might precipitate a settlement, and it is admitted that it is only the barest sort of possibility, is a separate peace in Illinois.

Even if there were no railroad strike, transportation troubles of a serious character would be certain to ensue in an effort to supply the territory north of the Potomac and Ohio rivers, which consumes 80 per cent of the coal output, from mines south of that line.

Bituminous coal must be mined at the rate of 12,000,000 tons a week for the next six months if all requirements of the country are met. It is evident, even if the effects of the shopmen's strike are overcome, that no such production can come from the non-union fields and from the weaker outlying union districts. The operators' pre-strike estimate of 6,000,000 tons of production from non-union territory has not been approximated, when one considers the average production during the sixteen weeks that the strike has lasted. The highest production obtained in a single week since the strike began was 5,360,000 tons, during the twelfth week. Production now has fallen to the point where it promises not to exceed 3,600,000 tons this week.

Defer Assigned-Car Hearing Till Aug. 14; Gutheim and McAuliffe Testify

TO CONFORM with the desires of both the carriers and the operators of coal mines, the Interstate Commerce Commission has postponed further hearings in the assigned-car case until Aug. 14. This action was taken at the completion of the testimony of A. G. Gutheim, principal witness for the carriers.

Mr. Gutheim presented an imposing array of facts and figures intended to prove that assigned cars are essential to a regular and adequate supply of railroad fuel. He admitted that there is a human element to consider in the situation which does result in some misinterpretation of the rules and in some inequality of treatment, but be contended that the disadvantages are far outweighted by the advantages of the system.

Eugene McAuliffe testified briefly. He opposed any use of assigned cars or of private cars. He said cars should be distributed according to the ability of each mine to load. He took issue with the argument that assigned cars are necessary to keep the railroads properly supplied with coal.

Upper Potomac Operators Deny Car Shortage; Intimidation Hampers Operation

SHARP issue is taken by operators of the Upper Potomac field with the statement of Governor Ritchie, of Maryland, to the President in which he said: "The Upper Potomac mining district continues partial operations but is handicapped by the railroad strike, which prevents coal being shipped from the mines."

"Governor Ritchie's wire to President Harding regarding Upper Potomac district being handicapped by railroad strike incorrect," John F. Palmer, secretary of the Upper Potomac Coal Operators' Association, says. "No car shortage in this district since the strike began. Five hundred surplus cars available today, also sufficient motive power."

To this Secretary Palmer has added the statement that "There never has been a car shortage in the Upper Potomac field since the strike began. It is not a question of car shortage but a question of intimidation of striking miners against men who want to work." There is a surplus of cars on the Western Maryland R.R.

Operators in the Georges Creek field, having had no protection against intimidation and violence, have engaged in no general effort to get back to a normal basis nor do they intend to do so in the absence of military protection, no matter what may happen, it is said.

Sixteenth Week of the Coal Strike

EDITORIAL REVIEW

FOLLOWING the break-up of the peace moves of President Harding in the coal strike when on Monday, July 17, the announcement was made that the miners and a portion of the soft-coal operators had rejected the plan of Mr. Harding to put the mines back at work, there have been no important developments in the situation. On Tuesday the President sent a call to the governors of 28 coal-producing states asking that they give protection to such men as volunteered to return to work in the mines under the invitation that he had extended to the operators to "return home and open the mines." So far no mines are reported to have been opened under this program and as the days pass there is less likelihood of any important increment to production by this route. The hard-coal producers are not disposed to hazard their valuable top works in an effort to get out coal even if sufficient men could be induced to enter the mines. The Pittsburgh operators are said to be actively seeking to open a few mines and in the newly created "open-shop" areas, as Kanawha, progress would be more rapid than it is were it not for transportation disability on certain roads.

An investigation is being made by Attorney General Daugherty to determine whether the rail and coal strikes are sympathetic strikes. "There appears to be a relationship between the rail and coal strikes, but whether it is conspired or inspired I cannot say," said Mr. Daugherty.

C. J. Albasin, Commissioner for the Pittsburgh Vein Operators Association of Ohio, states that eastern Ohio operators intend to obey the mandate of the government to resume mining operations, but he qualifies this statement by adding that the policy of the eastern Ohio operators has not yet been definitely fixed.

Mr. Frank Ledvinka, president of the miners' district for eastern Ohio, at the same time stated that if any attempt were made to reopen the mines before a settlement is made he would call out the union pumpers and maintenance men who have been working since the strike began.

Two developments of the week served to stiffen the morale of the strikers in the non-union fields of Central Pennsylvania. The first was the rejection of President Harding's arbitration proposal by the mine workers because all operators in the county were not brought within its jurisdiction, after the strikers here had about reconciled themselves to be left "holding the bag" after the union miners and operators got together. The second was the calling out of the guardsmen. While that was done by the Governor to prevent any disorders it will be impossible to convince the strikers it is said that the soldiers were not brought into the coal fields in an effort to force them to go back to work.

As a possible solution to the coal difficulties Senator King, of Utah, on Friday, July 21, introduced a resolution in the Senate proposing the appointment of a commission of five members by the President to investigate the strike and related problems in the coal industry with a view to their solution. The Senator does not specify the manner in which the commission shall be appointed, leaving it to the discretion of the President.

At Hampton Roads the situation has shown little improvement over a week ago. Shippers who had steamers under charter have many of them exercised their option of cancelling, receipts of coal at the piers having become so undependable. The output of the smokeless fields has been very much affected, and since these districts were caring for the Eastern situation measurably well until July 4 buyers are quite apprehensive. A few interests have been offering spot coal at increasingly high prices, the Hoover level having been left far behind, once demand tended to exceed supply. Something of a fleet has accumulated at Hampton Roads, where a few weeks ago the accumulation was one of coal rather than of ships. Prices as high as $7.50 and $7.75 f. o. b. vessel at Norfolk are said to have been realized within a few days.

Sproul Calls Troops to Maintain Order In Pennsylvania Bituminous Region

GOVERNOR SPROUL, of Pennsylvania, signed an order July 20 detailing the 104th Cavalry, 52d Machine Gun Squadron and Motor Transport Co. 110, of the National Guard, to active service in the bituminous coal region of the state. The troops 1,110 in number, entrained July 20 for service at strategic points in Washington, Westmoreland, Cambria, Indiana and Somerset Counties, under command of Colonel E. J. Stackpole, Jr., of Harrisburg, commander of the 104th Cavalry. A proclamation was issued by the Governor calling upon the constituted authorities and the citizens to aid in seeing that order is kept.

Coal and Coke Production Suffers Slight Setback in Connellsville Region

DURING the last week there was a slight falling off in the production of coal and coke in the Connellsville coke region, due to the action of the government in the coal strike and the condition of the Baltimore & Ohio R.R. brought about by the railroad strike, cars being scarce.

The following companies are operating, mostly on a considerably reduced output: Pittsburgh Steel Co., at about 10 per cent of normal; W. J. Rainey, Inc., about 10 per cent; American Coke Corporation, about 5 per cent; H. C. Frick Coke Co., about 60 per cent; Reliance Coal & Coke Co., about 20 per cent, Consolidated Coke Co., Connellsville Central Coke Co., Hoover Coal & Coke Co. and Republic Iron & Steel Co. each at about 10 per cent; Poland Coal Co. and Redstone Coal & Coke Co., about 15 per cent each; American Manganese Co., about 50 per cent; Mather Collieries Co. and Crucible Fuel Co., about 30 per cent; Buckeye Coal Co. and Forsythe Coal Co., about 25 per cent; Locust Hill Coal Co., about 50 per cent; Fancy Hill Coal Co., about 50 per cent; Walnut Hill Coal Co., about 50 per cent; Penn-Pitt Coal Co., about 25 per cent; Westmoreland-Fayette Coal & Coke Co., West Point Marion Coal Co., Atlantic Coal Co., Harrah Coal Co., Rich Hill Coal Co., Southern Connellsville Coke Co., W. J. Parshall and McIntyre Coal Co., about 75 per cent; Diamond Coal & Coke Co., Hillman Coal & Coke Co., Franklin Coke Co. and Forsythe Coal Co.

The following companies are idle, not trying to operate: Brier Hill Coke Co., Century Coke Co., Snowden Coke Co., Shamany Coal Co., Champion Gas Coal Co., Waltersburg Coke Co., Stern Coal & Coke Co., Republic Coal & Coke Co., Etna-Connellsville Coke Co., Union Connellsville Coke Co., Eastern Coke Co., McKeefry Coal Co., Husted-Seamans Coal & Coke Co., Atlas Coke Co., Superior Coal Co., Rosedale Coal Co., La Belle Coke Co., Lincoln Coal & Coke Co., Puritan Coke Co., Bourne-Fuller Coke Co., Fayette Coke Co., Washington Coal & Coke Co. and Oliver & Snyder Steel Co.

Midwest Region Seeks Ways of Getting Back to Work; Michigan is About Ready

COAL-MINING states of the Middle West are trying their level best to accept President Harding's "invitation" to return to work and get out the coal the country needs. Michigan thinks it will soon be producing—at least for state and municipal use. Indiana and Illinois are hamstrung by the statutes on the books of each state which, in effect, prevent the mining of coal by non-union men. The question is can the two states shake themselves free from those statutes? In Indiana Governor McCray is making a try at a state settlement of the coal strike before action centers against the statute. He invited operators and mine leaders to confer with him in Indianapolis Tuesday, July 25, with the hope of getting somewhere.

In Illinois Lieutenant Governor Sterling, in the absence of Governor Len Small, is doing some talking, but little else.

He announced he had asked Frank Farrington, president of the state miners' organization, to meet him. Mr. Farrington denies any such invitation, though he declares he would do anything he legitimately could to aid the Lieutenant Governor in any plan he might have to end the strike.

Business organizations of Illinois are loudly urging that a special session of the Legislature be called at once to repeal the miner's qualifications act and that thereafter the operators open the mines with non-union labor under state protection. Letters asking for a special session have been sent by the Illinois Manufacturers' Association and the Illinois Chamber of Commerce. They also suggest that the special session take up the question of establishing a state constabulary. The Chamber of Commerce, in its letter to Governor Small, requests him to demand that President Farrington and the operators get together within 48 hours, to submit the strike questions to arbitration if they cannot settle them themselves, and to resume mining not later than Aug. 1 on some sort of temporary basis if no permanent one has been worked out by that time.

Michigan proposes to go ahead in spite of the solemn utterances of John L. Lewis, International mine union president, that miners there will not go back to work unless the state gets the permission of the union. Governor A. J. Groesbeck, having received no assurance from Washington that federal power will support him in a plan to seize the mines, has appealed to the miners to mine coal for public institutions if for nobody else. He gave them until Monday night the 24th to answer, implying in his message that the state would act if they did not.

Coal Shortage Begins to Strike Home In Northwest and Middle Regions

AT LAST the home folks are beginning to feel the pinch of the coal shortage throughout the territory west of Indiana. Heretofore the strike's effect has been felt principally by railroads and large industrial consumers. But with transportation lines sagging—partly for lack of fuel—with electric light and water and gas plants all publicly figuring on the number of days they can run before shutting off service and with retail dealers turning away the first waves of people who want to buy their winter's coal at once, the cold facts of the strike are sinking home.

In Missouri there is considerable quaking on the part of the public. St. Louis public institutions are within a few days of the end of their coal supplies. The Governor of Missouri is contemplating a coal apportionment board for the state and the Mayor of St. Louis is planning the same service for the city. Throughout Illinois many a small public-utility plant is preparing to fall back on the large public-service companies. Railroads are cutting off more and more trains—because of coal shortage primarily, the officials assert—and boat lines on the Lakes, notably that operated by the Buffalo Steamship Co., have reduced schedules, thus cutting down the flow of shipping. Public institutions in Chicago, however, are supplied for at least 45 days and many of them longer.

Senator King Preparing Bills to Settle Strike; Mediation Commission Proposed

SENATOR KING, of Utah, who was one of the Senators who conferred on the coal strike recently with Samuel Gompers, head of the American Federation of Labor, is preparing to introduce before the end of the month, unless the coal strike is ended, bills designed to meet the situation. One proposes an investigation of all the phases of the strike with a view of determining which side to the controversy is at fault, and to expose it to the public with a view of bringing such public pressure as to force yielding on their part, which would operate to settle the issue. Another bill in preparation proposes that a commission shall be appointed by the President to adjudicate the controversy.

In connection with the strike it is said that the Shipping Board can operate vessels sufficient to import from foreign countries as much as 500,000 tons of coal a month if importation of coal has to be resorted to.

U. S. Commerce Chamber Members Asked To Support Harding Resumption Plan

JULIUS H. BARNES, president of the Chamber of Commerce of the United States, in a letter of July 20 called upon all members of the organization to take active steps in support of the program which President Harding has urged upon the governors of the coal-producing states.

Efforts at national arbitration in accordance with the proposal of the President having failed, Mr. Barnes points out that not only must law and order and the right of every man to work where he pleases without molestation be maintained by states and local authorities, backed up by the federal government, but that the settlement of the underlying controversy over wages and working conditions is now in the hands of governors and state authorities. Such settlements are imperative, he declares, if the country is not to experience suffering for lack of fuel when the cold weather sets in and industries are not to close down, thereby creating widespread unemployment.

Campaign of Frightfulness Unearthed Following Killing of Sheriff Duvall

SIMULTANEOUSLY with the news of the trouble near Wellsburg, W. Va., when early in the morning of July 17 a mob of striking miners from Avella, Pa., attacked the Cliftonville mine of the Richland Coal Co., in Brooke County, and killed Sheriff H. H. Duvall, announcement was made by West Virginia state officials that they had discovered and were investigating a statewide campaign of frightfulness planned by a secret organization, the dynamiting of a train of miners in Boone County being regarded as the first evidence of this plot. Under radical leadership and incendiary speeches, striking miners are being urged to tear down the flag and take the law into their own hands and the situation in West Virginia is a serious one.

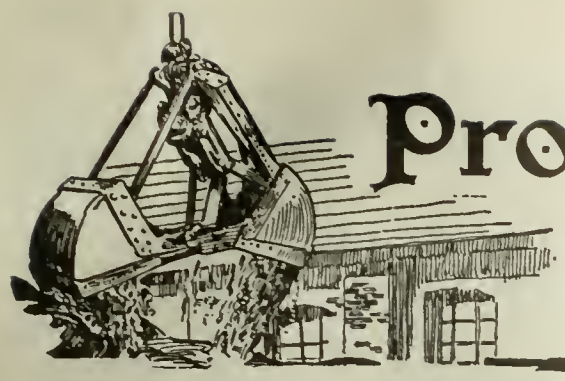
Companies That Suffered in Herrin Riot File Suits Against Williamson County

THE two companies principally involved in the June 22 massacre of non-union men working at the Southern Illinois Coal Co.'s strip mine near Herrin, Ill., have filed suits against Williamson County to recover $217,000 for property damaged by the uncontrolled mobs of attackers. The Southern Illinois Coal Co. asks $200,000 and the Hamilton Lester Coal Co. $17,000 for its steam shovels blown up during the attack. None of the families of the 19 men killed by the mob has filed suit against the county. Under the law, as interpreted by an attorney for the coal companies, each family can recover up to $5,000.

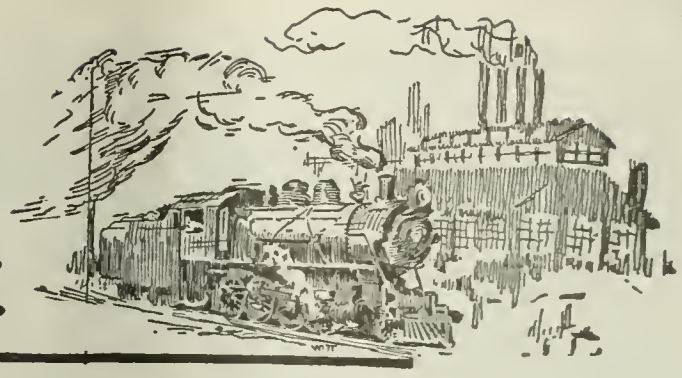
Utah is Calm; National Guardsmen Stay On the Job; More Men Digging Coal Now

THINGS are very quiet in the Utah strike area, but nothing has been said so far in official circles about recalling the National Guard. Most of the strikers have been disarmed now, it is believed, and it would seem that the danger of the conflagration feared a short time ago has passed. More men are being taken on at the mines, but so far no concerted effort has been made to break up the strike, and the miners' leaders profess to be confident of victory.

ANNOUNCEMENT WAS MADE by the Pennsylvania Coal & Coke Corporation, with headquarters at Cresson, Pa., upon the return of the president, T. W. Watkins, that it has accepted the proposal of President Harding of July 10 for the resumption of operations at its mines, which are located in various parts of Cambria County. Mr. Watkins has been the representative of the Central Coal Association in the negotiations at Washington and as the association has been against the acceptance of the proposal, Mr. Watkins has withdrawn as the association's representative.



Production and the Market



Weekly Review

WITH a speed that takes away the breath, coal prices last week soared to levels no one ever expected to see again after the orgy of 1920. Consumer demand is now centered on a very small tonnage, for of the coal that is getting over the strike paralyzed rails a large portion is going on short and to a lesser extent long term contracts. The majority of the spot coal reaching the market is priced at the level pegged by Secretary Hoover in June and it is a smaller portion that is rising to the bait of the long green held alluringly before the eyes of the operators by the hungry buyer.

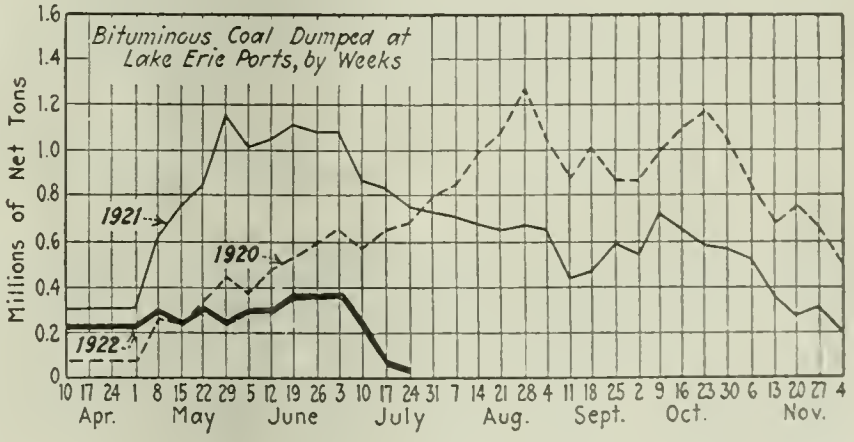
Coal Age index of mine prices of bituminous coal rose sharply to 460 on Monday, July 24, a gain of 139 points in a week. The average spot price corresponding was $5.57, compared with $3.89 a week previously. Western Kentucky, a district that did not enter into a price agreement with Mr. Hoover, led the procession, prices for that coal reaching $11.50 on Saturday, July 22, after a series of sensational jumps averaging a dollar a day for a week. Eastern coals were but little laggard, high volatile registering $11 on Monday, July 24.

British Coal Bought Heavily for Import

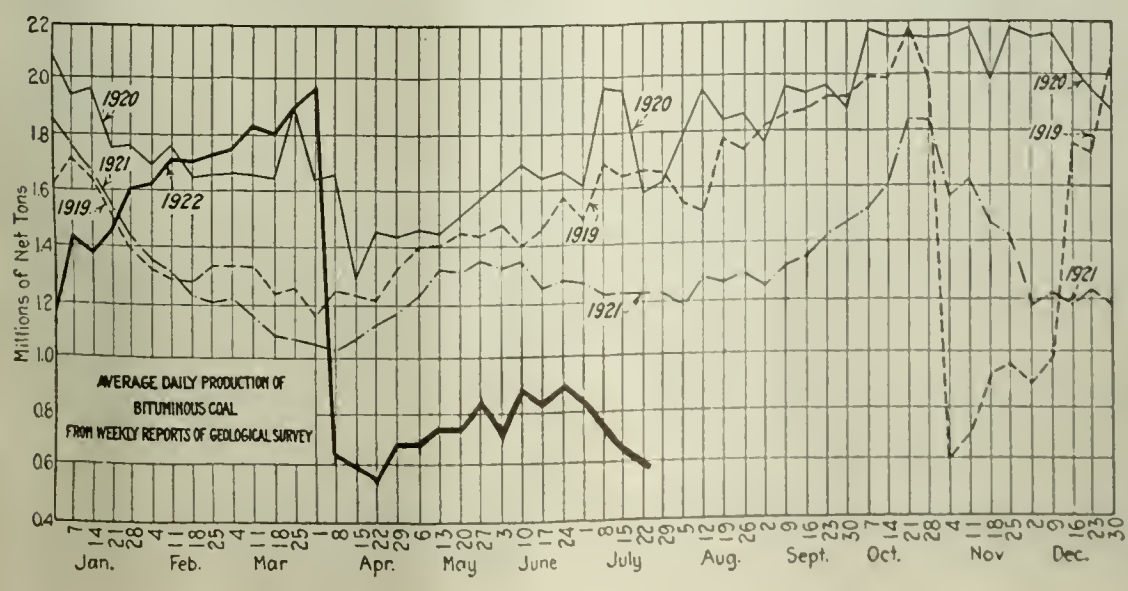
The feature of the week was the wholesale purchase of British coals for importation. Not that the price on this side has been a bar to imports for some time past but that opinion suddenly crystalized in the belief that the strike had yet a long course to run and that the reserves in this country are so low that several months must elapse before demand dies down, prompted this stampede to the British Isles. Within a week after the run began not less than 500,000 gross tons of English coal had been bought and ships chartered. In fact it is lack of ships that has halted the movement. A short time only will be required, however, to condition and get into English ports all the ships that are required to carry over the coal that can expeditiously be unloaded on this side. Railroads, public utilities, industrials, jobbers and even steamship companies are now in the game, which promises for the free lance all the excitement, profits, and chances of loss eventually found in the export game in 1920.

Production of bituminous coal lags with the blighting effect of the rail strike, which, according to John Lewis, has quite by coincidence been most effective on those roads serving the non-union coal fields which have been the mainstay of the country's coal supply so far throughout the coal strike.

To make as effective as possible what little coal is trickling through the rail strike lines and to hold down the price, the government at Washington is working



out a scheme of rationing and price control that is planned to go into effect this week. The railroads and utilities are to be the first to get coal with certain other essentials. Beyond that the coal will not go far for the needs of some of these are becoming increasingly urgent. At the present rate there will be a sorry looking coal pile in Uncle Sam's back yard on Sept. 1. Coal shortages in the past in this country have been more or less myths existing in the minds of consumers,



Estimates of Production

(Net Tons)

BITUMINOUS

Week ended:	1921	1922
July 1 (*b*)	7,658,000	5,226,000
July 8 (*b*)	6,165,000	3,678,000
July 15 (*a*)	7,401,000	4,114,000
Daily average	1,234,000	686,000
Calendar year	210,030,000	195,644,000
Daily average calendar yr	1,279,000	1,182,000

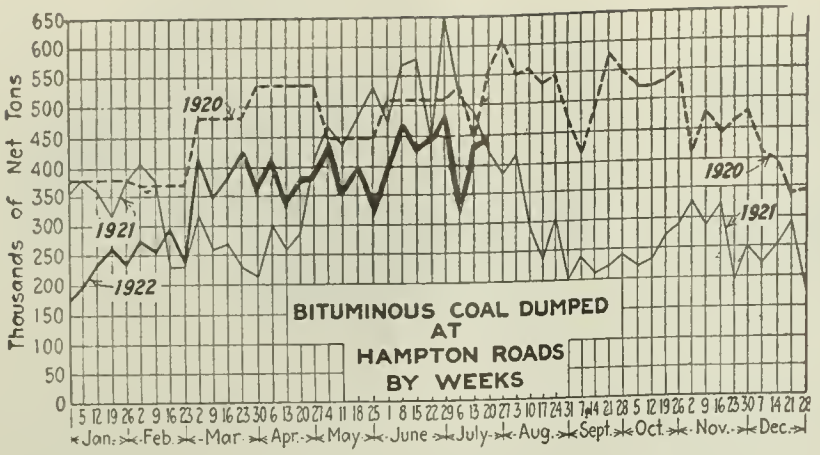
ANTHRACITE

July 1 (*b*)	1,868,000	25,000
July 8 (*b*)	1,525,000	23,000
July 15 (*a*)	1,876,000	31,000

COKE

July 8 (*b*)	34,000	94,000
July 15 (*a*)	44,000	98,000
Calendar year	3,476,000	3,408,000

(*a*) Subject to revision. (*b*) Revised from last report.



but this time, unless the miners get to work very, very soon, the absence will be real. A shivering lot of citizens will be hovering around the gas range or warming their toes by some neighbor's fireside this fall. The coal industry will come in for a lot of verbal fixing by these same citizens.

BITUMINOUS

Traffic congestion on the railroads has so interfered with the movement of freight that the production of the non-union coal fields has been and still is shrinking. Preliminary reports to the Geological Survey for the week of July 19-22 indicate a new low record of around 3,600,000 tons, as compared with the maximum in the twelfth week of the strike of 5,363,000 tons. The Survey notes that "In comparison with normal years the present deficit in production is even more marked. Final returns on the fifteenth week of the strike (July 10-15) show 4,114,000 tons of bituminous coal and 31,000 tons of anthracite, a total for all coal of 4,145,000 tons. In the corresponding week of 1921, a year of depression, the total quantity raised—anthracite and bituminous—was 9,280,000 tons; in 1920 it was 11,500,000 tons. In other words, considering anthracite and bituminous coal as a common source of supply, the present weekly output is from 5,000,000 to 6,000,000 tons below normal.

"The cause of the decrease was unmistakably traffic congestion on railroads serving the non-union fields. In Southern West Virginia and Eastern Kentucky from which the bulk of the country's supply during the strike has come, almost every field reported acute transportation disability. In Virginia, Western Kentucky and Tennessee the interruption of car supply was less serious and in Alabama and the Far West it increased.

"The trend of production is shown by the following table of cars loaded daily. On Monday railroads reported loading 12,657 cars, a decrease of 2,437 cars below the preceding Monday. By Thursday loadings had dropped to 10,800 cars, the lowest on any Thursday since the strike began.

	1st Week	11th Week	12th Week	13th Week	14th Week	15th Week	16th Week
Monday	11,445	15,474	15,311	16,747	11,039	15,094	12,657
Tuesday	11,019	15,849	16,622	15,748	334	12,909	10,915
Wednesday	11,437	14,905	17,032	15,656	11,979	12,398	10,895
Thursday	1 1,090	14,884	16,432	16,402	14,521	11,593	10,800
Friday	11,296	13,933	16,073	15,980	14,631	11,606	.....
Saturday	8,888	13,465	13,993	12,603	12,523	9,694	.....

"The reports so far received indicate no significant change in the number of men at work. Production in non-union Pennsylvania during the first half of the present week showed a slight decrease from the week preceding."

Some impatience is being shown in official circles in Washington by the action of New England and the Northwest in again demanding preferential treatment in the matter of coal supply. Until very recently, coal went begging at the Lower Lake ports and some 300,000 tons recently had to be shipped back from Upper Lake docks to other buyers because the Northwest would not pay the price asked.

New England uses less coal than the Chicago industrial area, yet its demands are heard above those of all other sections. New England, sooner or later, will have to put up with the inconvenience of burning bituminous coal, one official said. He thinks it would be better for New England to burn a much larger proportion of soft coal this winter and send such reduced amounts of anthracite as may be available into sections which had not such a favorable opportunity of securing bituminous coal.

Lake dumping dropped last week to 138,438 tons, of which 15,638 tons were vessel fuel and 122,800 tons were cargo coal. This compared with 170,000 tons the week previous, 236,000 tons the week before and 370,000 tons the week ended July 2, indicates the rate at which the Lake movement is slumping. Vessel fuel is so scarce and so high-priced that boats in the ore trade are being threatened with a tie-up and passenger boat schedules are already cut. Of the slightly more than 4,000,000 tons of Lake cargo coal this year but 80 per cent has gone to normal destinations.

Movement of both hard and soft coal through the New England gateways continues at the low rate of past weeks, averaging around 400 cars of anthracite, nearly all steam sizes, and about 500 cars of bituminous. The flow of soft coal will soon drop even below that figure. The full effect of the shortage in the East will show up as soon as coal en route has passed the gateways.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	June 26 1922	July 10 1922	July 17 1922	July 24 1922†
Smokeless lump	Columbus	$3.65	$3.65	$3.95	$5.50@$6.50
Smokeless mine run	Columbus	3.45	3.45	3.75	5.50@6.50
Smokeless screenings	Columbus	3.35	3.25	3.45	5.00@6.00
Smoke'ess lump	Chicago	3.65	3.65	4.15	7.50@9.00
Smokeless mine run	Chicago	3.40	3.45	4.15	7.50@9.00
Smokeless lump	Cincinnati	3.65	3.75	4.40	3.75@7.00
Smoke'ess mine run	Cincinnati	3.45	3.50	3.80	3.50@7.00
Smokeless screenings	Cincinnati	3.15	3.25	3.25	3.25@6.50
*Smokeless mine run	Boston	6.10	6.35	6.55	7.50@7.75
Clearfield mine run	Boston	3.30	3.50	3.40	3.50@3.75
Cambria mine run	Boston	3.65	4.00	3.85	3.75@4.25
Somerset mine run	Boston	3.40	3.65	3.50	3.50@4.00
Pool 9 (Super.Low Vol.)	New York	4.40	4.40	.....	.....
Pool 9 (Super.Low Vol.)	Philadelphia	4.30	4.70	4.75	.....
Pool 9 (Super.Low Vol.)	Baltimore	3.75	4.40	4.50	4.25@5.25
Pool 10 (H.Gr.Low Vol)	New York	3.95	4.25	4.80	8.75
Pool 10 (H.Gr.Low Vol.)	Philadelphia	4.00	4.45	4.55	.....
Pool 10 (H.Gr.Low Vol.)	Baltimore	3.75	4.40	4.50	4.25@5.25
Pool 11 (Low Vol.)	New York	3.75	4.05	4.60	8.00@8.50
Pool 11 (Low Vol.)	Philadelphia	3.75	4.25	4.40	.....
Pool 11 (Low Vol.)	Baltimore	3.75	3.90	4.30	4.25@5.25
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	3.90	3.90	4.70	8.50@9.00
Pool 54-64 (Gas and St.)	Philadelphia	.....	3.65	4.40	.....
Pool 54-64 (Gas and St.)	Baltimore	3.75	3.90	4.10	4.25@5.25
Kanawha lump	Columbus	3.65	3.65	4.00	5.50@6.50
Kanawha mine run	Columbus	3.40	3.40	3.65	5.25@6.25
Kanawha screenings	Columbus	3.30	3.15	3.40	5.25@6.25
W. Va. Splint lump	Cincinnati	3.50	3.90	4.25	3.75@6.50
W. Va. Gas lump	Cincinnati	3.50	3.90	4.25	3.75@6.50
W. Va. mine run	Cincinnati	3.40	3.75	4.00	3.50@7.00
W. Va. screenings	Cincinnati	3.15	3.35	3.60	3.25@6.25
Hocking lump	Columbus	3.65	3.65	3.80	5.25@6.25
Hocking mine run	Columbus	3.45	3.40	3.70	5.00@6.00
Hocking screenings	Columbus	3.45	3.20	3.40	5.00@6.00
Pitts. No. 8 lump	Cleveland	3.95	4.25	4.75	7.00@7.50
Pitts. No. 8 mine run	Cleveland	3.90	4.00	4.40	7.00@7.50
Pitts. No. 8 screenings	Cleveland	3.90	4.00	4.40	7.00@7.50
Midwest					
West Ky. lump	Louisville	4.10	4.75	6.15	10.00@10.50
West Ky. mine run	Louisville	4.10	4.90	6.15	10.00@10.50
West Ky. screenings	Louisville	4.10	4.90	6.15	10.00@10.50
West Ky. lump	Chicago	4.20	5.05	6.50	10.00@12.00
West Ky. mine run	Chicago	4.20	5.00	6.50	10.00@12.00
South and Southwest					
Big Seam lump	Birmingham	2.20	2.35	2.35	2.30@2.50
Big Seam mine run	Birmingham	1.95	2.15	2.20	2.20@2.50
Big Seam (washed)	Birmingham	1.85	2.40	2.40	2.50
S. E. Ky. lump	Chicago	3.65	3.75	4.15	9.00@9.75
S. E. Ky. mine run	Chicago	3.40	3.65	4.15	9.00@9.75
S. E. Ky. lump	Louisville	3.60	3.90	4.40	9.00@9.50
S. E. Ky. mine run	Louisville	3.40	3.70	4.15	9.00@9.50
S. E. Ky. screenings	Louisville	3.30	3.50	4.25	9.00@9.50
S. E. Ky. lump	Cincinnati	3.75	3.90	4.25	7.00
S. E. Ky. mine run	Cincinnati	3.35	3.75	4.00	3.50@6.50
S. E. Ky. screenings	Cincinnati	3.15	3.25	3.75	3.25@6.00
Kansas lump	Kansas City	5.00	5.00	5.00	5.00
Kansas mine run	Kansas City	4.25	4.25	4.75	4.75
Kansas screenings	Kansas City	3.05	2.80	4.25	4.25

*Gross tons, f. o. b. vessel, Hampton Roads.
†Advances over previous week shown in heavy type, declines in *italics*.
NOTE—Smokeless prices now include New River and Pocahontas.

COKE

Production of beehive coke recovered after the July 4 holiday but is still below the rate of output in June. Blast furnaces are depending on byproduct coke coming from supplies of coal mined and stored before the present drop in production.

MONTHLY OUTPUT OF BYPRODUCT AND BEEHIVE COKE IN THE UNITED STATES (a)

(Net Tons)

	Byproduct Coke	Beehive Coke	Total
1917 Monthly average	1,870,000	2,764,000	4,634,000
1918 Monthly average	2,166.000	2,540,000	4,706,000
1919 Monthly average	2,095,000	1,638,000	3,733,000
1920 Monthly average	2,565,000	1,748,000	4,313,000
1921 Monthly average	1,660,000	463,000	2,123,000
March, 1922	2,137,000	732,000	2,869,000
April, 1922	2,208,000	528,000	2,736,000
May, 1922	2,537,000	432,000	2,969,000
June, 1922	2,580,000	458,000	3,038,000

(a) Excludes screenings and breeze.

To make the coke produced, it is estimated, required 4,429,000 tons of coal, of which 3,707,000 tons was used in byproduct ovens and 722,000 tons in beehive ovens. The present monthly rate of consumption of coking coal is thus about 1,300,000 tons above the 1921 average but is still 2,660,000 tons below the average in the year of maximum demand, 1918.

ESTIMATED MONTHLY CONSUMPTION OF COAL FOR MANUFACTURE OF COKE

(Net Tons)

	Consumed in Byproduct Ovens	Consumed in Beehive Ovens	Total Coal Consumed
1917 Monthly average	2,625,000	4,354,000	6,979,000
1918 Monthly average	3,072,000	4,014,000	7,086,000
1919 Monthly average	2,988,000	2,478,000	5,466,000
1920 Monthly average	3,684,000	2,665,000	6,349,000
1921 Monthly average	2,385,000 a	731,000 a	3,116,000
March, 1922	3,071,000 a	1,155,000 a	4,226,000
April, 1922	3,172,000 a	833,000 a	4,005,000
May, 1922	3,645,000 a	681,000 a	4,326,000
June, 1922	3,707,000 a	722,000 a	4,429,000

(a) Assuming a yield in merchantable coke of 69.6 per cent of the coal charged in byproduct ovens and 63.4 per cent in beehive ovens.

Car Loadings and Surpluses

	All Cars	Coal Cars
Cars loaded:		
Week ended July 8	718,319	68,996
Previous week	876,896	94,748
Same week a year ago	640,535	123,970
Surplus cars:		
July 7	239,160	146,743
June 30	239,225	147,558

ANTHRACITE

Dealers in hard coal are rapidly clearing up their yards and in but few is there anything but pea coal. The supply of that unpopular size is dwindling and two companies have withdrawn prices and no longer take orders. When that stage is reached the boards are about bare. Nearly four months of production have been lost with no prospect of mine resumption and no opportunity of making up for lost time, for the hard coal mines are normally run at full capacity for 12 months each year to supply the ordinary demands of the householder. The lack of steam coal will also prove embarrassing in the East.

A new weekly statistical service just inaugurated by the Geological Survey and appended herewith, shows weekly shipments from each of the major producing fields. The figures are based upon reports furnished by the railroads, giving the number of cars loaded for shipment at the mines on each railroad division. These figures of rail shipments are not identical with production, for they do not include water shipments, sales to local trade and mine fuel. Still more important, they do not include coal made into coke, which absorbs a large fraction of the output in the Connellsville district and a smaller fraction in other districts.

The grouping of railroad divisions corresponding with coal-producing districts was done by W. P. Ellis, of the Department of Commerce. The groupings used for the principal fields are shown by the footnotes, which apply to the table.

WEEKLY SHIPMENTS OF BITUMINOUS COAL FROM PRODUCING DISTRICTS, AS REPORTED BY THE RAILROADS

(Net tons, assuming 50 tons to the car)

District	April 8	April 22	May 13	May 27	June 10	June 24	July 1	July 15	Current Week*
Central Pennsylvania *a*	132,900	94,150	125,900	138,800	150,000	164,700	153,350	139,050	132,000
Western Pa., including Freeport *b*	118,550	64,800	93,750	113,200	117,250	138,900	123,850	131,550	125,100
Greensburg-Westmoreland *c*	264,450	161,250	137,800	141,850	157,650	164,850	161,800	181,250	166,900
Connellsville and Somerset-Meyersdale *d*	289,350	198,400	206,700	233,200	255,700	282,850	274,400	230,150	231,300
South Fork and Windber *e*	61,050	2,650	7,150	10,150	12,850	17,000	15,800	18,200	17,200
Total Pennsylvania	866,300	521,250	571,300	637,200	693,450	768,300	729,200	700,200	672,500
Georges Creek, Upper Potomac and Cumberland-Piedmont *f*	18,250	29,300	49,900	61,700	66,750	72,500	77,950	59,500	50,200
West Virginia Panhandle *g*	29,300	39,700	41,500	40,900	43,750	46,150	48,950	43,250	39,400
Fairmont *h*	7,150	13,700	26,600	34,600	41,300	50,150	46,850	44,750	46,600
Coal and Coke *i*	27,850	35,100	41,850	44,100	46,800	50,900	49,900	24,550	29,100
Kanawha and Coal River *j*	8,100	14,600	27,100	38,950	52,300	58,700	58,500	70,650	66,700
Logan *k*	297,600	292,400	355,400	382,150	368,000	393,900	380,400	185,150	145,600
New River (C. & O New River Division) *l*	61,850	61,900	109,400	131,550	158,100	188,550	177,400	175,500	150,500
Winding Gulf (Virginian) *m*	103,650	103,400	130,950	163,400	166,550	145,150	139,400	134,300	88,400
Pocahontas and Tug River	445,400	478,150	558,250	561,250	550,650	565,000	557,100	350,250	298,300
Kenova Thacker	129,250	146,000	180,450	190,250	199,300	199,900	217,300	161,150	109,500
Total West Virginia and Maryland	1,128,400	1,214,250	1,521,400	1,648,850	1,693,500	1,770,900	1,753,750	1,249,050	1,024,300
Eastern Kentucky *n*	407,600	540,750	611,250	732,900	755,250	687,400	633,150	315,150	321,600
Western Kentucky *o*	88,850	143,450	372,250	396,050	419,500	394,600	407,550	357,900	398,600
Tennessee *p*	28,850	44,350	76,500	68,300	88,600	90,750	85,250	70,450	72,100
Clinch Valley and S. W. Virginia *q*	132,800	156,250	204,800	215,850	219,500	225,750	220,250	157,450	128,600
Alabama and Georgia	249,450	194,450	232,850	250,450	276,000	299,150	311,850	301,400	299,700
Ohio	34,250	49,600	79,950	93,700	93,850	110,150	102,350	91,000	98,500
Indiana-Illinois	6,000	2,200	5,250	6,800	16,950	17,150	6,950	8,600	9,100
Iowa, Mo., Kans., Okla., Ark and Tex. *r*	25,250	33,600	45,800	52,300	67,800	80,650	81,650	76,000	85,000
Colorado *s*	82,000	90,850	120,750	139,100	161,000	174,350	174,950	184,350	174,200
New Mexico *t*	23,800	25,050	11,350	26,600	35,050	42,000	39,950	35,300	37,500
Utah *u*	59,700	54,000	47,350	56,300	61,750	74,000	80,300	79,500	85,520
Wyoming, Montana and N. Dakota	7,000	7,500	5,650	5,800	8,800	8,800	9,650	12,500	16,000
Washington	18,500	19,700	17,850	18,450	16,250	20,700	19,450	21,000	21,100
Michigan	0	0	0	0	0	0	0	0	0
Grand total	3,158,750	3,097,250	3,924,300	4,348,650	4,607,250	4,764,650	4,656,250	3,659,850	3,444,320

* Total for July 17, 18 and 19, multiplied by 2.

(a) Includes loadings on following railroads: PRR., Allegheny, Renovo, Pitts. East, Central, Snow Shoe, Tyrone, Bellwood Br., Cress, via Cress., Cress, via Bell.; J. & S. C.; Lig. Vall.; Camb. & Ind.; B. & S.; Susq. & N. Y.; Pitts & Susq.; Pitts. & Shaw.; P. S. & N; N. Y. C.; Franklin, Penna.; Erie, Bloss.; R. R. P.; Cent. Pa.; E. Broad Top; H. & B. T. M., Broad Top.

(b) L. E. F. & C.; P. L. & W.; B. & L. E., But. Mer.; PRR., Erie & Ash.; W. Alleg.; B. & O., Pitts.; Montour; P. & W. Va., Avella, Pitts.; P. & L. E., Pitts., PRR., Monog.; Union, Pitts.; B. & L. E., Freeport.

(c) PRR., Pitts. Mid., Pitts. West., Conemaugh.

(d) Monongahela, Penn.; PRR., So. West Br.; B. & O., Connellsville; W. M., Somerset, Connellsville.

(e) PRR., Pitts, So. Fork.

(f) Cumb. & Penn., W. M., Geo. Cr. Thomas; B. & O., Cumb.; W. Va. Nor.

(g) B. & O., Wheeling; PRR., Wheeling.

(h) B. & O.,Monongah; Monongahela, W. Va.; W. M., Weaver, Fairmont.

(i) B. C. & G.; B. & O., Charleston.

(j) K. & M., Kanawha; C. & O., Kanawha, Coal River.

(k) C. & O., Logan.

(l) C. & O., New River.

(m) Virginian.

(n) A. C. & I., E. Ky.; C. & O., Ky.; Miller's Cr.; Long Fork; S. V. & F.; L. & N., E. Ky.; Cumb.; Ky. & Tenn.; L. & N., Ky., C. V.; Southern, C. N. O. & T. P.

(o) I. C., Ky.; L. H. & St. L.; L. & N., Hender., O. & N.

(p) L. & N., Knox.; N. C. & St. L., So. App.; Sou., Coster; H. & N. E.; Tenn. Cent.

(q) N. & W., Clinch Vall.; C. C. & O.; Interstate; Sou., Appal.

(r) C. R. I. & P., Mo., Okla., Tex.; C. B. & Q., Mo.; Q. O. & K. C., Rev. & Sou., Mo.; K. C. C. & S., Deepwater; M. K. & T.; M. O. P.; St. L. & S. F., Ark., Kans., Mo., Okla.; A. T. & S. F., Mo., Kans., Okla.; U. P., Lansing, K. C. S.; Ark. Cent.; Mid. Vall.; Ft. Smith & W.; K. O. & G., Deer-Hen, R. G. & E. P.; I. & G. N.; Tex. & Pac., Mingus, Strawn.

(s) D. & S. L.; D. & R. G., Colo.; A. T. & S. F., Colo.; C. R. I. & P., Colo.; C. W. & E.; C. & S. Colo.; C. B. & Q., Colo.; U. P., Colo.

(t) A. T. & S. F., Gallup; E. P. & S. W., Raton; N. Mex. Md.; S. P. R. & P.

(u) D. & R. G., Utah.; Utah; Un. Pac., Utah.

Foreign Market And Export News

Buying of British Coal for American Needs Proceeds Rapidly; Price Reported at $9

BRITISH coal to relieve the shortage in the Eastern United States became a reality last week, when, following the refusal of the miners to arbitrate, it appeared a certainty that the strike in this country is not to be settled at once. Buyers and wholesalers here have hesitated to take a chance on bringing in foreign coal, with a two-week minimum haul, so long as there was any chance of early resumption of mining. Now that all hope is gone and the shortage produced by the railroad strikes has become acute, buying of British coal has been rapid.

In the first ten days not less than half a million tons were bought and within a few days all available bottoms had been chartered. The U. S. Shipping Board ordered all ships in foreign waters suitable for coal cargoes to the British Isles and promised to recondition and send abroad all boats needed for this trade. At present it is boats and not coal that is putting the brake on importation of coal, for Britain's supply is ample and prices are easy.

The Shipping Board has set a price of 7s. per ton for freight and this with the current Cardiff price would put coal in New York Harbor for around $7.50 per gross ton. On Monday, July 24, there were reports that the price had mounted to $9 per ton.

U. S. Demand Aids British Industry.

Production in Great Britain during the week ended July 8 was 4,598,000 gross tons, according to a cable to *Coal Age*, as compared with 4,530,000 tons in the week preceding.

Considerable inquiries are being received in South Wales from the United States, Canada and the West Indies. This is stimulating Continental buyers who recently have been holding back hoping for lower prices. Newcastle reports business brisk on American inquiries for all descriptions.

During the earlier part of last year it was common assertion, and a true one, that the high cost of coal in Britain was retarding industrial recovery. Since then prices have been brought down to a point at which neither the miner nor owner is receiving adequate remuneration. The mining industry has done a great deal more than its fair share toward accelerating the revival of trade, and it can give no more.

For some months past the attention of producers and manufacturers has been directed toward the railways for relief in lightening the burden upon industry. They have submitted what is admittedly an overwhelming case for substantial reductions in transport charges, but unfortunately they have derived small satisfaction from their representations. The railway companies have so far conferred little more than their blessing on a war-stricken country. What reductions they have conceded, viz.: a 12½ percentage reduction and a lowering of the flat rate from 6d. to 3d.—amount to about a quarter of what is considered necessary to restart trade.

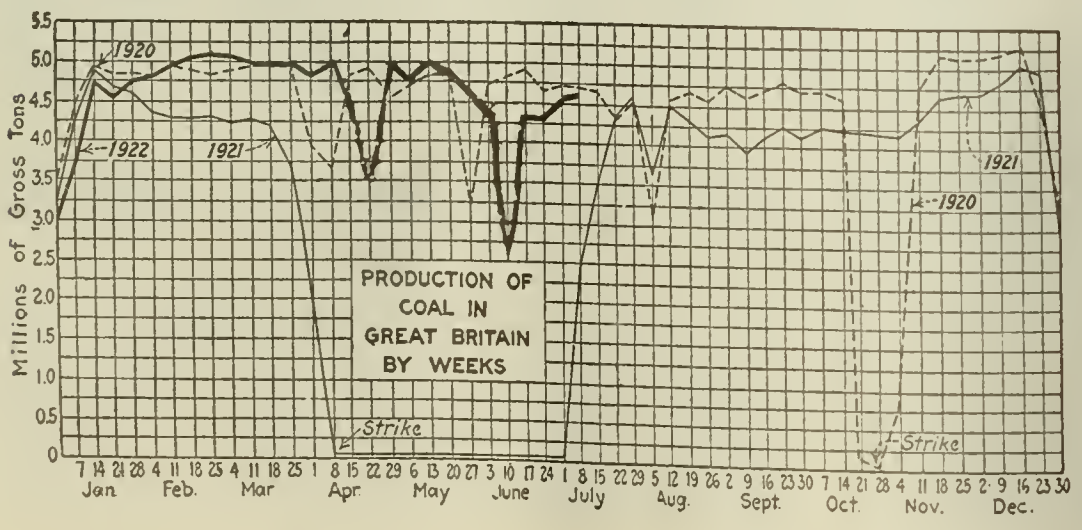
Publish French Prices; Demand Up.

Publication of the new prices of the Nord and Pas-de-Calais has momentarily increased the demand.

These prices—which particularly in the Paris area, are still higher than those of British imported coals—are provisional prices which were fixed pending the solution of the present conflict between operators and miners and the granting of lower transportation rates on coal.

It has been reckoned that to stem the rush of British coals French coals should be 20 frs. cheaper. One hour's extra work in the mines would decrease the cost by 10 frs. a ton. It is to be hoped that French miners will be sensible enough to listen to the dictates of reason and to agree to an increase of their effective underground working time from 6¾ to 7¾ hrs.

Production was 2,538,000 metric tons in May, as compared with 2,479,000 tons in April; May output of coke was 82,000 tons, 2,000 less than the April figure, while briquet production was 212,000 tons, as compared with 190,000 tons in April.



Coal Paragraphs from Foreign Lands

ITALY—The price of Cardiff steam first was quoted at 36s. 3d., on July 21, according to a cable to *Coal Age*.

GERMANY—Production of coal in the Ruhr district during the week ended July 8 was 1,629,000 metric tons, according to a cable to *Coal Age*.

Hampton Roads Market in Turmoil.

The market was in a turmoil last week, with supplies rapidly diminishing and ships being diverted for lack of coal. The N. & W. piers are almost at a standstill because movement of coal over that road has been cut down to a minimum by the railroad strike.

Schooners and barges pressed into service to carry coal coastwise when the rail strike began, are now lying idle in large numbers. As coal grows scarcer quotations are rising until the average price of coal this week lay between $7 @ $9 for all grades.

The market was so nearly demoralized on account of the absence of coal to sell, that a fixed price list was impossible. Large supplies of Navy coal, held at the Naval Operating Base, were being considered for their availability to be used in the emergency to serve merchant ships.

Hampton Roads Pier Situation.

	Week Ended July 13	Week Ended July 20
N. & W. Piers, Lamberts Point:		
Cars on hand	984	567
Tons on hand	61,352	31,485
Tons dumped	167,627	194,896
Tonnage waiting	20,000	2,000
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	1,522	1,053
Tons on hand	83,950	59,450
Tons dumped	128,640	107,710
Tonnage waiting	38,000	62,825
C. & O. Piers, Newport News:		
Cars on hand	1,090	555
Tons on hand	76,000	27,750
Tons dumped	92,728	94,833
Tonnage waiting	5,015	15,765

Pier and Bunker Prices, Gross Tons

PIERS

	July 15	July 22†
Pool 11, New York	$7.50@$7.75	**$10.00@$11.00**
Pool 1, Hamp. Rds	6.50@6.75	**7.00@9.00**
Pools 5-6-7 Hamp. Rds.	6.25@6.75	**7.00@9.00**
Pool 2, Hamp. Rds.	6.25@6.75	**7.00@9.00**

BUNKERS

Pool 11, New York	$8.00@$8.25	**$10.00@$11.00**
Pool 1, Hamp. Rds.	6.50@6.75	**7.00@9.00**
Pool 2, Hamp. Rds.	6.25@6.75	**7.00@9.00**
Welsh, Gibraltar	43s. f.o.b.	43s. f.o.b.
Welsh, Rio de Janeiro	57s.6d.f.o.b.	57s.6d f.o.b.
Welsh, Lisbon	43s. f.o.b.	43s f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	42s. t.i.b.
Welsh, Messina	39s f.o.b.	39s. f.o.b.
Welsh, Algiers	38s 6d f.o.b.	38s.6d.f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s f.o.b.	65s. f.o.b.
Welsh, Maderia	42s.6d.f.a.s.	42s.6d f.a.s.
Welsh, Teneriffe	40s.6d.f.a.s.	40s.6d.f.a.s.
Welsh, Malta	44s.6d.f.o.b.	44s 6d f.o.b.
Welsh, Las Palmas	40s.6d.f.a.s.	40s 6d.f.a.s.
Welsh, Naples	38s.f.o.b.	38s.f.o.b.
Welsh, Rosario	52s.6d.f.o.b.	52s.6d.f.o.b.
Welsh, Singapore	55s. f.o.b.	55s. f.o.b.
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Port Said	49s. f.o.b.	49s. f.o.b.
Alexandria	43s. f.o.b.	43s. f.o.b.
Capetown	35s. 3d.	35s. 3d.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	July 15	July 21†
Admiralty, Large	24s.@24s.6d.	**25s.**
Steam, Smalls	17s.6d.@18s.6d.	**18s.@18s.6d.**
Newcastle:		
Best Steams	23s.@24s.	**24s.@25s.**
Best Gas	21s.6d.@22s.6d.	**22s.6d.@24s.**
Best Bunkers	20s.6d.	**21s.6d.**

†Advances over previous week shown in **heavy type**: declines in *italics*.

North Atlantic

Big Buyers and Consumers Ward Off Panic Prices

Scarcity at Piers Causes Small Users to Offer Any Price—Railroads, Utilities and Industrials Order English Coal—First of British Product to Arrive in a Week.

NOTHING but the extreme care being exercised by the larger consumers and buyers of coal has so far prevented a price situation in this territory as panicky as that in Chicago. There is so little coal at the piers at New York, Baltimore and between (238 cars at New York piers, for instance, on July 24) that small consumers in need are offering any price to get coal.

Last week was notable for the sudden turn to buying of English coal. Railroads, public utilities and large industrials placed orders through their connections and some steamship companies are now reported to be undertaking importation on their own account. It will be a week yet before the first of the English coal reaches these shores and it will not be available in quantity until well into August.

NEW YORK

Lack of cars resulting in a shortage of coal was in part responsible for a rapid advance in quotations during the week. It rose as much as $1.25 and the quality of the coal offered was hardly considered.

An additional feature was the placing of orders for tonnages estimated at 100,000 tons by local houses for English coal, some of it for immediate delivery and some for August. It was figured out that this coal would be brought into New York harbor at a figure close to $7.50 c.i.f.

Public utility corporations are well supplied with coal, according to reports filed with the governing commissions.

Southern coal, because of the low production due to the lack of cars, is not being brought here in large tonnages. Quotations ranged as high as $10.50, New York harbor.

On July 21 there were 376 cars at the local piers, much of which was on contract and quickly taken away. The grade rarely figured in purchases and quotations ranged around $10.

Quotations changed frequently and buyers were forced to act quickly if they wanted coal. At the end of the week Pittsburgh steam coal was quoted around $6.50 f.o.b. mine; and gas coal $1 higher. While Allegheny Valley coals were quoted $7.50, some purchases were reported as having been made at a much lower figure. Clearfield coals were quoted $6@$6.50.

BALTIMORE

As far as can be learned, no genuine attempt is being made to re-open the mines in Maryland under the protection plan of President Harding. Governor Ritchie, of this state, has refused to send troops to protect the mines at this time, taking the ground that this action is not needed at present. In his communication to President Harding he stated that one of the troubles of the Maryland situation was that the railroads were not supplying sufficient cars to the mines, but this has been vigorously denied in railroad circles.

There is no export coal loading at this port, but some fuel is still being taken in bunkers; 11 ships took 2,921 tons in bunkers from July 1 to 20 inclusive. Quotations of price for soft coal from mining regions show a sharp advance over a week ago. Quotations from openings in fields to the south of this point are all the way from $4.25 @$5.25 per net ton.

CENTRAL PENNSYLVANIA

Feverish activity characterized the market following the breaking up of the conference at Washington. Previous to that, the market was dull, many buyers holding off in the expectation that an agreement between the miners and the operators would bring about a resumption of production and a consequent reduction in prices.

B. & O. coal was being sold on July 18, at $4.75 and on July 19, went to $5, then to $5.25, with every prospect of going to $5.50. Coal is scarce due to the shortage of cars, there being none distributed by the B. & O. on any sidings during the closing days of the week. Prices on P. R. R. loadings range $4.75@$5.75, most of which is being produced by small mines.

Just what move will be made to operate the larger mines remains to be seen. Several operators have posted notices setting forth that mines will be put into operation as soon as they can be gotten ready and a sufficient number of men employed to insure a steady output.

PHILADELPHIA

The situation is pretty badly muddled. Little coal is coming to this market. Despite the scarcity it is somewhat odd to hear shipping houses advise that the number of inquiries are far less than they would expect under such a state of trade. However, there are many inquiries, but mostly from the large consumer, and there are plenty of rumors of steel plants in this neighborhood about to close down.

Prices seem to have vanished into the air during the latter part of the week, in fact, many houses are simply in a position where they have no coal to offer at all. In asking for coal the consumer has about given up trying to purchase fuel of any particular grade and is well content to take just coal. Despite the strongest kind of efforts to keep down prices, there is a tendency toward a runaway market. Rumors of prices as high as $8 at the mines have been heard. However, even if sales are made at these figures they cover but a meager tonnage, as there is so very little free coal.

Large users are making inquiries for prices on English coal, and already some business of this kind has been placed. The price of the coal landed at the piers here seems to be between $8@$9, and it is also stated that some foreign coal is booked for arrival at local piers for delivery to interior points.

FAIRMONT

Mining was largely at a standstill during the second week of the rail strike owing to a general break-down of transportation facilities on the B. & O. Few cars were being placed except for railroad fuel purposes. Some relief was experienced when the Western Maryland began taking loads at the rate of 75 a day from the Elkins Division of the B. & O. Inquiries for fuel were numerous but most operators were not in a position to make or assure deliveries.

UPPER POTOMAC

Mines were not affected by transportation disabilities to as great an extent as in other parts of West Virginia, the Western Maryland being able to handle the tonnage originating on its own line as well as some of the tonnage off the B. & O. A few more mines resumed operation. There was a heavy demand for coal in all pools.

South

BIRMINGHAM

General demand for all grades continues good and some difficulty is being experienced in placing some of the spot business coming in, as there is comparatively little free coal to be had. The buying movement has become more diversified. Inquiries come in from all general directions, both in home and foreign territory and sales are reported at a premium above the regular quotations.

Another consignment of 4,000 tons of gas coal was loaded at Mobile this week for Peruvian interests, going to Callao, and some tonnage went to Cuba. The medium grades of domestic coal are finding a more ready sale lately. Most of the better grades are sold up well ahead and little is available in the open market.

Quotations on steam coal have advanced slightly:

	Mine Run	Domestic
Carbon Hill	$2.50@$2.60	$2.30@$2.55
Cahaba	2.60@ 2.75	3.05@ 3.85
Black Creek	2.75@ 3.00	3.05@ 3.30
Corona	2.60	3.25@ 3.50
Montevallo		4.10@ 4.35

Output for the week of July 15, will probably reach 340,000 tons, although much time has been lost throughout the district account of poor car supply and transportation service.

VIRGINIA

The rail strike has operated to reduce production, such curtailment growing out of the inability to move loads promptly. The rail strike is about all that prevents capacity production since there is an excellent market. Producers are generally adhering to $3.50 for mine run.

Anthracite

Clean-Up of Leftover Hard Coal Now in Sight

Withdrawal of Prices on Pea Foreshadows End of Storage Piles—Householders Active in Market—Importance of Early Booking.

TWO of the larger companies are reported to have withdrawn prices on pea coal and others are expected to follow soon. When pea is no longer available from company storage the last of the leftover hard coal will be in the hands of dealers, and very soon thereafter, of householders.

Orders are being booked with assurances that when the mines resume the coal will be delivered in order of booking.

No attempt is being made, and none is expected to be made, by the operators in the hard-coal regions to resume work without the consent of the union, despite the assurance of the Governor that protection will be afforded to all who want to work.

NEW YORK

As the headlines in newspapers tell of a prospective coal famine consumers are aroused to the existing situation and are looking around for coal for the coming winter. Retail dealers are kept busy telling their customers there is no coal to be had, excepting pea, and that there is no telling when it will be available.

While most dealers within the city limits are nearly out of the domestic sizes line dealers and those on the outskirts of the Greater City have a fair tonnage on hand.

Pea coal is moving rapidly. This is the only size the companies have and their storage piles are rapidly disappearing.

Some independent buckwheat was offered here around $5, f.o.b. mine. River barley was quoted $2 @ 2.25, a slight advance over the previous week. Because of the rapid increase in quotations for bituminous coal the demand for this size strengthened considerably. Loaded boats of buckwheat were reported at $7.50@$7.75, alongside.

BOSTON

Retailers' stocks in the large cities are being rapidly depleted. Practically no distributor in Boston is now in position to make deliveries to householders of more than a ton or two at a time of either broken, egg, stove or chestnut. What small reserves there are the dealers are saving for hotels, hospitals and other necessary uses, rather than for dwellings, where no heat will be required for at least 60 days.

At wholesale the only size now being offered in any quantity is pea. Within a few days two of the large producing companies have withdrawn prices even on that size, and are no longer willing to obligate themselves for shipment. Certain of the anthracite roads are absorbing tonnages of pea for locomotive use and prices are likely to stiffen materially during the coming week.

BALTIMORE

The anthracite situation is tense. At this writing the city is about 250,000 tons short of the usual amount either already delivered to consumers or in the yards here. As the strike apparently is still a tight affair the dealers of Baltimore figure that there is going to be tremendous difficulty in supplying consumers even with moderate needs next autumn. Except for a small quantity of pea coal now in the yards here, dealers have been swept clear of supplies. Consumers are now growing restive and are calling up their retail supply connections in an effort to assure deliveries, if not at present, then before cold weather sets in.

ANTHRACITE FIELDS

The mayors of Wilkes-Barre, Scranton, Carbondale, Pittston and Hazleton, accompanied by Senator Pepper of Pennsylvania, called on President Harding at the White House, on July 22, and outlined a plan of settlement of the strike in the anthracite field. While not divulging its nature, the mayors stated that the plan has been discussed with John L. Lewis and will be the further subject of conference with the union leader and representatives of the operators.

BUFFALO

With the supply practically all gone it seems odd that so little is said and that nothing has been done about the resumption of mining. The inquiry for it increases steadily. Canadian dealers are anxious, but all that can be said to them is that they shall have coal as soon as it moves.

PHILADELPHIA

From a feeling of hopefulness the retailers have now fallen into a state of doubt of an early resumption of mining. There was a belief that the men would accept the arbitration plan, but this having been rejected, no definite date is seen for the end of the strike.

There is a steady increase of consumers calling for coal, and as a result all retailers continue to move a fair stock of pea. Dealers from all sections are sending in moderate orders for this size.

Heavy orders for pea are coming in from Western points, as well as from Northern territory. One of the companies has now announced that it has no more for sale. Already it is reported that some of the railroads have taken some pea for motive power fuel.

River barley continues in strong demand and one of the railroads is reported as trying out a consignment of this coal. Prices are firm, with an inclination to increase, a few sales being reported at $3, but the average is still $2.25@$2.75.

Coke

CONNELLSVILLE

Offerings of coke have decreased farther, partly on account of the fresh strikes that followed the assembling of the conference at Washington, and partly on account of insufficiency of transportation produced by the railroad shopmen's strike. Prices have been advancing, causing miscellaneous consumers generally to drop out of the market, as the furnaces did long ago, while there remains buying by foundries. As coke is a small part of the cost of finished castings the foundries do not balk at price.

Connellsville foundry coke has sold at $14, and it is rumored one carload went at $15. For furnace, $13 has been quoted.

At least half a dozen furnaces have been banked or blown out in the past week on account of failure of supply, chiefly coke made at byproduct ovens where receipts of West Virginia and Kentucky coal are almost stopped by transportation disability.

The *Courier* reports production during the week ended July 15 at 52,300 tons by the furnace ovens, and 11,620 tons by the merchant ovens, a total of 63,920 tons, an increase of 10,000 tons, representing a two-thirds recovery from the decrease in the holiday week.

UNIONTOWN

Invitation of President Harding to operators to resume production of coal backed up by Pennslyvania National Guardsmen has not as yet changed the situation in this region. It is expected that a more or less concerted effort will be made next week by a number of operators to bring a "showdown," although plans are more or less guarded. W. J. Rainey, Inc., has posted notices to the effect that it will comply with the President's invitation and resume operations, but the notice has had no effect upon striking employees and no effort has been made to obtain outside labor.

Meantime the market is bounding upward like a skyrocket. At 25 and 50c. a ton hard-pressed consumers are pushing it upward until it is impossible to quote any price today with any certainty that it will remain a factor tomorrow. A price of $7.50 is generally quoted now, but there is no indication that that is the limit. Announcement from Washington that a coal-rationing plan is being considered is believed to have caused some consumers to scurry around, placing large orders before the rationing commences.

BUFFALO

The entire giving out of supply from the Connellsville district has not obliged dealers to give up quotations on that basis, but that can hardly be called an improvement, for byproduct coke is an uncertain quantity, from the fact that, as a rule such plants exist for the purpose of supplying nearby furnaces and the surplus is small. One jobber quotes a good byproduct at $11 for the lower grades and $11.50 for foundry, to which $1.31 must be added for freight.

Chicago and Midwest

Flight of Coal Prices Leaves Men Breathless

Western Kentucky Shoots Up More Than $1 a Day—As It Passes $11, Pittsburgh Coal at $9 Appears and Slows Ascent—St. Louis Suffers.

HECTIC market conditions continued through the past week in the Midwest region. With Chicago always at the peak, prices soared dizzily on every coal traded in in every market where any of it was offered. Western Kentucky reached $11.50 at Chicago Saturday night at the end of a drunken upward career—an ascent of $5 from the Monday before—and smokeless and eastern Kentucky attained $9.50, though very little of these two coals was available. The level had crawled so high that Pittsburgh coal appeared in considerable quantity and was bought greedily at $9. At the end of the week trading was in car numbers only.

Excitement in the fields tributary to this region continued at high pitch. There was no telling, from hour to hour, what coal would sell for in each succeeding period.

Even country trade has shown a noticeable pick-up, for dealers everywhere perceive the folly of expecting coal to sell at ordinary prices next winter and most of them are willing to stock right now at whatever figure the market dictates. Dealers are seeing many a consumer getting shorter and shorter of fuel and they can see plainly what is going to happen soon.

The shortage is getting so keen in the St. Louis territory that the Governor of Missouri is considering a coal apportioning plan for the state and the Mayor of St. Louis may attempt the same thing for the city. Municipal institutions there are said to be within a week of a boiler shutdown. In Illinois a number of coal consumers such as town lighting plants are suffering keenly—and without hope. In one or two cases they have shut down and are drawing power from bigger central stations.

CHICAGO

Western Kentucky coal went a long way this week toward spoiling its own game of aviation. Prices soared $5 or more between Monday morning and Saturday noon, causing consternation at times as the market made its dollar jumps each day. Many a jobber had his fingers burned by taking orders at an agreed price, only to have the coal hurdle his price before he could deliver it. That was at the first of the week. Later that practice stopped. Dealing was then altogether in car numbers and prices were never set until the coal was delivered.

The gay and hilarious daily hoisting of prices put the market up to a point finally where, by Friday, Pittsburgh coal began to appear. This newcomer, making its first appearance here in a long time, could, with a freight rate of $2.84, compete at a price of $9; for by Friday western Kentucky had passed that niggardly figure. By Friday night, in fact, western Kentucky had reached $11. But the next day its rapid flight appeared to be somewhat checked. It did not pass $11.50 in spite of herculean efforts of a few who tried to open the day at $13. The Pittsburgh coal—more than 100 cars of it—may have been responsible.

No other coals cut much of a figure on this market, principally because of difficulties incident to the railroad strike. A little smokeless and eastern Kentucky filtered into town a few cars at a time, selling readily at $9 and $9.50 at the end of the week, but the quantities were small. A slight recovery of the Louisville & Nashville from its attack of general debility made it possible for a thin flow of coal to start from fields along its lines, but the volume which reached here was small.

SOUTHERN ILLINOIS

Peace appears to reign throughout all southern Illinois coal fields, though there is a tenseness to be observed among miners which might indicate either a willingness to go back to work at the first opportunity or a fear that the government is going to do something to the union. The coal supply of the fields is exhausted and there is no production at any of the out-of-the-way wagon mines or strip pits.

ST. LOUIS

For the first time since last April the situation is becoming serious here. At many points in the state as well as in southern Illinois coal is unobtainable for municipal plants and other essential industries.

In St. Louis proper, another ten days will see the coal cleaned up excepting at the big utility plants and at the city water works, where there is about a month's supply ahead. The city institutions will be out of coal within a week unless relief from some unknown quarter develops. Domestic customers are making no demand for coal.

Kentucky coal, which was selling at the close of last week for $5, went up Monday to $6 and finished up the week at between $7.50 and $8 with no operators willing to take an order. They expect the price next week to be as high as $10 to $12 at the mine for mine run.

WESTERN KENTUCKY

An advance of easily $4.50 a ton in the price of western Kentucky coal was posted during last week. On Monday, July 17, the market jumped rapidly, closing at around $6.25 a ton, going to $6.75@$7 on Tuesday, $7.25@$7.75 on Wednesday, $8@$8.50 on Thursday and $11 on Saturday. However, there were practically no cars in the fields, especially on the Louisville & Nashville R.R.

The railroads and public utilities are wild for coal. Such great companies as the Commonwealth-Edison Co. of Chicago offered $7.25 a ton, or 25c. over first offers on Wednesday morning, in order to secure tonnage.

During the past week the Harlan field got out a little tonnage for the first time since the rail strike started. The Norfolk & Western and the C. & O. are having some trouble in the Kentucky-West Virginia district, and the L. & N. has been having much difficulty, with the result that tonnage from the non-union fields of Kentucky and the Virginias has slumped badly, while surplus stocks have been reduced to a minimum and demand is increasing daily. Production is probably at about the lowest ebb since April 1.

INDIANAPOLIS

The skepticism with which the general public is viewing the invitation of Governor McCray to the operators to open their mines, is reacting on the coal market. During the past few days there has been a mad scramble for coal on the part of industrial users. The visible supply is fast shrinking and Indiana at the present time is faced with the most serious coal shortage for years.

Many industrial users have been holding off for two or three weeks and using their reserves in the forlorn hope that the strike would be over by this time. Regardless of all that is said and done, the average citizen of Indiana has but little faith in the ability of operators to successfully operate mines without the aid of the organized miners.

LOUISVILLE

Apparently the Kentucky operators have thrown all caution aside, and either are figuring that there is no danger of federal control, or that they should get every nickel possible while the getting is good. The market has been jumping wildly. Supplies in large consumers' hands are at the vanishing point, and coal must be had at any price in order to keep railroads and public utilities supplied. It is reported that at the advanced figures there will not be much Lake movement just now. Car supply has become very poor.

Canada

TORONTO

The coal situation is growing more serious every day. Domestic orders are coming in with a rush but dealers are unable to make deliveries as there is practically no anthracite in the yards excepting a little pea coal. Soft coal is getting scarce as the railway strike prevents shipments from coming forward. Prices are much unsettled and with an upward tendency. Quotations (nominal as regards anthracite) are as follows:

Retail	
Anthracite egg, stove and nut	$15.50
Pea	14.00
Cannel	16.00
Wholesale f.o.b. cars destination	
3-in. lump	$10.00@$10.50
Slack	9.50@10.00

Eastern Inland

Uncertainty Among Buyers And Sellers; Prices Mount

Feeling Is that Resumption Must Come Soon — Jobbers Wary of Being Caught with High-Priced Product on Hand—Rumors Emanate from Pittsburgh.

MUCH uncertainty prevails among consumers and sellers of coal in this area. Prices are steadily mounting as each day new consumers come into the market in urgent need of coal, but there is a feeling that the situation cannot continue for long and that the mines will soon resume operation. No jobber wishes to get caught with high-priced coal on his hands and this type of dealer is proceeding with caution.

The price is being set by the buyer in his eagerness to get car numbers, and in the process the Hoover price level has long since been passed.

At Pittsburgh there are rumors of much activity in getting certain mines ready to operate non-union, or at least without the consent of the United Mine Workers, but no coal has come from these mines as yet.

BUFFALO

Plenty of uncertainty, plenty of people to say what should be done, plenty of operators ready to go to work if the machinery will run, but nothing done yet. Coal is giving out pretty fast and will be gone in some districts before there is more. The consumers know this and are bidding high for it.

Bituminous coal is about $1.50 a ton higher than it was a week ago and if no addition is made to the output it may go still higher. Reports of selling an allotment and of plants shutting down increase.

The grain movement keeps up well and ore is moving at a good rate, but for the present the best Virginia bituminous coal that came in so liberally from Ohio ports early in the season has been shut off entirely. None has been reported for a week. Bunker coal is becoming so scarce that only small amounts are to be had at any port. If this shortage continues some of the fleet will have to tie up.

PITTSBURGH

Immediately upon President Harding "inviting" the operators to return home and produce coal, active work was begun in getting several mines ready for resumption. Many miners were disposed, late in June, to return to work if given full protection, but whatever the intentions may have been the actual proceedings at Washington were followed by a stiffening of the backbone of the strike, and resumption will now be more difficult.

Two entirely separate efforts at resumption are in progress, by certain operators in the Pittsburgh (union) district, under the advice of the Pittsburgh Coal Producers' Association, and by operators, particularly the H. C. Frick Coke Co. (Steel Corporation) in the Connellsville region, non-union for more than a generation although the U. M. W. claims it has been largely organized lately.

The only coal traded in to any extent of late has been Connellsville, the offerings of which have been slightly reduced by fresh strikes and by insufficiency of transportation. The urgency of certain buyers, particularly public service corporations, has been greatly increased, chiefly by reason of the interruption of deliveries of West Virginia and Kentucky coal. Nearly every day in the past week Connellsville coal has advanced 50c, being now strong at $7.

COLUMBUS

The combination of the coal miners' strike and the railroad trouble is pretty effectually tying up the coal trade. While there is a fair tonnage still being produced, lack of transportation facilities is causing much anxiety in all quarters and there is an acute shortage in certain sections. The entire price situation is wild and uncertain and quotations ranging $3.50 @ $7 are heard.

Some of the larger operators are making an effort to abide by the Hoover levels but they are not meeting with much success. What free coal is on the market is commanding higher figures and since it is a bidder's market the highest bidder gets the coal.

Retailers are now coming into the market to replenish their stocks. Some householders, expressing anxiety, are buying their winters' supply. Retail prices have advanced to higher levels in sympathy with mine quotations.

Lake trade is falling off. The H. V. Docks at Toledo during the week ended July 19 loaded 57,354 tons as compared with 96,688 tons the previous week. A total of 1,455,692 tons has been loaded by these docks since the opening of the season.

EASTERN OHIO

That reserve stocks are nearing exhaustion and that a fuel crisis looms in eastern Ohio is evidenced by developments during the week. The quantity of coal now reaching this section is the smallest in years and operators and jobbers are being besieged by industrial consumers.

Stripping operations in eastern Ohio have been curtailed, not so much by a lack of transportation as by interference and intimidation of employees by union miners.

Indications are that public utilities in this territory have limited reserves of fuel. Industrials and steamship lines in many instances have already found it necessary to restrict their activities because of limited fuel. The Detroit & Cleveland Navigation Co. has temporarily retired two steamers between Cleveland and Detroit and in the Mahoning Valley the operations of steel plants are being seriously retarded, and blast furnaces are being banked.

Increased demand and the diminishing quantity of coal available have boosted prices. The maximum has moved up from $5.25 to $7@$7.50. Pittsburgh and Kentucky gas coal is quoted at $7.75@$8 f.o.b. mines, while the range of spot prices on coal from other districts is $7@$7.50.

NORTHERN PANHANDLE

Since the beginning of the rail strike feeling between union and non-union miners has been intensified, striking railroad pickets having attempted to intimidate the miners to some extent. Mines are not being affected much by additional strike troubles. Inability of the B. & O. to move coal is affecting production to a greater extent than the strike of miners. This is limiting the movement largely to railroad fuel.

DETROIT

Interest of buyers is apparently not very generally aroused, although the shortening of supply is beginning to be noticeable. Demand can scarcely be classed as active or urgent except in a few cases.

The principal difficulty now being experienced is in getting coal from mines to docks on Lake Erie or through by the all-rail route. This impediment is an outgrowth of the railway strike rather than the mineworkers' strike.

Some buyers are negotiating with the mines for coal on the basis of $7 at the mines. It is believed, however, that these are exceptional instances as the business coming to jobbers and wholesalers is not of large proportions and incoming shipments are small.

CLEVELAND

The situation in this district is doubly acute. Not only are local consumers clamoring for fuel, but the demand from the Northwest is centering here. Meanwhile conditions are moving rapidly from bad to worse. The sky is the limit for prices, recent quotations ranging up to $6.50 and $7 per ton for the non-union grades. This coal, however, is extremely scarce, not only because of the enormous demand but declining receipts as well. The plight of the Northwest is reflected in the fact that at present the dumpings of coal at lower lake ports is around 500 cars daily, whereas the normal figure at this season is 2,500. The up-lake movement is now about 4,000,000 tons against 11,500,000 for the same period of last year.

The Cleveland Chamber of Commerce has appointed a committee to act in the emergency.

Many Cleveland industries are being crippled. The fact that 75 per cent of the industries are supplied with power by the Cleveland Electric Illuminating Co., is preventing more widespread distress, as the illuminating company is fairly well supplied with fuel.

Ohio operators with headquarters in Cleveland thus far have made no move to start operations under military protection and the majority of them probably will not do so.

Northwest

Federal Distribution Plan is Encouraging

Northwest Believes It May Get Enough Coal by That Agency—Dock Men Are Using Allotment Scheme Already—No More Upbound Cargoes Due.

THERE is a ray of hope for the Northwest in Secretary Hoover's promise to Governor Preus, of Minnesota, and to others that the region is going to get preference in coal shipments when the government's new scheme of coal apportioning goes into effect. However, that is about the only cheerful thing the people of the Northwest have to think about in connection with coal. Lake shipment of coal from lower ports has stopped and no more cargoes are scheduled. Stocks of free coal are so low that in most cases orders will not be taken until they have been approved by dock-company headquarters. Prices generally are still going up.

Public utilities and industries throughout the region find themselves in various conditions. Most of the big utilities have enough fuel on hand to run until September, but among manufacturing plants the situation is grievous generally.

MILWAUKEE

The coal situation at Milwaukee is becoming very acute, and the nervous tension created by the dubious outlook for the coming winter is increasing daily. Dealers report a rush of orders from both city and country, which they are unable to fill. There is no anthracite on hand, except a small supply of pea size, and the soft-coal stocks that are not already contracted for cannot last longer than about 40 days more.

Public utilities, operating in the city, have enough fuel engaged to carry them through to the first of next year, according to estimates based on the average daily consumption. In the country, however, similar enterprises have only 17,000 tons of coal on hand, whereas the supply should exceed 125,000 tons. Lake steamers find it difficult to secure bunker coal. This naturally hampers lake transportation. Receipts by lake already are slowing up in consequence, and may soon cease entirely.

July cargo receipts by lake to date aggregate 131,699 tons of bituminous coal, making the season's soft-coal receipts thus far this season 737,960 tons. Receipts last year up to this time aggregated 467,656 tons of anthracite, and 1,437,151 tons of soft coal.

Pocahontas coal has been advanced 50c. per ton on all sizes, but the price of other bituminous coal continues unchanged. Screened Pocahontas now sells for $11.25, mine-run for $9.25, and screenings for $6.75.

MINNEAPOLIS

With the Governor of the state making vigorous efforts to get a priority on coal for the Northwest when deliveries are resumed, buyers of this district are beginning to appreciate that the situation is serious. And there is no assurance of an adequate coal supply no matter what the government may do. Ordinarily the domestic business begins to get considerable service by September 1. Since there is little chance of that this year, consumers are starting a rush for coal. Wholesalers are refusing many orders. Bidding is being done on coal for prompt shipment, and premiums are being run up quietly, but wholesalers are endeavoring to avoid this sort of thing, realizing the hereafter that will follow anything that savors of profiteering.

Efforts to use substitutes may lead to wood and lignite. Wood will be expensive but will do very well in cook stoves and airtight heaters. Lignite is difficult to handle in ordinary steam plants because it slacks and runs down through most grates.

DULUTH

Stocks on docks have decreased so here that the majority of dock concerns are selling only on release orders from their headquarters in Minneapolis. This method of apportioning is an effort to place coal where it is most keenly needed. Latest reports show but 185,000 tons of free bituminous remaining here, with anthracite in an even worse condition. Shipments have practically stopped, one cargo only having been received last week. At the same time assurance has been received that no more cargoes will be shipped to lower lake ports from here.

Public utilities in Duluth and Iron Range cities are well taken care of according to latest reports. The local plant of the Minnesota Steel Co. and the Oliver Iron Mining Co. have sufficient coal to continue work until December. Independent mining companies are reported as being in more serious condition.

The general impression here is that the strike will be broken before a general tie-up occurs. Secretary Hoover's assurance that the Northwest will receive preferential shipments as soon as mining starts, and in this way will be able to get its accustomed amount of coal here, is giving heart to all.

New England

Virginia Terminal Shortage Is Felt; Market Turns

Quotations Likely to Tend Upward Till Rail or Mine Strike Ends—Textile Resumption Not in Sight—Outlook Is for Fitful Buying in Small Lots.

SHORTAGE of coal at the Virginia terminals has made itself felt. While thus far there has not been demand enough to cause any very active bidding up of prices, it is clear that the market has turned and that quotations probably will tend steadily upward until either the shopmen's strike or the suspension of union mining is brought to an end. In this territory there are fair reserves, industrial conditions considered, but were the textile mills to resume full-time production there probably would be a notable shortage that would send prices soaring. However, there is no immediate prospect of any such general resumption here and buying will doubless continue to be scattered and confined to relatively small tonnages.

For distribution inland, rehandlers at Boston, Providence and Portland have little free coal. Receipts have begun to fall off, and factors here know that for the next few weeks their present stocks will not easily be replaced. Prices in consequence have risen to new high levels; $9 has been quoted on cars Boston, and actual sales at $8.75 are known, these prices being per gross ton. At the same time deliveries are being made on contracts, and one retail distributor in Boston has seen the way clear to name an average price of $7.45 per net ton delivered for 12,000 tons New River for delivery prior to Sept. 15.

Under the conditions it is no wonder that the British coal is likely to come here in quantity. As much as 500,000 tons has already been arranged for, it is said, all of it to be received at Atlantic ports, and this should be an influence not only in keeping prices within reasonable limits but also in making it clear to union leaders that consumers are not entirely helpless.

The trade is much interested in following reports from day to day of developments on the railways that serve the Pocahontas and New River fields. The serious breakdown on the Norfolk & Western is still the occasion of much anxiety, and New England will hardly feel easy over supply until conditions on that line show some improvement before long. Since April 1 that particular railroad has been a main channel of supply, and any interruption has serious implications.

Spot prices are bound to be more or less buoyant the next fortnight or so, if not longer. With anxious buyers in many different sections there is bound to be a certain amount of bidding for what free coal there is, and it would not be surprising to see $9 per gross ton f.o.b. vessel at Hampton Roads reached within a relatively short time.

Cincinnati Gateway

Big Demand for "Free" Coal Creates Three Price Levels

Offers Made at Scales, Between Mine Mouth and Weighing and Before Loading—Unsettlement Laid to Rail Trouble—Non-Union Output Drops and Car Movement Slackens.

DEMAND for "free" coal has grown out of all bounds of possibility of supply. The result is that there are really three prices to be reckoned with upon coal passing through the Cincinnati gateway. One might be called the scales price—that is, a price offer for coal that is about to be weighed by the N. & W. or the C. & O. or that has hit the main line of the L. & N. The second price might be said to apply to coal from the mouth of the mines to the scales and the third that for coal still to be loaded. Even this latter is split into two prices, for there are some firms still holding to the Hoover price even on free coal, while there are others who are getting the limit that the market will stand.

The backbone of the trouble is the rail congestion caused by the breakdown in transportation. Non-union production is curtailed and those cars under load are moving in at less than 50 per cent of normal.

CINCINNATI

Lake business is "shot." One cargo gathered up on Wednesday cost $6@$7 a ton. Casual buyers therefore are standing off. Country business is pretty much in the same boat—the dealers come here, look the market over and find out the prices that are being asked for coal and go back home again.

The whole situation has been created by the breakdown in transportation attendant to the shopman's strike and the others that have surrounded it. Thousands of cars are lying on the sidings that cannot be moved. Less than 30 per cent of normal of loaded cars were brought across the river this week; in round numbers this is a drop of 5,000 cars.

Smokeless agents frankly declare that they will have no coal to offer until the middle of next month. Logan has been hard hit and is moving only a few cars out to the main line of the C. & O. Hazard has a better car supply than surrounding fields and Harlan has worked only one day this month. Producers say that their costs are mounting and that every ton put on the cars this week has cost them $5@$6.

Retailers are still holding to the prices established the first of the month. They are warning customers, however, that they will soon be forced into the open market and that a rise in price can be expected.

LOW-VOLATILE FIELDS

New River and the Gulf

Labor troubles and the effects of the mine strike have been largely overcome in the New River field, but a shortage of cars has begun to seriously interfere with production. For a time there was a threat of trouble on Beard's Fork and Lower Loop. The demand for steam fuel is strong. There is a heavy demand at Tidewater.

Losses due to a shortage of cars in the Gulf region were somewhat more pronounced during the week ended July 15, and tended to make inroads on the output at a time when labor shortage was being overcome. The condition of motive power is making it difficult to move coal as promptly as usual and congestion was beginning to develop on the Virginian by the middle of the month, cutting down the movement to Tidewater.

Pocahontas and Tug River

By the middle of July a rather serious car shortage had begun to develop in the Pocahontas region, the lack of empties entailing a loss of about 45 per cent. The Norfolk & Western is unable to handle so large a volume as it did during June and hence there is congestion at various terminal points as well as on connecting lines. The general tendency was to move coal to Tidewater, owing to the short haul and the fact that loads did not have to be delivered to connecting lines.

Tug River mines, too, were suffering from the effects of a car shortage, amounting to about 45 per cent. There was more coal than usual on sidings and at terminals awaiting movement to market. Restricted movement of coal was tending to affect the steel operations since so large a proportion of the output of this territory is usually shipped to affiliated steel mills.

HIGH-VOLATILE FIELDS

Kanawha

Considering the obstacles to be overcome, the field was producing a fairly large tonnage during the second week of the rail strike, increasing its output to 70,000 tons, the largest since the strike began. Coal was not being moved so promptly as had been the case during the first week of July. It is more difficult to secure empties now than it was before the rail strike, but the need for empties is not as large in the Kanawha region as in some others. There are still more than 100 mines at work, however, despite some serious acts of violence.

Logan and Thacker

Handicapped by decreasing railroad facilities, Logan mines have been unable to keep up the pace recently set, although there is still a large output in this territory. Much of the output is being held up at connecting points owing to congestion on other lines. Producers are not finding it possible to get coal to the steel companies in sufficient quantities to keep them stocked. With the supply dwindling the demand is reaching even stronger proportions.

In the Thacker field the only factor which is interfering seriously is the railroad situation. Cars are much harder to secure because of the congestion at terminals on the Norfolk & Western and connecting lines. Not only is there a car shortage of about 45 per cent but it is becoming more difficult to move loads. Lake buyers are seeking large tonnages and the general movement to the West is large, insofar as transportation facilities permit.

Northeastern Kentucky

There is a serious curtailment of the output owing to the rail strike, the car shortage in that respect affecting production to the extent of about 20 per cent or more. Loads are not being moved expeditiously and congestion is resulting, in the face of a very strong demand.

West

KANSAS CITY

While it is true that the production of coal under normal conditions in the Kansas coal fields is small as compared with other coal producing districts, the production in Kansas today is about 25 per cent of normal and more mines are opening up. It will be recalled that about a year ago there was a split between Alexander Howat and John L. Lewis and each had his following and the miners that followed Howat are the ones that are digging coal today and apparently without any interference from Lewis' followers.

A more peaceful mining locality than the Kansas field would be difficult to find and is an object lesson to all and clearly shows what may be expected where there are two factions about equally divided. Howat is in jail, which may have something to do with the lamb-like demeaner of the men. If that is the case we can go farther and draw another conclusion: Put all radical labor leaders in jail and there will be peace.

Coal of all grades is scarce and hard to get. Some of the retail yards have sold out to the steam plants and are taking a chance of getting a supply later to take care of their trade. Prices fluctuate from day to day but the ruling figures on Kansas coals are about $3.75 for slack and $5 for lump.

SALT LAKE CITY

Business is improving. Some of the dealers are stocking up and there is a demand for Utah coal on the coast. One large firm—the U. S. Fuel Co.—reports more orders in all grades than it can fill, despite the fact that its production last month was more than double that for the same period last year. Some of the operators, however, have been badly hit by the strike and are producing much less than in normal times. The slack business is excellent and producing companies cannot meet the demand. The domestic consumer is not buying much yet but inquiries indicate a little uneasiness due to the strikes. It is believed that many storage orders will be placed at an early date.

News Items From Field and Trade

ALABAMA

It is rumored that stockholders of the **Alabama Company** have been asked to vote on an application for an option on the properties of the company to Lloyd H. Atkinson and associates, all of New York. The purchase price of the Alabama Company is given as $6,250,000 in the circular letter sent to all stockholders, asking them to accept or reject the request for an option. The executive offices of the company are in Baltimore. The properties of the Alabama Company consist of blast furnaces and several coal mines, most of which are now in operation, although they had been shut down for a long period.

Charles H. Nesbitt, chief mine inspector, attended the annual meeting of the Mine Inspectors' Institute of America, which was recently in session in Chicago.

ILLINOIS

Orders to start the work on the new power plant of the **Central Illinois Public Service Co.** at Grand Tower, have been given. The plant will be located near the Mississippi River at Grand Tower, to insure a year-around supply of water for its enormous turbines. The company furnishes a large per cent of the power consumed by the mines of southern Illinois. The company has power plants now in operation in more than ten centers in the southern part of the state.

The Union Fuel Co. announces the opening of offices at 332 South Michigan Avenue, Chicago, where the executive, sales and accounting departments will be located. Andrew Christ, Jr., has been appointed vice-president of the company and will be in charge of sales.

A permit has been granted for the construction of the Jefferson Southwestern R. R. to run from the three-railroad town of Marion in Jefferson County, 15 miles southwesterly through coal lands about to be opened by the **Nason Coal Co.**, of Chicago, to a connection with the Chicago, Burlington & Quincy, three miles from the location of a proposed huge mine. Construction of the road will begin soon and the sinking of the first of several mines on the property will start as soon as a new wage agreement is negotiated with miners.

The McDonough County Coal Co., of McComb, has been reorganized and the work of the company will be enlarged. With the enlargement will come the purchase of additional machinery, including a compressed air plant.

INDIANA

A merger of three of the largest coal companies in Indiana, including the **American Coal Mining Co.**, Brazil, **Indian Creek Coal & Mining Co.**, of Indianapolis, and the **Oliphant Coal Co.**, Vincennes, has been announced by H. A. Glover, Indianapolis sales representative of the new organization, which will be known as the **Knox Consolidated Coal Co.** The new corporation will issue common stock to the amount of $5,000,000 and the same amount of bonds. Two of the mines formerly were owned by the American company and one each of the remaining two were owned by the Indian Creek company and the Oliphant interests. The purpose of the merger was merely a combination of interests to improve business for all and to lessen the amount of competition in territories in which the coal mined by the three companies is sold. The Knox Consolidated Coal Co., with its present mines, will have a daily capacity of 16,000 tons and will be the largest single producer in Indiana. The company will be headed by E. D. Logsdon, Indianapolis, president of the Indian Creek Company at the time of the merger. Mining operations will be carried on under the direction of Simon Zeller, of the American company. W. M. Zeller, Jr., of the same company, will be treasurer. The general sales department will be under the direction of Mr. Glover, formerly of the Oliphant company. The board of directors will be composed of Mr. Logsdon, W. J. Snyder, Brazil, F. L. Oliphant, Vincennes; H. R. McClellan, Bicknell, Simon Zeller, Brazil.

The Tecumseh Coal & Mining Co., at Bicknell, has merged with the **Pike County Coal Co.** and the **Simplex Coal Co.** The new organization will be known as the **Howe-Coulter Co.**, and with it has been amalgamated the former sales organization known as the **Martin-Howe Co.** The Tecumseh company owns two large mines, one mile east of Bicknell. The president is W. H. Howe. John Coulter is secretary-treasurer and Robert McClevy is general manager. The company has a large acreage of coal land in Knox County yet to mine and also has 5,000 acres near Oatsville.

The Indiana & Ohio Coal Co. has been incorporated with capital of $100,000 to engage in the mining of coal. The incorporators are John Williams, Chares W. Wenner, Thomas G. Williams and John A. Young.

MISSOURI

A trust deed to secure an issue of $7,000,000 in first mortgage bonds has been filed by the **Central Coal & Coke Co.**, of Kansas City, in favor of the First Trust & Savings Bank, of Chicago, and is the largest instrument of the kind ever filed in Ray County. The law requires that the deed be filed in every county in which the corporation owns property and the company has a mine at Camden.

A charter has been granted the **Kirksville Coal Co.** to operate coal mines in the vicinity of Kirksville. The company has a capitalization of $150,000.

Kansas City interests are engaged in the organization of a company to operate coal mines in the vicinity of Wainwright in Callaway County. It is understood that **W. M. Summers**, of Kansas City, owns 3,000 acres there, and that in addition to the mining of coal the mining of clay will be carried on. It will be a steam shovel operation and it is anticipated that a brick plant will be built near the premises in the near future.

NEW YORK

L. P. Zimmermann, president of the Maxim Coal & Coke Corporation, Buffalo, since its organization, has sold his interest and resigned. The company is continued with former vice-president **D. T. McCarthy** elected president and treasurer and his son, **F. A. McCarthy**, vice-president and secretary.

Attorney General Charles D. Newton has taken steps to test the constitutionality of the **Pennsylvania anthracite tax** law and has appealed to the Attorney Generals of New Jersey, Massachusetts, Connecticut, Maine, New Hampshire, Vermont and Delaware to join him in the movement.

F. J. Kerner Coal Co. of No. 1 Broadway, New York City, has opened branch offices in Somerset, Pa., and Morgantown, W. Va.

OHIO

It is reported that the old coal carrying railroad between Palos and Marietta, part of which has been abandoned, will be electrified shortly and used to serve a number of mines on its line. The road was formerly the Marietta, Columbus & Cleveland.

C. E. Tuttle of the Puritan-Tuttle Coal Co., was in Cincinnati recently for a few days. He now makes his headquarters in New York.

The Murphy Coal Co., Columbus, recently chartered with a capital of $75,000, has been organized by the election of J. L. Murphy of Logan, president and H. H. Long, secretary and treasurer. The concern is allied with the **New York Coal Co.**, and has taken over an acreage in Boone County, W. Va., on the C. & O. The work of developing the property will be started at once and it is planned to be producing coal in several months.

Papers have been filed with the secretary of state chartering the **Wyoming Pocahontas Coal Co.**, with an authorized capital of $2,000,000 to mine and sell coal. Among the incorporators are H. L. Barkdull and P. J. Bickel. The operations will be mostly in the Pocahontas field.

Slidell and Ducker, attorneys, have asked for the appointment of a receiver for the **Big Mandy Coal Co.** in behalf of **Walter Bledsoe & Co.**, the **Mowbray-Robinson Co.**, and **J. I. Hunt**, an operator, of Chavies, Ky., in the United States District Court at Cincinnati . The moving spirit of the Big Mandy is Rush Meadows, who was connected with the failure of the Mohio Coal Co. last year. It is charged that coal in the retail yards of the Big Mandy company at Norwood and Winton Place has been turned over to Okey Meadows, his father, and who operates the Okey Meadows Coal Co. Companies opening offices in Cincinnati recently were the **Kelly's Creek Colliers Co.** and the **Cleveland Cliffs Iron Co.**, in the Dixie Terminal Bldg., and the **Keen Coal Co.**, at 43 Ingalls Bldg.

A schedule of assets for the **Tri-State Tile & Coal Co.** was filed in the United States District Court at Cincinnati which shows that this Ironton corporation has liabilities of $37,806 and assets of $41,967.

Alex Bonnyman, president of the Blue Diamond Coal Co., and the Blue Diamond Coal Sales Co., visited the Cincinnati office of the latter corporation for a conference with heads of departments while on his way to New York, where he sailed for a visit to Scotland.

Visitors to the Cincinnati market from the fields recently were: **S. A. Lewis**, of the Lewis Coal & Coke Co., Cabin Creek, W. Va.; **G. W. Hatfield**, of the Victor Coal Co., of Williamson, W. Va.; **A. R. Yarborough**, traffic manager of the Kanawha Operators' Association, and **C. S. Higgins**, of the New River association.

James Rice, president of the Rice Coal Co., of Dayton, and head of a Kentucky producing company, has recovered from a long attack of typhoid fever and has gone to Michigan to spend a month recuperating.

PENNSYLVANIA

The Frostburg Coal Co., of Punxsutawney, Jefferson County, was recently incorporated. The company has a capital of $50,000 and its purpose is the mining, buying, selling and dealing in bituminous coal. James H. Ritter, Punxsutawney, is treasurer, and one of the three incorporators, the others being William H. Ritter and Dr. Frank A. Lorenzo, Punxsutawney.

The Light Railway Equipment Co., with general offices in Philadelphia, has reorganized and rebuilt with new machinery, since the recent fire at the works near Philadephia, and is now operating to nearly full capacity.

Judgment of $12,000 awarded the Graff Furnace Co. by a Federal jury recently in its suit against the **Scranton Coal Co.** for failure to allow a sufficient amount of pillar coal under adjoining property is sustained by Judge C. B. Witmer in an opinion in which court refuses the request of the defendant for a new trial, but notes an exception for the defendant. Court did not enter into a discussion of the merits of the case. An appeal to the circuit court of appeals will be taken.

The Atlas Fuel Corporation of New York City, has removed its general offices to the Farmers Bank Bldg., Pittsburgh. Jay W. Johns, president, is in charge.

The Purity Coal Co., one of the Cosgrove group, operators of a 251-acre strip mine near Boswell, Somerset County, recently increased its capacity by the installation of a new Marion steam shovel.

VIRGINIA

Coal shippers are again in controversy with railroads serving Hampton Roads in an effort to get a reduction in trimming charges. Committees of coalmen, who importuned the carriers for a conference on the proposed reduction, have had their request granted but no date for the confer-

ence has ben set. Lemuel Barrows, president of Castner, Curran & Bullitt, of New York, was here in an informal conference between coal shippers and railroads. W. C. Higgins, representing the New River Coal Operators' Association, was also here. R. C. Moore, of the Southern Transportation Co., Philadelphia, served on the committee. A committee from the **Hampton Roads Maritime Exchange**, which has this matter in charge and took part in the preliminary conference, is composed of the following: W. W. Houston, Pan Handle Coal Co.; A. G. Bailey, Castner, Curran & Bullitt; E. O. Parkinson, Pocahontas Fuel Co.; and R. T. Pullen, C. H. Sprague & Sons, Newport News.

WEST VIRGINIA

The Buffalo Creek & Gauley R.R. Co. has awarded a contract covering the purchase of 300 steel hopper coal cars of 55 tons capacity, for prompt delivery. The company, which is owned by the **Elk River Coal & Lumber Co.**, runs from Dundon, its connection with the B. & O., to Widen, where the mine of the Elk River company is located.

In connection with three new indictments made by the grand jury investigating the dynamiting and shooting disorders of two years ago at Willis Branch, Lawrence Dwyer, international board member for District 29, who was recently in the East for the purpose of securing relief for miners, and David Robb, another official of the United Mine Workers, have been indicted for counseling, hiring and commanding parties to steal and conceal the machine gun taken from the Pax depot in August 1920, and also for counseling and aiding in disorders that were so common during the period Willis Branch was under siege. Indictments were returned against the officials upon startling testimony given by Walter C. Romine, Bryant Kidd and Grover Moore, all of who are under indictment. A complete confession was made of the parties implicated.

That he has just written policies approximating $2,000,000 at Omar, Logan County, insuring the lives of 2,000 employees of the **Main Island Creek Coal Co.**, was the surprising news given out by Roger Martin, Dublin, insurance man. Mr. Martin paid quite a tribute to A. J. Dalton, president of the coal company, who he said, presented a $1,000 policy to each of his employees.

The Bachmine mine in the New River field abandoned not long ago by its new owners is to be once again under the control of the **Maryland-New River Coal Co.**, the former owners of this property. With a view to resuming operations in the near future repairs are being made to the plant, and the post office at Bachman is to be re-established.

The magnitude upon which the **Rock Lick Smokeless Coal Co.** plans to operate in the New River field is indicated by the issue of $600,000 in bonds which have been taken over by the National Valley Bank of Staunton, Va., the bonds being secured by a deed of trust. This company secured not long ago about 2,000 acres of coal land from the Thurnond Land Co., the consideration as indicated by revenue stamps being approximately $120,000.

Hearings before the Public Service Commission of West Virginia were opened at White Sulphur Springs recently, in connection with the effort of power consumers in the Winding Gulf and Tug River districts to secure a reduction in rates from the Appalachian Power Co. Fifty coal companies in the two districts joined hands in presenting their case. Harry E. Harmon, president, and J. T. Wilson, secretary and treasurer, and Henry A. Warden represented the Tug River association, and J. C. Sullivan, president, and George Wolfe, secretary, represented the Winding Gulf district. Much testimony was offered to show that a reduction should be made, stress being laid by the coal operators on the fact that labor and fuel costs had been materially reduced since July, 1920, when the power company was permitted to increase its rates about 30 per cent.

I. J. Rhodes and L. A. Osborn, of Welch, and H. N. Eavenson, of Pittsburgh, have completed the sale of 6,000 acres of coal land lying on the waters of Long Pole and Fore Pole Creeks, McDowell County, 4,000 acres of which was owned by them and 2,000 by the Mingo Land Co., to the **Hardy Coal Co.** The Hardy company, with a capitalization of $2,500,000, will immediately install on Fore Pole Creek one of the most modern and best equipped plants in McDowell County. Paul Hardy, of Huntington, is president and general manager; Philip Coyle, of Boston, vice-president, and S. S. Stevens, of Boston, secretary and treasurer. A branch line of three miles will be built up Fore Pole Creek, contract to be let as soon as surveys are completed.

Preliminary to operating in the vicinity of Williamson, the **Compton Waugh Coal Co.** has been organized with a capitalization of $25,000. Active in organizing this company were C. S. Waugh, M. E. Waugh, of Williamson; L. T. Compton, R. D. Easterling and A. Compton, of Matewan.

With a view of operating in Harrison County, the **Moke Co-operative Coal Co.** has been formed, with a capital stock of $300,000, Clarksburg to be the headquarters of this company. Principal stockholders of the new concern are: W. L. Moke, Frank O'Day of Clarksburg, W. Va., W. D. Walker, of Kitzmiller, Md., George Warwick, Bloomington, Md., W. W. Leonard, Worthington.

WISCONSIN

Fire has completely destroyed the high belt conveyer system at the plant of the **Milwaukee Coke & Gas Co.**, causing a loss of approximately $100,000. The loss is covered by insurance. Coal will be transferred from vessels to the pulverizer by an improvised method until the conveyor has been rebuilt, so there will be no interruption in the daily output of 12,000,000 cubic feet of gas and 1,700 tons of coke.

WASHINGTON, D. C.

A new policy governing the procurement of mining engineers for the Government service has been announced by the **U. S. Civil Service Commission.** In the future in preparing eligible lists of mining engineers, applications for examination will be received during such period as may be necessary to build up eligible lists. Heretofore it has been the custom to announce an examination on a certain date. It has been found practically impossible to give general circulation to the announcement of examinations. It is believed, once it is understood that examinations can be taken at any time, more representative eligible lists can be secured. Just at this time there is a shortage of mining engineers. There are no fresh eligible lists from which these engineers may be drawn. While the need just at this time is largely for specialists in petroleum and coal, there are vacancies in other branches of mining engineering to fill. The salaries for mining engineers range from $3,600 to as much as $5,000. Salaries for associate mining engineers range from $3,000 to $3,600, while assistant mining engineers receive $2,160 to $3,000. Junior mining engineers receive from $1,620 to $2,160.

Traffic News

In the complaint of **Holmes & Hallowell Co.**, the commission on reargument, has modified the rates previously prescribed on bituminous and anthracite from the Head of the Lakes to points in Minnesota, and the Dakotas. The rates on bituminous begin at 85c. per ton on hauls of 30 miles and under up to $4.68 per ton on distances from 625 to 650 miles. On anthracite the rates range 85c.@$4.86 for the distances named.

Argument as to divisions between carriers of rates on bituminous coal to destinations in Michigan, Ohio, Indiana, Illinois and Wisconsin has been assigned for Washington, Sept. 25.

In a brief filed with the I. C. C. **John Morrell & Co.** claims that the rates on fine coal from the various Illinois districts and from related fields in western Indiana and Kentucky to Sioux Falls, S. D., have been unreasonable since Feb. 28, 1920, because they exceed the rates from the same points to Sioux City.

In dismissing the complaint of the **Corona Coal Co.**, against the Mississippi-Warrior Barge service, the I. C. C., in its opinion, finds that it does not have jurisdiction over the local rates of the barge line applying to port-to-port traffic; that the charges of the barge line in connection with the handling of coal at Violet, near New Orleans, are not prejudicial and that the barge line is justified in maintaining lower rail-than-water rates than are maintained on the all-rail route.

The I. C. C. has suspended until Sept. 12 the rates on coal from Bessemer & Lake Erie R. R. stations to stations on the B. R. & P. Ry.

The Illinois Coal Traffic Bureau has been authorized to intervene in the complaint of the **Indiana State Chamber of Commerce** involving rates on bituminous coal from Ohio No. 8 and Inner Crescent groups to Terre Haute and other Indiana points.

In the complaint of the **Northwestern Traffic & Service Bureau** an examiner recommends that rates on soft coal from Manitowoc, Wis., and other west-bank Lake Michigan ports on traffic from beyond to Minneapolis and St. Paul be declared reasonable.

An examiner recommends in the complaint of the **Republic Iron & Steel Co.** that the rate on bituminous coal from Russellton, Pa., to Youngstown, Ohio, is not unreasonable.

The Santa Fe has filed a brief with the I. C. C. in the complaint of the **Northern States Power Co.**, contending that no reason exists for requiring on fine coal lower rates than on other grades of bituminous to Sioux Falls, S. D., from mines in Illinois, Indiana and Kentucky.

Coming Meetings

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

American Chemical Society's annual fall meeting will be held Sept. 4-9 at Pittsburgh, Pa.; divisional meetings will be held at Carnegie Institute of Technology and general meetings at Carnegie Music Hall.

American Mining Congress. Twenty-fifth annual convention and exposition of mines and mine equipment will be held at Public Hall, Cleveland, Ohio, Oct. 9-14. Executive offices, the Hollenden Hotel; E. C. Porter, convention manager.

The Rocky Mountain Coal Mining Institute will hold its next meeting at Glenwood Springs, Col., Sept. 6-8. Secretary, F. W. Whiteside, Denver, Col.

New York State Coal Merchants' Association will hold its annual meeting at Richfield Springs, N. Y., Sept. 7-9. Executive secretary, G. W. F. Woodside, Arkay Bldg., Albany, N. Y.

National Safety Council. Eleventh annual Safety Congress at Detroit, Mich., Aug. 28 to Sept. 1. Executive secretary, W. H. Cameron, North Michigan Ave., Chicago, Ill.

Coal and Industrial Exposition under the auspices of the Huntington Chamber of Commerce will be held Sept. 18-23 in the Chamber of Commerce Bldg., Huntington, W. Va. **The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers** will again hold its annual meeting in the same building during the exposition.

National Exposition of Chemical Industries will hold its eighth national exposition at the Grand Central Palace, New York City, Sept. 11-16. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Institute of Mining and Metallurgical Engineers will hold its fall meeting during the week of Sept. 25 at San Francisco, Cal. It is proposed to arrange for a party to leave New York on Sept. 10, stopping at different cities en route. Secretary, F. F. Sharpless, Engineering Societies Building, New York City.

Obituary

O. R. Scott, general manager of the Patoka Coal Co., died at his home in Indianapolis recently after an illness of three months. Mr. Scott was born in Terre Haute in 1877 and began his business career at an early age as delivery boy for a Terre Haute grocery. Later he was bookkeeper for a coal company there. He went to Indianapolis in 1913. From that time, his rise in the coal trade was steady.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

Volume 22 NEW YORK, THURSDAY, AUGUST 3, 1922 Number 5

On the Last Lap

FACING an unprecedented coal shortage, the result of the combined strikes of union and non-union coal miners and certain railroad employees, the country is slowly awakening to the seriousness of its situation. It was pointed out a month ago that by Aug. 1 stocks would have shrunk to the danger point, and the curtailment of output caused by the rail strike, not anticipated at that time, has in fact accentuated this condition.

It is imperative that the production of coal be resumed. It is equally imperative that a sane adjudication of the points at issue be provided and that provision be made against future serious breaks of this kind. There is now but one force in this broad land that can accomplish either—public opinion.

Settlement of the rail strike comes first because without unrestricted transportation even the coal from non-union fields is locked in the hills. Moreover, more than can be furnished by these mines is necessary. Anthracite production, cut off for four months, must be resumed if the health and security of half the householders of the country is not to be further imperiled. Industries already are halting for lack of fuel and now largely dependent on depleted reserves, with priorities turning the restricted current output to the more essential requirements of transportation and public utilities, will in a few weeks reach the bottom of their coal piles and perforce shut down. Because it is midsummer and this country has always been able to worry along somehow through previous similar situations, the great body of public opinion is indifferent. It will not remain so indefinitely.

The miners will return to work when John L. Lewis permits. He arrogantly defies anyone to get his miners to dig coal until he says the word. The strength of his position lies in his appeal to the men to preserve their organization, the United Mine Workers, at any cost of suffering or deprivation. He has taken the position that to follow any but his policy would mean the disintegration of the union. On this basis he has held his followers in line despite the fiercest kind of internal disputes. John L. Lewis will permit the miners to work when his terms are met.

Or, the miners will return to work when a force superior to John L. Lewis compels him to abandon his high and mighty attitude—drives him from his rule or ruin policy. From January to the middle of July the two parties—miners and operators—had a free hand. In that time splendid opportunities one after another were lost by the operators nationally to educate the public and mobilize opinion in the direction of a sane settlement of the issues. The anthracite operators and those groups of soft-coal producers who, struggling alone, have built up a clear record must suffer now for the lack of a united national direction. The administration passed up the opportunity two months ago to set before the people in words as clarion clear as it now takes up the twin coal and rail strikes, the untenable position of the miners' union in the anthracite situation when, lengthy negotiations having failed, the operators made offer of unqualified arbitration and the miners refused.

Let us forget the lost opportunities and concentrate on the one remaining—to direct every energy toward breaking the strangle hold of John L. Lewis on this country. The one force that can now bring this about is public opinion. We were not half-hearted in our criticism of the administration as a conciliator last month. We will not be half-hearted in our support of it now that the President has taken charge of the coal strike in behalf of the American people. It will never be known whether the bituminous-coal operators unaided could have reached an agreement with the union. Whatever the ending now may be it will result from the pressure of public opinion generated by Mr. Harding. He has squarely met the call for protection of those who are willing to work. He is now mobilizing public opinion and when the time is ripe he will throw it into action.

That Commission

ONE happy thought seems to be common to everyone who talks or thinks about the coal situation—let us have a commission. A commission will find all the ills and aches in the coal industry and prescribe a cure, or possibly a series of cures. Everbody seems to know a lot of things that are wrong, or at least is sure that things must be wrong, but no one knows just what, or how to correct the errors. Therefore, a commission. The commission will take the facts we have, add to them, and do the thinking for us that these collated facts suggest. This is just what the situation demands. A commission that will do one-half the things it is now hoped it can accomplish will be the best thing that ever happened to the coal industry. It will explode a lot of myths, lay down some sensible rules of conduct and, although we have but slight hope of its reorganizing the bituminous-coal industry, it will be able to expound some healthy truths about the existing forms of doing business.

Commissions on coal almost without number have been proposed in the past three years, in every instance in some form of legislation objectionable alike to operator and miner. The objections have all centered around the idea that the suggestions were designed to initiate regulation of the coal industry—wages as well as prices—through the opening wedge of compulsory fact finding. In some instances it has not been so much the actual legislation that has aroused hostility as it has been the obviously hostile spirit prompting it. The spirit of President Harding's suggestion is so entirely

free from taint of partisanship that the only one to object to his commission will be he who wants to hide facts. It cannot be otherwise than that he will appoint as commissioners men from all walks of life—eminent and unbiased. Neither miner nor operator should expect representation. It would be a modern marvel, indeed, if employee representation should produce other than a minority report, which in turn invariably results in some form of strike in protest of the majority.

It will be quite important to have the jurisdiction of this commission clearly and properly defined in advance. If it is to be an arbitration board then it can have jurisdiction over none but those party to the present controversy. The President has so indicated, to the dismay of the miners, who want nothing better than to have the government drag the non-union operators in the room where they are sitting.

On the other hand if the commission is not for compulsory arbitration and is but to investigate and study the coal industry, if it is to do any of those very important things which Mr. Hoover has indicated should be done and which some of the miners and some of the operators have advocated, then it must take in the entire coal industry. It must be national in the scope of its investigation, but with no power to force its decisions. The President has also indicated that he expects his commission to work that way too. Of course, it cannot do both and he will decide which of the two he desires the most.

The attitude of the United Mine Workers toward a commission is expressed in the following words from their reply to the President's proposal of July 10: "When all the facts bearing on the production and distribution of coal have been collected and impartially analyzed, we shall gladly face these facts and accept them as a condition to the rehabiliation of the coal-mining industry." Those who are familiar with the readiness with with this union "accepts" findings other than its own will know best what credence to give this fine assertion.

Mr. Ogle, president of the National Coal Association but speaking for the *union* coal operators *who attended* the President's conference on July 1, urges the immediate appointment of a fact-finding commission. The other union and the non-union operators have not so specifically expressed themselves on this matter. They have not been asked to, in fact.

As for the public, that part which has made itself heard is solidly for an investigation of everybody and everything connected with the coal industry. The idea of a commission is popular.

There will be a commission. When it comes time to lay their respective cases before that body the miners will be prepared and the operators will not be ready. The miners were ready last month, last year. They are regularly preparing data and arguments in support of their policies and positions. Such in fact is now the regular practice for all large labor unions. The union can give you a printed book, right up to date, on any subject from the "Hazards of Coal Mining" to the "Sanction of the Living Wage." The very weight, in pounds avoirdupois, of their evidence is impressive. They know what they want to prove, and they get the figures to prove it.

There is just one point to what has gone before. Operators who have any hope of defending their cause before whatever type of tribunal or commission is certain to come, and soon, will do well to inquire into the modern style of conducting such bodies and get ready. They cannot expect anyone to prepare their case for them. The commission will gather its facts by way of evidence introduced—not by digging it out itself. The facts on which it bases its conclusions will be those placed before it.

Will Miners Expose Themselves to This?

THE miner's qualification acts on the Illinois and Indiana statute books are precious to the United Mine Workers of America. The organization would surrender a good deal of ground undeniably gained by one means or another since April 1 rather than see those acts repealed. By that very fact a weapon of defence against coal famine is laid in the hands of the voters of those two states. "I'll call a special session of the Legislature and repeal the Indiana act," declared the stalwart Governor of Indiana the other day. "Don't," pleaded the state president of the miners; "give us forty-eight hours more," and in his voice was the fear of the whole mine union organization. Repeal of the qualification act, behind which the union is solidly intrenched against the open shop, would be a disastrous blow to unionism.

In Indiana there is a strong possibility that the Legislature, if assembled in special session, would actually effect the repeal. In Illinois the issue would be in graver doubt. Illinois operators have made no recent move against the act and might not favor a repeal even if it were in prospect. Instead, operators there are inclined to take the position that the Governor should declare a suspension of the state mining laws during the present emergency and, with martial law in effect in the mining districts, protect sufficient non-union men in the workings to prevent suffering for coal.

However, if higgle-haggling continues in the national coal-mine situation and the country begins keenly to suffer for coal, public pressure upon the Indiana and even the Illinois legislature to force the mines open to non-union labor may become irresistible. If the United Mine Workers of America, in their desperate ring battle with the operators, permit strike conditions to reach that point, they will have exposed a vulnerable spot upon which outraged spectators climbing over the ropes may land a wicked punch.

THE MORE URGENT WORK of taking care of a car shortage has compelled the Interstate Commerce Commission to suspend hearings recently inaugurated on the subject of car service rules—that is, on how to distribute cars during a shortage. The last car shortage was two years ago, and since then there has been admitted necessity of giving consideration to a revision of the rules of car service. It is said that down in Arkansas they never fix the roof while the sun shines, because it does not need it, and when it rains, they cannot.

THE COAL DEADLOCK invites picking.—*Washington Post.*

IT LOOKS AS IF the tariff bill would clap a big duty on returning prosperity.—*New York Tribune.*

SINCE IT STARTED on the first, why not call it the April Fuel Strike?—*Manila Bulletin.*

After a while, perhaps, the leaders of certain unions will discover that wages cannot be hoisted with bombs.—*Columbia Record.*

Merrill Mine, Its Housing Problems, Gravity Chute And Other Original Features



Village Located Convenient to Town—Men Travel to Mine on Railroad Train—Experience in Handling Partings in Coal—Assembling Empty and Load Trips—How Supplies Reach Mine

By Alphonse S. Brosky*
Pittsburgh, Pa.

IN WEST VIRGINIA coal operations are scattered and travel on the railroads is slow and arduous. In consequence it is necessary that each town be complete in itself, and to hold its men a company must provide such a town unless it can locate its village near one of the thriving centers that West Virginia is rapidly developing. While lack of easy communication makes the mine worker of that state less disposed to wander from operation to operation, it is a distinct disadvantage where a company seeks to add to its working force.

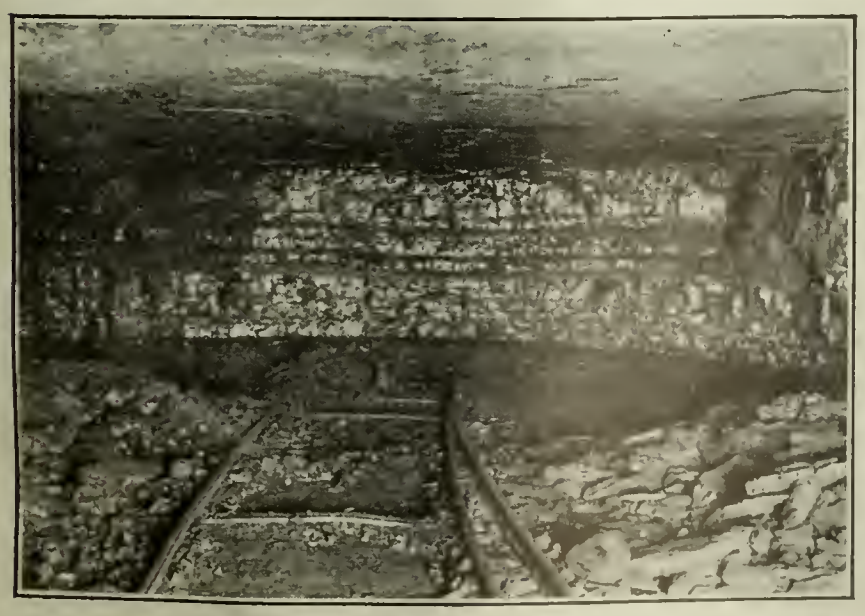
At some of the mines the valleys from which openings are made are so narrow that place for a town can hardly be found anywhere near the operating point. The Merrill mine, on Little Buffalo Creek, three miles west of the main Guyan Valley-Logan Branch of the Chesapeake & Ohio R.R., is in this predicament. A branch road built by the company runs up Buffalo Creek from the main line to the mine, but the town of Henlawson, where the men employed live, has been located almost from necessity where the two creeks meet and the branch forks from the main line. It lies at a point not far from the City of Logan, which is the center of the activities of this field.

The Merrill Coal Co., which owns the mine, has a little more than 4,000 acres of coal land which lie under the two mountain chains that flank Little Buffalo Creek on either side and extend from the mine to the village of Henlawson, the mine openings and the tipple being at the eastern end of the property. In the valley some building land is to be found, but had it been used the men would have been located conveniently neither to the mine nor to the main line and the town of Logan. Furthermore, a dirt road up the valley would have had to be maintained. Consequently it was thought best to build at the present site and transport the men by railroad.

On the three miles of track that the company owns it operates one 40- and one 60-ton shifting locomotive and two passenger coaches. A labor train leaves the town in the morning in time to get the men to their work at 7:30 a.m. As there are no houses in the valley all the 162 men employed at the mine travel to and from work on the labor train. This is run by the company, for, as at many other mines located off the main lines of railroad, the company finds it advantageous to use its own shifting engines. This insures the prompt delivery of cars from the main line to the mine and also guarantees daily removal of the loads. The railroad grade is in favor of the loaded cars, so that the number of cars taken out of the valley is almost unlimited, but only ten empties can be hauled upgrade to the mine.

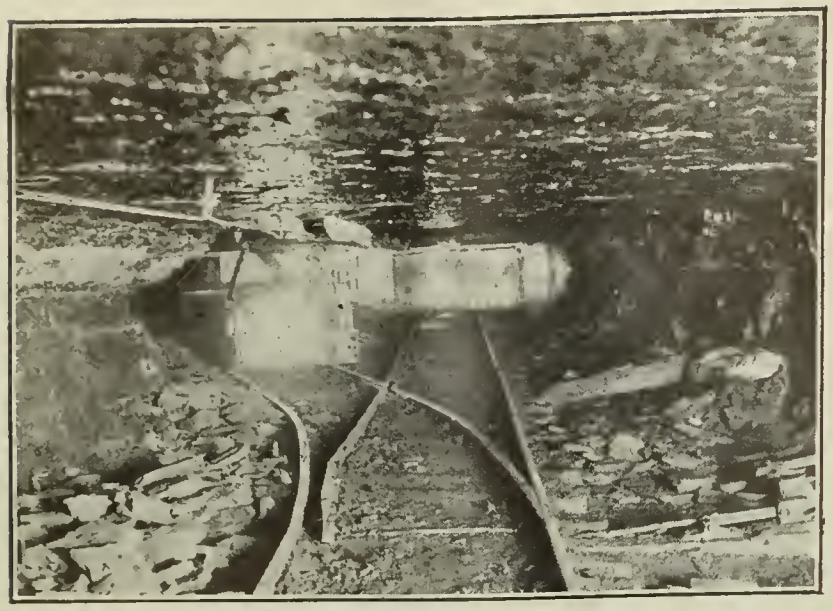
Three workable seams outcrop from the two ranges, the Winifrede, the Alma-Draper and the Island Creek, but the latter is the only one being worked at the present time. As the coal is mined out the workings will approach the village and eventually the men will be entering the mine and working at points near home. The coal has no unusual dips and the grades are slight, consequently the main haulageways may extend for considerable distances along the principal axis of the mountains, and coal may be brought out to the surface entirely through one main drift or it may be taken through several drifts and trammed along the mountain side to the tipple. When the haulages become too lengthy and an increase in production is desired, addi-

*Bituminous editor, *Coal Age*.



FACE OF ROOM, SHOWING METHOD OF CUTTING COAL

Though mined by an arcwall machine, the cut is made near the floor. At first it was cut between the lower slate bands shown, which are at a maximum 1½ in. thick and not persistent, but it was found undesirable to cut the coal in this way, for the slate too often was broken in pieces and was smaller than could be removed satisfactorily on the picking table.



GATHERING LOCOMOTIVES DO ALL UNDERGROUND HAULING

Six-ton reel locomotive bringing thirteen loads from the First Flats Left. The curves leading from the mains to the flats are of 100 ft. radius; those which join butts with flats have a 75-ft. radius. The room curves are laid to a radius of 25 ft.

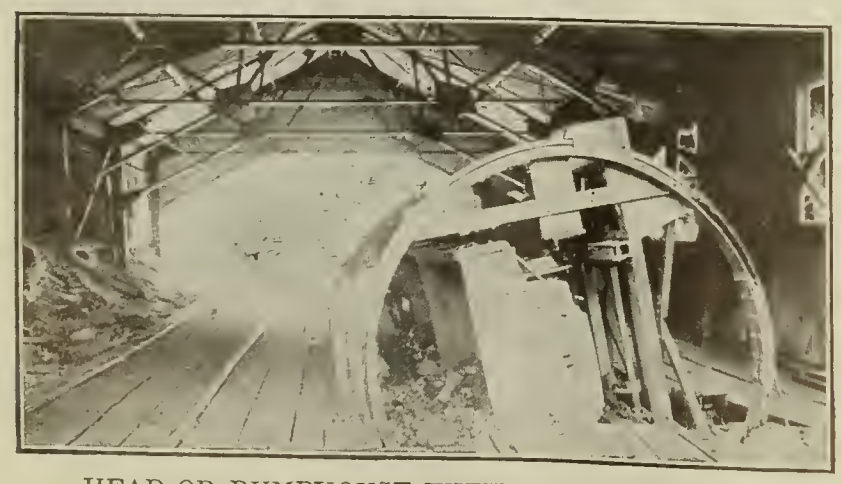
tional tipples may be erected at intervals from the present mine to the town. Future plans call for the erection of four additional tipples to take the coal from the two hills, thus reducing the length of the underground haulage.

The Island Creek seam at this place has an average thickness of 6 ft., and the slate roof is so unusually strong that few timbers or props need be used even along the roadways of wide rooms. Three streaks of slate which attain a maximum thickness of 1½ in. appear and play out from place to place.

The lowest streak appears 3½ in. from the bottom, and the other two streaks above are separated by 4 and 8 in. of good coal. The coal is undercut with arcwall machines and where the bottom rolls the cut is kept several inches above the floor. The bottom coal is easily removed by shovels. Where the coal is undercut it is brought down by the usual method.

An attempt has been made to cut between the first and second slate streaks, using the arcwall cutter, but it was found that after shooting the slate was badly broken up and the coal obtained was not as clean as with undercutting. The idea was abandoned, therefore, as undercutting and shooting permit the removal of the slate in pieces of a size suited to picking.

Most of the cleaning is done on the picking tables. The slate does not always fall free from the coal, and in such cases the loose slate cannot be removed in the mine and that which clings to the lump coal must be loaded out. During periods of operation when the coal passes over the picking tables in large quantity the pickers do not have time to knock the slate from the lump coal. In consequence it is the practice at this mine to pick from the table the chunks of coal having adhering slate, depositing them on the tipple deck so that during periods of no run the pickers can wield their hammers and clean the accumulated lumps of their impurity.

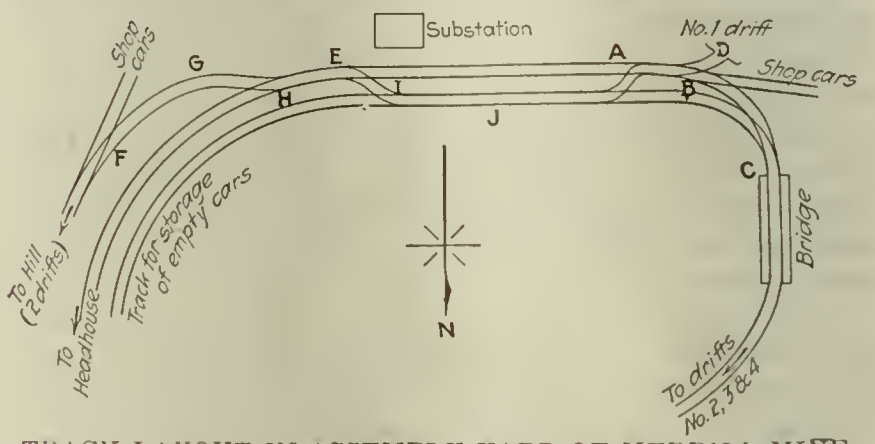


HEAD OR DUMPHOUSE WITH REVOLVING DUMP

The mine cars have swivel couplings, so that they can be dumped without uncoupling. The track on the left is for empty cars.

At the tipple the Island Creek seam lies 300 ft. above the railroad track, the headhouse lying, however, approximately midway between these two elevations. Coal is trammed from the point where the trips are made up, which is in the vicinity of the substation and not far from the drift mouths, to the headhouse, a distance of one mile, the grade being 3½ per cent in favor of the loads. Further details regarding the surface haulage arrangements will be given later.

The two mountains under which the coal lies come together at the upper end of the creek. It is at this point that the first drifts, or, as some would say, "the first mines," are being worked. The tipple, as was mentioned above, lies one mile from here, down the creek. Remembering that the coal area describes a long and narrow U the working-out plans may be followed easily. At the present time most of the coal comes from drifts emerging from the curve of the U.



TRACK LAYOUT IN ASSEMBLY YARD OF MERRILL MINE

Because the coal is brought in six to ten loads to a trip by gathering locomotives and comes in from many directions the problem of yarding the cars at the surface is not easy, but ample trackage insures minimum interference and delay.

Four drifts have been driven to win the coal at the juncture of the main bodies on either side of the creek. Of these, No. 1 drift is the only one of any importance, No. 3 and No. 4 drifts having been worked out, with No. 2 in the last stages of pillaring. An irregular body of coal to the east will be worked out during the coming year, leaving the two long arms on either side of the creek to be operated in an approach to the town. No real developments have been made in the northern arm. Access is gained to the southern arm through No. 1 drift, which is the principal opening. As necessity requires other drifts will be opened progressively in the direction of the tipple and the town. When the haulages to the present tipple become too long and when other conditions favor the action, other tipples will be erected to the east of the present one.

Because of the exceptionally firm roof, rooms can be driven 24 ft. wide on 60-ft. centers without any extensive timbering along the track. They are 300 ft. long, driven in one direction only. In No. 4 drift rooms were driven in the same manner on 80-ft. centers. The procedure was found particularly valuable near the outcrop. The good roof does not warrant the wide center elsewhere, however.

On the main hauls and the tramroad 50-lb. rails are laid on a 44-in. track gage. In the rooms and on the butts 25-lb. rail has been laid. Steel ties are used

Assembly Yard

A large motor with a trip of twenty-five cars is headed for the dump house near the tipple. After it has pulled out the smaller gathering locomotives each will bring from six to ten loads and assemble them into a trip. The substation is the only permanent building in the illustration. A steel-and-stone machine shop measuring 40 x 100 ft. will be built soon.



in the rooms and also on the butt entries. They have been adopted as standard equipment for room track in a majority of the mines of West Virginia, having been more generally used in that state than in Pennsylvania. I sometimes wonder why it is that the Keystone State is slow in adopting the steel tie in place of wood for room work. Surely it is easier to handle, has a longer life, costs less, maintains a uniform gage and for room work is more rigid than the wood tie as usually laid. Where the grades are light it may be adopted even for laying track in the butt entries, as is the practice indeed at the Merrill mine. This company has experienced no difficulties from spreading or in-secure rails in the butt headings where they have been laid on steel ties. However, their use is not to be recommended where grades of one or more per cent are encountered.

In turning the butts off the flats, however, the curves are laid with 50-lb. rail on heavy wooden ties. Extreme care must be exercised in putting down the curved track, and the joints made by the light and the heavy rail must be aligned accurately and firmly joined, else the gathering motors with their trips may encounter trouble in hitting the "straightaway" at usual curve speed.

The air butts are utilized as storage tracks for empties and the live butts from which the rooms are driven serve for storing loads. Just now five 6-ton motors are used for both gathering and hauling coal. When the workings have been extended, however, larger motors will be required for the main haulage. The gathering motors will deposit the loads on the main or straight roadway of one of the live butt entries near the curve. After backing the allotted number of empties into the aircourse butts, the main haulage motor picks up the loads from the tracked butts. Then the gathering motors have easy access to the empties through the first break-through off the flat, a distance of 80 ft.

At most operations in this state where the coal lies some distance above the railroad, the problem of transporting supplies to the coal horizon is solved by a plane and a hoist. The grades in most cases are steep, so that a self-propelled trip is not practical. Thus an ordinary mine-car truck is fitted with a body best suited for the supplies handled, and this is raised and lowered by a hoisting engine placed either at the top or foot of the hill. At the Merrill mine the industrial track is laid on a 15-per cent grade, switching back once and maintaining the same grade to the tramroad over which the coal passes. The industrial track does not cross the tramway at right angles, as is the usual practice, but is in reality a continuation of the tramway, being located on the side of the headhouse opposite from the mine. Supplies are carried to the mine openings by means of ordinary mine cars hauled by a 6-ton motor, two cars to a trip. After leaving the loading point the trip can make connections to any one of the drift mouths, passing over the empty track through the headhouse and thence to the single track or tramway. There are no pauses during a trip from the bottom landing to the destination. In the old system of hoisting supplies the cars are raised some distance above the tram track and are then dropped down on a switch to the tramway. Here a motor is coupled to the car, and both proceed to their destination.

The yard track in the vicinity of the substation is laid out in an interesting manner. One of the illustrations shows the track arrangement looking toward the substation and No. 1 drift. Another is a plan sketch of these tracks so designated as to aid in explaining how trips are made up ready for their movement to the tipple. Five 6-ton motors gather loads at the faces and, as the workings are not extended, carry them to the assembly yard. In the plan the trip of loads on the left track is headed by a 10-ton motor which is ready to move to the tipple. Immediately after this trip had pulled out a trip of ten cars emerged from No. 1 drift on track *A*, and crossed over at *B* to track *C* on the bridge; the motor then pulled into the clear at *D*. That trip was followed by ten more loads from No. 1 drift which pulled out and backed into the loads standing on the bridge.

The second motor then pulled out light and crossed over at *E*, where it picked up a trip of 20 empties from track *J*, backing into No. 1 gathering motor, which was waiting at *D*. The trip of 20 empties with a motor in the front and the rear proceeded inside No. 1 drift to the flats. Here the trip split in two, No. 1 motor pulling its quota to the First Flats Left section and No. 2 motor backing its trip into the First Flats Right section. Then a trip backed down off the hill on track F, directly in front of the loads which had been deposited by No. 1 and No. 2 motors on the bridge.

No. 3 motor then pulled to the clear, going light, and waited at point *G* until the big motor returned from the tipple with a trip of empties. The empty trip from the tipple on arrival pulled up on track *A* to clear the end of the trip at *H*. The No. 3 motor, which had been waiting at *G*, then backed into this trip of empties, and pulled it up the hill over *G* and *E*.

It then backed down and over the crossover *I* to the storage track *J*, where the cars above the number required on the hill were dropped, and the empty trip then pulled for the hill. The big motor with a trip of 25 to 30 loads then started with the tracks cleared for the tipple. A round trip from the yards to the tipple can be made in twelve minutes.

Because of the variation in the schedule and the quantity of coal coming from the several mines at different times this description does not hold for all car assemblies, but it does give one an idea as to the flexibility of car, trip and motor shifting that may be obtained with such a layout. The large motor makes from 18 to 20 trips per day to the headhouse; as a 2-ton mine car is employed, a 25-car trip averages 50 tons, or 900 to 1,000 tons per day.

Rotary Tip Dumps Cars While Coupled

About 150 ft. west of the headhouse the single tram track gives way to a double track, one a load and the other an empty track passing through the headhouse and continuing out past the other side for some distance, acting as storage track. The load track is a straight-line continuation of the tramway. The headhouse is about 150 ft. above the railroad tracks over which the tipple stands. The headhouse is equipped with a two-car air-operated rotary dump arranged for dumping trips while still coupled. A 75-cu.ft. compressor, running at 190 r.p.m. and driven by a 10-hp. induction motor, supplies air at 90 lb. pressure. After leaving the dump the trip progresses by gravity to the empty-storage track, where it is picked up by the big motor on its return with the next trip of loads.

The coal drops by gravity from the cars down a concrete chute placed on a 35-deg. slope ending in a 15-ton feed hopper. The chute is 94 ft. long and 17 ft. wide. The slope of this chute is greater than usually is adopted, but as the tipple is designed so that coal may drop by gravity directly into a c as mine-run, if so desired, the s enough to insure the sliding of t condition. The chute is large en storage of 180 tons of coal.

An apron feeder provides for t mine coal at a rate of 300 tons p screens, which are designed for and screenings. The lump and t shaker screens to picking tables, c ning parallel to the railroad track ft. clear picking space. Each tabl ing boom for lowering the lump railroad cars. Screenings are loa by means of chutes.

Can Load Run-of-Mine Witho

Emergency run-of-mine may be a chute from the receiving hopper track without operating the tippl from the picking table passes by and thence to a refuse bin across tipple. Picked run-of-mine may of the lump loading boom, the co picking and reassembled at the loa

The receiving hopper is of ste from the concrete chute, the flo trolled by two slide gates opera platform alongside the slack tra feeder is of the apron type with a steel thimble roller chain at t minute. The shaker screens are anced and stepped type. The up openings for separating the slack has 3-in. openings for separating t The discharge end is so designed the picking table without breaka driven by babbitted eccentrics o and steel rods, the flywheels being tric shaft. The screens are driv which also drives the picking tab feeder.

Each of the picking tables is la modate ten men. As already n bands of slate are found in the





be slabbed from the lump and picked out when loose. Two feet of clear picking space is apportioned to each man. The discharge ends of the tables for a distance of 31 ft. are mounted on pivoted frames, forming loading booms for lowering the picked coal into cars. The conveyor chain is of the pitch-steel roller chain type with 4-ft. carrying pans and a speed of about 60 ft. per minute. The trough of the scraper conveyor is formed of two channels and bottom plates. the flights are carried on a 9-in. pitch steel thimble roller chain driven by a 15-hp. motor at a rate of approximately 80 ft. per minute. The tipple w and erected by the Pittsburgh

The illustration in the title village of Henlawson, the rest b foliage on the surrounding h four of these fabricated hou are equipped with a bathroom rooms. They shelter eighty-f single men. As 162 men wo there are about two men to e to each man.

Spiral Dump Is an Old Idea in a New Form

PAUL STERLING, mechanical engineer, Lehigh Valley Coal Co., Wilkes-Barre, Pa., calls attention in a letter to *Coal Age* to the fact that the dump shown in the article entitled "By a Twist in Track Cars Are Turned Partly Over, Dumping Contents" is quite similar to one built many years ago.

The article to which Mr. Sterling refers was written by A. F. Brosky and appeared in *Coal Age* of July 13, 1922, page 50. It describes a dump wherein the rails and wheel grips are spiraled through a certain number of degrees, first one way and then dump without expenditure o turned about its center of gr movement. The device built b was designed and constructed of W. A. Lathrop, at that tim sylvania Coal & Coke Co."



Pulverized Coal Is Dangerous on the Surface as Well as Underground; Precautions to Be Taken in Handling It*

Cleanly Use of Powdered Coal Essential to Safety—Switches and Generators Have Been Known to Ignite Dust Clouds—Dangerous to Overheat Drier—Beware of Fire in Circulating Pipes

By L. D. Tracy†
Pittsburgh, Pa.

PLANTS in which pulverized coal is used should be carefully inspected, and the owners and operating forces should be impressed with the absolute necessity of reducing to a minimum conditions that tend to raise or ignite a cloud of coal dust.

This latter term is used advisedly. Pulverized coal in bulk is not especially hazardous, but as soon as it is raised into a cloud and mixed with air it becomes as dangerous as an unconfined body of gas. It takes only a small quantity of coal dust per cubic foot of air to form a highly explosive mixture. In tests by the Bureau of Mines 0.032 of an ounce of Pittsburgh coal dust mixed with a cubic foot of air has been found sufficient to cause an explosion when brought in contact with flame. Perhaps this danger can be visualized more readily when it is stated that all that is needed to produce such an explosion is a quantity of coal dust that can be heaped on a silver quarter of a dollar mixed with the air contained in a 12 x 12 x 12-in. box. Such a mixture needs only an open light to cause it to explode.

Some time ago the Bureau of Mines demonstrated the inflammability of powdered coal at its experimental mine. A large funnel containing pulverized coal was connected to a compressed-air line and a short distance away a piece of burning waste was placed on a small rod driven into the ground. The air was turned on, raising the coal dust into a cloud which was blown across the burning waste. Prompt ignition of the coal followed.

One form of coal dust which is exceedingly dangerous and to which perhaps too little attention is paid is that coming from small heating furnaces in which pulverized coal is used as a fuel. These furnaces are comparatively small and are used principally to heat bars and rods for small forgings. They are somewhat like the old-style blacksmith forge, being generally provided with a hood over the fire for carrying away the fumes. The pulverized coal is shot in under pressure and sometimes all of it is not completely burned but goes off into the surrounding atmosphere as floating dust which finally settles all over the platforms around the furnaces, on the beams and girders of the buildings and any other place upon which it can lodge.

I once made an investigation of a plant in which this condition existed and found this kind of dust all over the building. Samples were taken and analyzed. Many of these samples were not much different from a poor grade of pure coal.

A rather peculiar accident happened some time ago from dust of this kind in one of the Pittsburgh steel mills. At one point in the building an electric switch was so situated that dust could settle between the poles. One Sunday, when the mill was shut down, sufficient dust accumulated to form a short-circuit, and as a result a whole panel of the switchboard in the power house was burned out. Many accidents have occurred practically all of which were due to the dusty and unclean condition of the buildings.

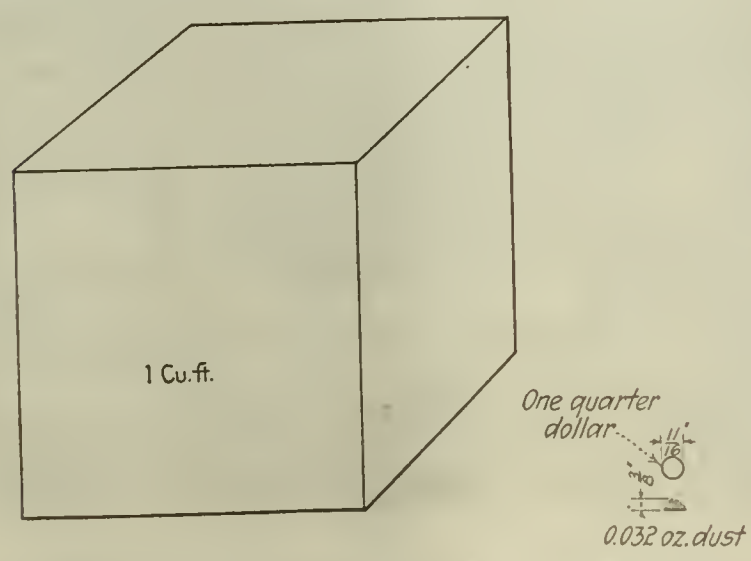
Some hazards, however, are more or less connected with the apparatus used in pulverizing the coal and delivering it to the point of consumption, and though it is true that reduction of the fire and explosion risks rests largely with those operating such plants yet much can be done through proper inspection by well-informed authorities having proper jurisdiction. In order to get an adequate understanding of these hazards and their remedies a working knowledge of the methods and machinery used in pulverized-fuel plants is necessary. A brief description of these methods and equipment therefore may be of value.

Before coal in a finely divided state can be used for fuel it must be crushed, dried, pulverized and conveyed to the furnace or boiler where it is to be used. Generally speaking three distinct classes of pulverized coal equipment are in general use. These may be designated as (a) the circulating system, (b) the indirect system and (c) the unit system. The first two mentioned employ practically similar processes, varying perhaps in detail, but differing chiefly in the manner in which the pulverized coal is transported to the furnaces.

In the circulating system, after the coal has been pulverized it is fed in regulated quantities to a fan, by which it is forced in a cloud through pipe lines with diameters ranging from 8 or 10 in. up to 14 or 16 in.

*Article entitled "Fire Hazards in Plants Using Pulverized Coal," read before the Fire Chiefs' Club of Ohio at its annual convention at Columbus, Ohio. Published by permission of the Director of the U. S. Bureau of Mines.

†Coal-mining engineer, U. S. Bureau of Mines.



WHAT A LITTLE PILE OF COAL DUST WILL DO

As much coal dust as you can pile on a quarter will suffice to fill a whole cubic foot of air with enough dust to cause an explosion. No wonder that the French use vacuum dust collectors above their screens. Dust is a real menace in our coal tipples and should be avoided.

Branch lines leading from the main line to the furnaces carry such coal as may be needed and the surplus, which has not been drawn from the main line, is returned to a point near where it started, where a separator removes the coal dust from the air and returns it to a storage bin to be blown again through the line.

In other words this system embodies a continuous circulation of coal dust. It is somewhat analagous to a gas line where the fuel is drawn off as needed. Secondary air lines, independent of the main coal feed, provide the additional air at the burners necessary for proper combustion.

The indirect system transports coal either by means of compressed air under possibly 50 to 90 lb. pressure, a screw conveyor, or a combination of air and screw conveyor to bins at the furnaces. From these bins the pulverized coal drops into a small screw conveyor by which it is either fed to an air blast which carries it into the burner, or directly to the burner itself.

Directly and Indirectly Fired Types in Use

An important feature of this method of utilizing pulverized coal as contrasted with the circulating and direct systems is the entire absence of a drier to expel the moisture from the raw fuel.

Two types of these driers, the directly and the indirectly fired, are at present in use. The former type consists practically of a long shell from 3 to 5 ft. in diameter, at one end of which is a furnace and at the other a stack. The hot gases pass through the center of the shell, coming in contact with the raw coal, which is fed into the drier at the stack end.

The indirectly fired drier generally is one of two kinds. The first is the double-shell type which consists of two cylinders, one inside the other. The raw coal travels through the inner shell and the hot gases move in the opposite direction in the space between the two cylinders, after which they return through the inner shell to the exhaust stack.

The other kind has an inclined single shell, the higher end of which terminates in a brick housing supporting the exhaust stack, and the lower end in a steel hood. The furnace for heating the drier is placed between the stack chamber and the hood. This furnace is provided with a large combustion chamber through which the drier shell passes. The hot gases from the combustion chamber of the furnace circulate around the outside of the drier shell.

Drier Is a Potent Factor in Explosions

The drier, directly and indirectly, doubtless is the cause of a large percentage of the fires and explosions which have occurred in coal-pulverizing plants. On the man operating the drier—by this I do not mean the man in general charge but the one actually shoveling the coal—is placed a great responsibility, akin to that laid on the man in charge of a battery of boilers. I sometimes think that the average factory or power-plant superintendent little realizes this fact. If the man tending a boiler forgets to keep the water therein at the proper level, something pretty costly is likely to occur. If the man tending a drier happens to perform his duties improperly and allows the furnace to become too hot the chances are that there will be work for the fire department in that vicinity.

This is well illustrated by an explosion and fire that occurred in a large steel plant. From evidence obtained at an investigation it was well established that the man tending the furnace of the drier for some reason built up an abnormally large fire so that the coal in the drier ignited. The flame then passed into the pulverizer, where it came into contact with fine coal dust, with the result that an explosion followed, filling the entire building, killing two men and badly burning two others.



CLOUD OF COAL DUST IGNITED IN OPEN AIR

Coal dust needs no confining, the detonation of a shot or the violent effect of an electric arc to set it on fire. If the dust is fine and well mixed with air a flame will immediately cause it to ignite. Here the dust was blown from a funnel by compressed air.

One precaution that can be taken to prevent fires in buildings where powdered coal is used is to insist upon absolute cleanliness in the pulverizing plant. Accumulations of dust must not be allowed. One principle that should never be forgotton is that when cleaning up such a plant coal dust should never be swept up with a broom nor should accumulations be dislodged from window ledges, girders, boiler housings or platforms by blowing with compressed air, unless they have first been thoroughly wet down or mixed with incombustible dust in the proportion of seven parts of rock or shale to one of coal. Some plants that I have visited are kept almost spotless by means of a vacuum system.

Another safeguard is to isolate the drier from the rest of the pulverizing plant. If the former is not placed in a separate building it should at least be separated from the coal-consuming equipment by a blank masonry wall.

If a building the inside of which is covered with coal dust once starts burning the fire will spread with far greater rapidity than in a similar building that is clean. In fighting a fire of this nature care should be taken to avoid a sudden explosion or backfire from pulverized coal, possibly stored in a bin, but suddenly raised into a cloud by a sudden air draft or by falling material.



EFFECT OF A COAL-DUST EXPLOSION AT A STEEL MILL

This plant was destroyed by an explosion due to an abnormal fire being lighted in the coal drier. The flame passed into the pulverizer, where it came in contact with coal dust. Two men were killed and two badly burned.

All driers should be equipped with recording pyrometers that make a continuous record of the temperature at which the drier is operated. Preferably this chart should be placed in the office of some responsible official. Thermocouples—that part of the pyrometer affected by the change in temperature—should be installed at the discharge end of the drier.

One of the greatest causes of fire in a drier room is the continued passage of hot gases from the furnace through the drier shell when the machine is not in operation or when the shell is not revolving and there is not a constant stream of coal passing through it. Under such circumstances a certain amount of coal may quite possibly be lying in the drier shell, which, through continued contact with the hot gases, may in time become ignited. When the drier is again put in operation this hot coal will either be delivered to the pulverizer or to the dried-coal storage bin. If it goes to the pulverizer it is likely to ignite and explode the fine dust therein; if to the dried-coal storage bin, it may possibly start a fire. Such fires usually are, and wrongly, charged to spontaneous combustion. On the other hand, through continued application of heat from the furnace, gas may be generated from the coal within the drier. This may collect in the shell and explode, with disastrous results, if brought into contact with an open flame.

Though regulation of the coal-drying equipment is largely a matter for the operating official, yet an enactment by the proper authorities requiring all driers to be equipped with bypasses, in order to prevent the gases of combustion from entering the shell when these machines are not in operation, would be of great value.

Next to the drier one of the most prolific sources of trouble is the large main which circulates the mixture of air and coal dust around the plant, returning the unused coal to the storage bin. Pulverized coal is driven through this line by air currents induced by a fan and having a pressure of about 8 or 9 oz. per square inch. Fires in this line are often of a smoldering nature but they may heat the pipe red hot. In coping with such a fire little can be done save cutting out the hot section.

In any event the blowing fan should be stopped. The most important precaution of all, however, is that the entire line be inspected to see that it is absolutely free from sparks, glowing particles or smoldering coal before the fan is again started. Otherwise there may be just enough dust lying in the bottom of the pipe line to make an explosive mixture when it is raised into a cloud by the starting of the fan. Such a mixture will cause trouble if brought into contact with any glowing particles. For this reason after a fire in a coal-circulating line the entire piping system should be thoroughly inspected before the fan is started.

At a manufacturing plant which had a large number of small furnaces drawing fuel from such a line, the main fan suddenly broke down and stopped running. The sudden cessation of pressure evidently permitted a back draft and drew hot particles of coal into the pipe line. Here they continued to smolder until several hours later when the fan was again put in operation. The air current thus started stirred up the dust which had settled to the bottom of the pipe and simultaneously fanned the smoldering coal into flame. The result was an explosion which travelled throughout the entire length of the pipe line and ended by blowing into pieces the cast-iron housing of the fan, one man being killed and two others burned. It is perhaps needless to say that all pipe lines carrying pulverized coal should be of metal.

In a pulverized-coal plant all elevator systems and all screw conveyors should be dust-tight. This type of apparatus offends more, probably, than any other in the matter of throwing off fine dust. For a while this dust will remain in suspension, but it finally settles on some convenient flat surface. It is an easy matter to permit the joints to become loose and the cover to be jarred off.

Coal elevators should be adequately vented to the outside air. One point should be closely watched, however, in all outside vents connecting with passages wherein pulverized coal is carried and that is that the dust be not discharged in the open air in such manner or at such points that it may be drawn into the doors or windows or settle on the roof of some other building.

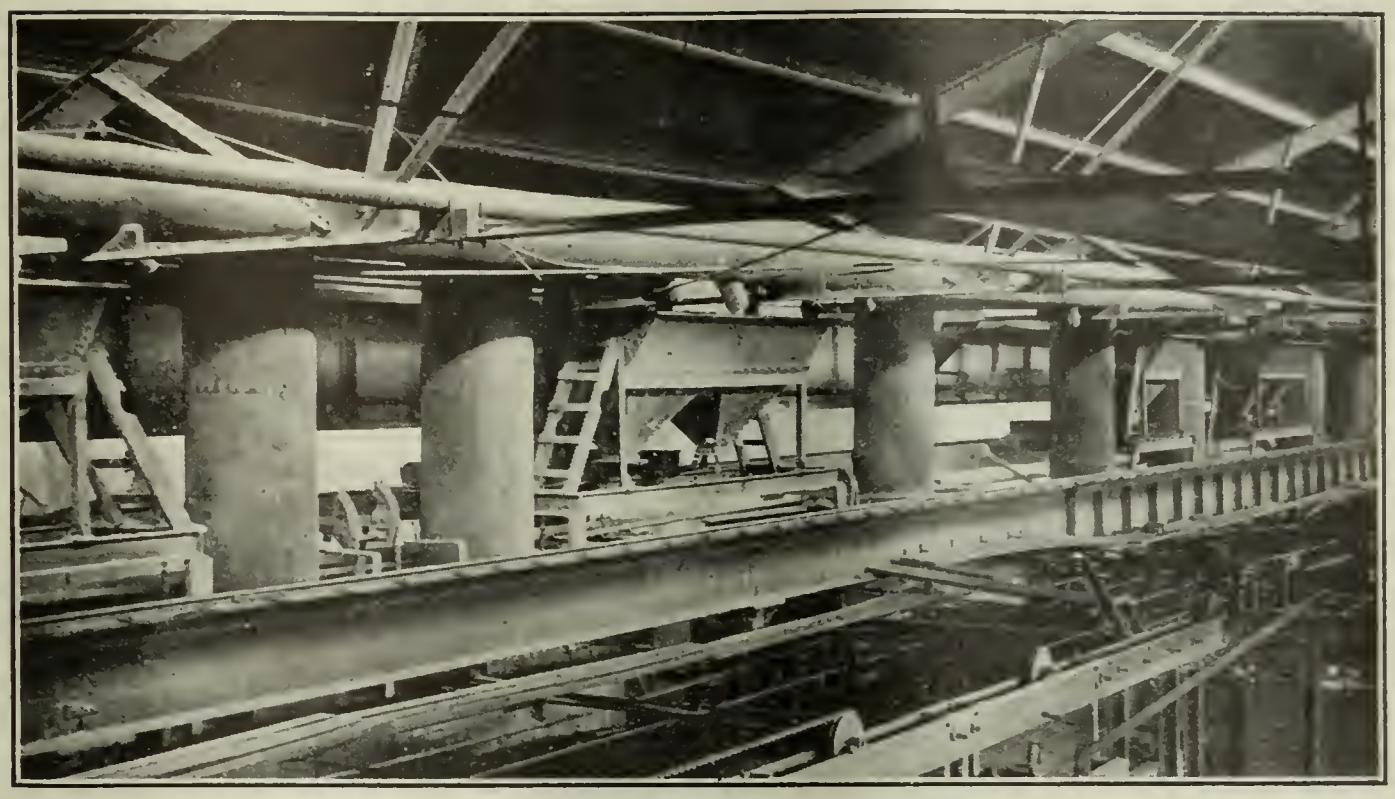
Fires in storage bins have been another source of trouble to users of pulverized coal. Such bins are of two kinds, those which have a capacity of 15 tons of dried coal or thereabout and those that store pulverized coal. The latter hold from one to five tons each.

Need Self-Ignition Data for Powdered Coal

Spontaneous combustion almost undoubtedly plays a large part in the origin of these fires. Few reliable data are available concerning spontaneous combustion under the conditions found in pulverized-coal plants. We do not have, for instance, information relating to the quantity of air that should be circulated through the bin or the temperature which once reached will cause the coal to heat rapidly. We know, however, a few things about the spontaneous combustion of coal under other conditions and they may possibly hold true for pulverized coal. One is that fine coal exposes a larger surface to the air than coal of the same weight but in larger sizes. Consequently, it will take up oxygen more rapidly. Burning is, of course, no more nor less than a rapid absorption of oxygen. Once coal is heated by any agency whatever to a temperature of 150 or 175 deg. F. it conserves enough of its own heat and absorbs oxygen so rapidly that the temperature of actual combustion is soon reached.

Bins Over Heating Furnace

A most convenient position but one in which the powdered coal in the bins is likely to get heated and to burn, the burning material being carried finally into the circulating system where coal is suspended in the air and free to explode. Locating the bins as shown aids spontaneous combustion.



Accounts of the following instances of spontaneous combustion are taken from the records of the Bureau for Safe Transportation of Explosives and other Dangerous Articles, which is affiliated with the American Railway Association.

Smoke was noticed coming from a box car loaded with pulverized coal in bulk. The side doors were opened for ventilation. At first actual fire could not be detected, but the entire load was hot and smoke was rising from the surface of the coal. Three hours later the fire was seen coming to the surface. Efforts were made to transfer the contents of the car, but the dust and gas ignited where the men were shoveling. Finally the car was brought to a fire hydrant and a stream of water was used on the dust from time to time. It was eventually necessary to wash the entire load out of the car with a stream of water.

Another case was that of a shipment of pulverized coal in bags. When the doors of the car were opened smoke poured out in great volume. Several bags of the pulverized fuel which had ignited spontaneously were unloaded from the car and the fire extinguished.

An official of a large steel company in the Youngstown district stated that trouble had been experienced from fire in its pulverized-coal bins. There was no way, so far as he knew, in which burning coal could be transported to and deposited in the bins. These bins were close to the heating furnaces and thus absorbed much radiant heat. However as they were not large they probably were supposed to be emptied every 24 hours.

It is a well-known fact that for some reason pulverized coal will stick to the sides of a bin and in time become so caked that it is necessary to jar the bin or use bars to loosen it. In such cases the coal fed to the furnace comes entirely from the center of the bin.

It also is a well-established fact that pulverized or even slack coal stored in close proximity to a furnace, a steam line or a stack for exhaust gases will heat up much more quickly than it would otherwise. As the bins mentioned often caked and were close to the heating furnaces it is reasonable to assume that the coal clinging to the side walls was heated by radiation from the furnaces and in time reached a temperature high enough to cause combustion.

It is well, therefore, to locate all storage and other bins containing pulverized coal as far away from furnaces, open lights and flames as operating requirements will allow. The bins should be so located that no radiation from furnaces, boilers, steam pipes, flues or other heating appliances can materially raise the temperature of their contents. When practicable, bins used in connection with various furnaces should be placed outside the main building. Where this is not practicable they should be separated from the furnace by a noncombustible partition.

Where a bin contains any large quantity of burning coal care must be taken to guard against one important danger when making efforts to extinguish the fire. If a stream of water is poured on red-hot coal carbon monoxide is likely to be generated, and should the bin be located within a confined space men are quite likely to be overcome, for carbon monoxide is the most poisonous gas of all those ordinarily encountered. A fraction of 1 per cent is deadly when breathed. If a strong stream of water is played on a pile of powdered coal within a bin a cloud of dust may be raised, and when it comes in contact with a flame it may ignite, with serious consequences.

Probably the quickest, safest and most economical way to cope with a bin fire is to remove all the coal as soon as possible and let it lie in a pile outdoors until the fire is entirely extinguished.

When fires occur in driers their extinguishment requires considerable judgment. If the fire has not attained much headway it may be put out with water. If it is fierce and the drier shell has become red hot, however, it would hardly be well to introduce water. While I have no personal knowledge I understand that live steam is a highly effective and safe means for extinguishing a fire of this kind.

All electric wires and cables in a plant using pulverized coal should, as far as possible, be carried in conduits. All switches, as far as can be arranged, should be placed on the outside of any building in which coal dust is likely to accumulate, and where they cannot be so located they should be of the oil-immersed type. The necessity for this precaution is shown in the incident mentioned above wherein a switch was short-circuited by dust and a switchboard panel was burned out.



BINS ON OUTSIDE OF MAIN BUILDING AWAY FROM HEAT

This location is well chosen and is one where the coal would be kept at the temperature of the outside air except for its own heating quality and its original heat. It is a far safer position for the pulverized coal than that in the previous illustration.

Motors that are likely to spark are a potential source of danger. Perhaps the best illustration of this peril is the explosion which occurred at the New Brancepeth colliery, in England. The pulverizer was driven by a 25-hp. 500-volt direct-current motor, which was inclosed but not explosion-proof. It stood on a platform about 6 ft. from the floor. A short-circuit of one of the armature coils caused severe sparking, whereby the coal dust inside the motor casing was ignited. This caused an explosion of sufficient force to blow off the sheet-iron hood that covered the commutator end of the motor. The flame thus produced ignited the fine dust held in suspension within the building, the resulting flames extending 6 ft. outside the open door and for a height of 15 ft.

The U. S. Bureau of Mines and prominent English authorities have made extensive tests in order to determine whether a cloud of dust can be ignited by an electric arc or spark. For instance, when an arc was formed with a direct current of 100 volts and 100 amp. ignition was obtained in twenty cases out of sixty-two. With a direct current of 240 volts and 27 amp. ignition was obtained nineteen times in twenty-three trials. A motor of 5 hp. on a 220-volt circuit ignited a dust cloud once in every ten trials, and a 10-hp. motor on the same voltage ignited a dust cloud almost every time. Consequently motors of the non-sparking type, preferably squirrel-cage machines, are the nearest to being explosion-proof now available. All machinery should be thoroughly grounded to prevent sparks arising from static electricity.

Whenever inspections for fire hazards are made around any kind of plant where there is a prevalence of dust, whether it be of coal, grain, aluminum, or in fact dust of any kind, the electrical equipment should be carefully examined and especially any device that may spark, such as motors, exposed switches and electric wiring.

When portable incandescent lamps are used to illuminate any place in which there is liability of a pulverized-coal cloud forming the bulb should be protected with a wire guard. It is, however, dangerous to use these portable lights around dusty bins because the dust may be ignited by sparks from possible defective connections and short-circuits. Ordinary hand flashlights are handier and safer.

In closing I would like to emphasize the following considerations: A cloud of coal dust and air mixed in the proper proportions is as dangerous as a cloud of unconfined natural gas and air; a fire in a structure covered with coal dust, even though the dust has been partly consumed, will be difficult to fight, because if this dust once gets in suspension in the vicinity of flames an explosion is quite likely to occur. Such an explosion has no mercy on anyone who may be fighting the fire in the vicinity.

Supplementing Locally-Generated Current With Central-Station Power

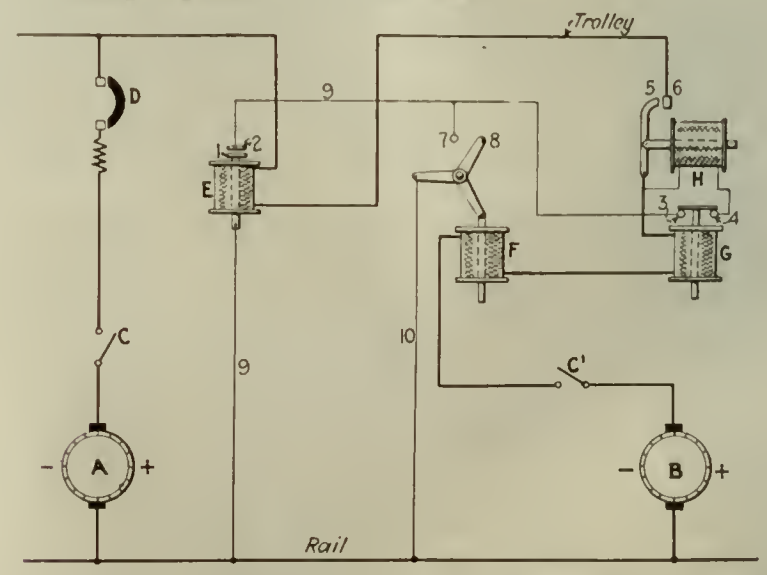
By M. E. Benedict*

AN INGENIOUS method whereby locally generated power may be supplemented with central-station current has been devised and patented by H. A. Scott, of Saltsburg, Pa., chief electrician of the Kiskiminetas Coal Co. This scheme has been in successful operation at one of the mines of that company for several years.

The plant is equipped with a steam-driven generator of sufficient capacity to carry the average mine load but inadequate to handle the frequent peaks incident to mine operation. It was necessary therefore either to buy another steam-driven unit or to purchase power, which in this case was readily available. The latter course was decided on and a motor-generator set was installed in the mine as near the load center as possible, power being taken underground through a borehole. Under these conditions the motor-generator set would naturally handle most of the load, and as it was desired to hold the amount of purchased power to a minimum Mr. Scott worked out his device. The plan evolved has resulted in only about 10 per cent of the energy used being purchased from the public-service corporation.

The accompanying illustration makes clear the manner in which the device is operated. The generator *A* is steam-driven and is located near the drift mouth. It is equipped with the switch *C* and circuit breaker *D*. Generator *B* is the motor-generator set within the mine. The feeder from generator *A* contains the solenoid *E*, which, when the current output of this machine reaches a predetermined quantity, closes the contacts 1 and 2, thus establishing a shunt circuit from generator *B* through the solenoids *F*, *G* and *H*, through the contacts 3 and 4 and 1 and 2, this circuit being marked 9. The

*Consulting engineer, Johnstown, Pa.



TAKES CARE OF PEAK LOADS WITH STATION CURRENT

Generator *A* is steam-driven and located at the drift mouth. Generator *B* is a motor-generator set within the mine. Solenoid *E* establishes a shunt circuit, with generator *A* supplying current from generator *B* whenever the current output of generator *A* reaches a predetermined quantity.

current traversing the solenoid *H* closes contacts 5 and 6, whereupon generator *B* feeds into the trolley through the coils *F* and *G*. Current passing through the coil *F* by actuating its plunger closes contacts 7 and 8, which gives another path for the return of the shunt circuit 9. This is necessary, as contacts 1 and 2 will open as soon as the generator *B* relieves generator *A* of part of its load.

The plunger in the coil *F* is set to open by gravity when current in that coil reaches any fixed minimum, this current value being adjustable. All the load is then restored to the generator *A*. The function of the solenoid *G* is to act as an overload breaker. When the load on the generator *B* exceeds a safe value this plunger will rise, opening contacts 3 and 4. Circuit 9 thus will be opened and generator *B* will be out of service until the plunger of the solenoid *G* returns to its low position.

When Mines Are Moistened by Steam It May Be Necessary to Do It Split by Split

By F. C. Cornet*
New York City

THOUGH a dusty coal mine may be sprinkled by a water car or pipe line so thoroughly that the danger resulting from the presence of coal dust is greatly reduced, the process does not begin to compare, so far as effectiveness and low cost are concerned, with the method that uses the ventilating current as a carrier and distributor of humidity.

For the latter process to be possible the air entering the mine must possess a temperature higher than that of the workings and be so humid that it will reach a condition of saturation before the moment when the temperature of the ventilating current is reduced to that of the workings traversed. Thus a certain amount of moisture will precipitate and settle, as would dew, on the floor, roof, ribs and timbers, moistening every square inch of exposed surface and rendering harmless all dust deposited thereon.

Furthermore, this method of humidification has this further advantage that when the moisture precipitates and settles it carries with it the invisible dust that is in suspension in the air, the moisture so long as it remained in the state of vapor having traveled in intimate contact with the dust.

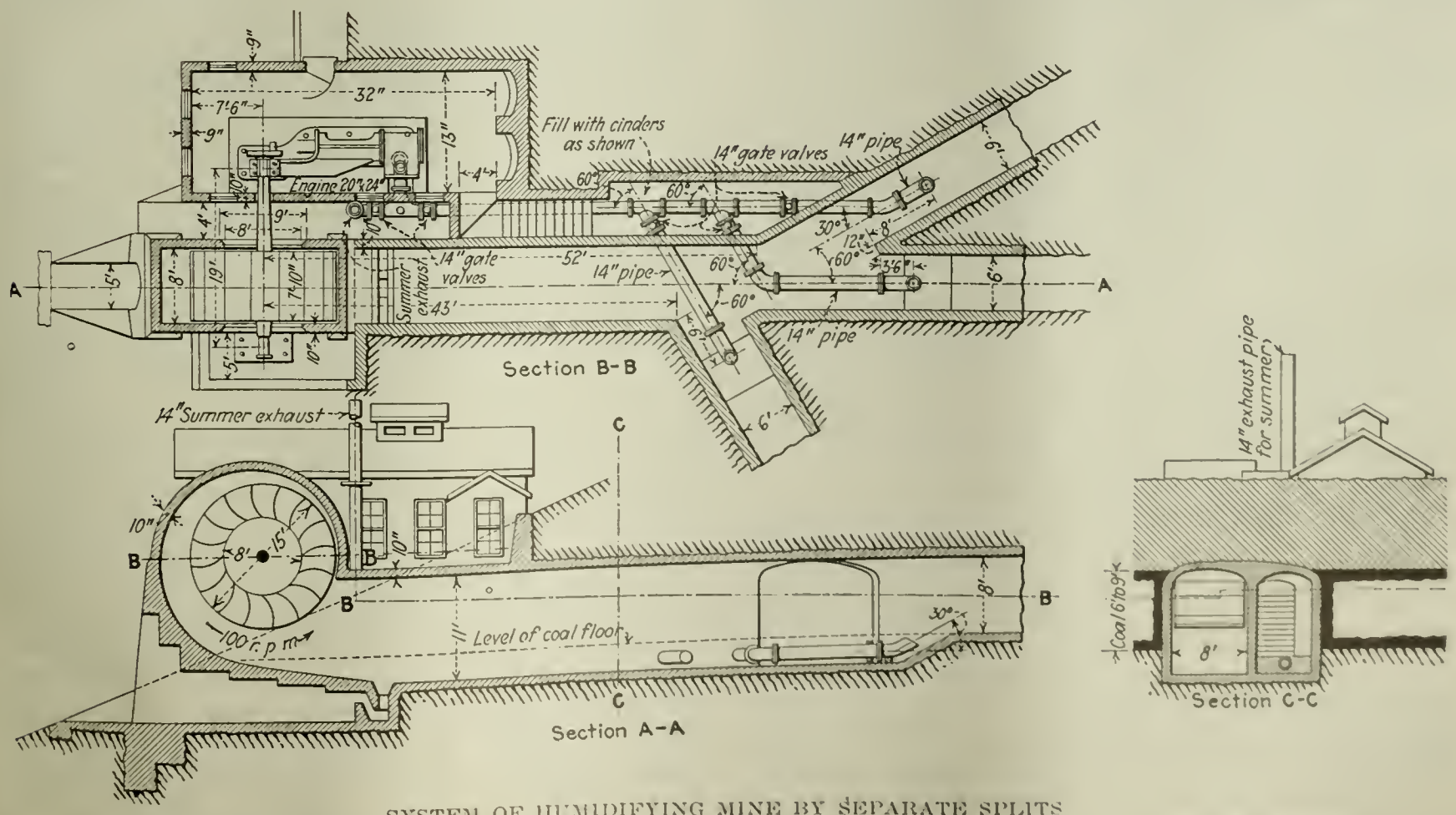
The instant that the lowering temperature causes the ventilating current to become saturated, precipitation commences and continues until the temperature of the mine has been reached, after which all water vapor left in the traveling air remains in it and returns with it to the outside.

During the greater part of the summer season the ventilating current is at a temperature sufficiently above that of our mines and contains enough moisture to insure a deposition of humidity abundant and prolonged enough to render harmless the dust present in all places traversed by the air current.

In mines abundantly and efficiently ventilated it is a matter of common observation in summer that the traveling air begins to shed humidity on entering the mine and continues to do so to the end of its underground progress. This is of great importance, for whether the ventilation be blowing or exhausting, it results in the humidification of not only the aircourses and workings proper but also of the haulage roads, which generally are dusty, often more so than the rooms themselves, a condition due to the action of the wheels on the coal falling from the cars.

What happened fifteen years ago at Monongah, W. Va., when a trolley wire fell on the track a short distance from the mine mouth and thereby caused a disastrous dust explosion, demonstrated that when measures are devised to humidify a dusty mine the

*Consulting engineer.



SYSTEM OF HUMIDIFYING MINE BY SEPARATE SPLITS

Air must be so completely heated and so adequately humidified that when it is about to leave the mine it will still be prepared to deposit moisture when passing over surfaces of the temperature of the workings. Otherwise it will leave its work only partly done. To give the air in any one split more heat and more steam it is given all that is available, but for a short time only, and each split has its turn.

haulage roads, beginning at the first set of timbers, should not be forgotten.

The conditions of temperature and moisture under which the ventilating current is able to deposit humidity from the beginning to the end of its underground travel, through the twenty-four hours of the day, are met only during the hottest and most humid weeks of summer. There may be summer days when the atmospheric temperature is abnormally low and the ventilating current, being initially little warmer than the underground workings, deposits all the humidity it is capable of yielding before it completes its passage through the mine. But any deficiency thus caused in the humidification process is sure to be made up in a day or two, when the outside air again becomes warm.

When a mine fails in summer to be thoroughly humidified it will generally be found that the ventilating air volume is either too small or unwisely distributed. The latter occurrence is much more frequent than the former, for if the total volume of air entering a mine is, in general, amply large to satisfy all necessary humidification requirements, it is seldom rightly apportioned. Some of the separate currents into which it is subdivided are sometimes of such small volume and travel so slowly that they reach the temperature of the mine at an early stage of their travel, thus ceasing to spread moisture before reaching the places most in need of humidification.

Some Splits Take Too Much of the Moisture

Conversely, the volume of other splits may be so large that they spread moisture in needless profusion along their whole route, their temperature even on returning to the outside being often found to be higher than that of the workings they have superabundantly ventilated and humidified.

The remedy for these different conditions suggests itself. If the situation of certain workings is sometimes so dry that their humidification by the ventilating current calls for the use of an air volume seemingly out of proportion to their importance, the management of the mine is solely responsible for this condition, which in nearly every case is attributable to lack of foresight.

During seven months of the year, when for the greater part of the time the atmospheric temperature in West Virginia is lower than that of the mines, the ventilating current grows warmer as it travels underground, thereby developing a capacity for absorbing moisture which is evidenced by the drying up of all ventilated places, except, of course, those where water happens to run out of the strata. The more abundant the ventilation, the more marked is this drying process, which sometimes is so active that sprinkling, unless continuously resorted to, is powerless to check it.

When steam is turned into the ventilating current it warms the air, thus enabling it to absorb a certain amount of water vapor, which it sheds later while traveling through the workings, thereby humidifying the latter. Most coal-mining men are familiar with this method, which, however, has been found to fail in so many instances that many have hastily condemned it as not worth bothering about or, at any rate, not sufficiently satisfactory in its application to justify driving the fan by steam when electricity is more convenient.

My opinion, gained from personal experience, is that in all cases where the fan is a blower, exhaust steam turned into the ventilating current will do all that the advocates of the idea claim for it, provided the volume of air thus treated is not out of proportion to the weight and temperature of the steam exhausted by the fan engine.

When the volume of the ventilating current is too large to be humidified as a whole by the exhaust steam, it must be treated in detail, being to that end split into two or more parts, the largest of which must not overtax the heating and humidifying capacity of the steam furnished by the exhaust of the engine. The splitting must be done close enough to the fan to permit the full amount of exhaust steam to be discharged in a controllable and practical way into each split separately, heating and humidifying each in turn.

The full exhaust may thus be turned into each split at regularly recurring intervals, thereby raising its temperature sufficiently and imparting to it enough moisture to develop in it a humidifying capacity that will endure throughout the time it takes the air in each split to run through the workings assigned to it.

Gate Valves Place Heat Where Desired

How the ventilating current may be thus humidified in detail is shown in the accompanying drawing. The fan and engine appearing here are of old types; the wooden housings, having outlived their usefulness, will soon be replaced by a concrete covering of a design calculated, as may be seen, to make the plant fairly efficient. The main air current will be subdivided, as shown, into three splits within a distance of 20 yd. from the center of the fan. Two gate valves, placed near and under the engine in a double system of exhaust piping, will permit the management to direct the exhaust steam at will either into a vertical pipe leading into the atmosphere or into a horizontal pipe laid in a so-called pipe tunnel parallel with the main airway and separated from the latter by a concrete wall through which pass three branch pipes, each controlled by a gate valve and each leading into a separate split, an arrangement designed to permit the separate warming and humidifying of each split in turn.

The system is a most flexible one. All of the exhaust steam may be sent direct into the atmosphere or part of it may be sent there while the rest is directed through the horizontal pipe and one or more of its valve-controlled branches into one or more of the splits. Or again, all the steam leaving the cylinder may be sent through the tunnel pipe and its valve-controlled branches into the three splits concurrently or each split separately, in turn and in rotation.

In order to make the arrangement a success the tunnel is made easily accessible by a good stairway running down from the engine room. A hole 3 or 4 in. in diameter, made in the airway wall at the far end of the tunnel, will keep the latter continually ventilated and fairly comfortable, and two electric lights will be kept burning there at all times. The horizontal pipe will be buried in tamped cinders, as indicated, the valve-operating wheels, their stems and stuffing boxes only standing up out of the leveled and hardened fill.

Even if both lights should happen to be out at the same time, an operator used to the place will be able, despite the darkness, to find the valves rapidly and without difficulty. The latter will have to be operated often in any event, the present plan being to keep the exhaust blowing in each split for 8 hr. at a time, making it necessary to make a change in the gate valves only three times a day. The probabilities are that if the 8-hr. period is departed from it will be made longer, not shorter, thus increasing proportionately the intervals between valve changes.



Problems of Operating Men

Edited by James T. Beard



Responsibilities in Firebossing

Importance of the Work—Other Duties Than Inspecting for Gas—Fireboss in a Large Mine Has No Time for Tracklaying and Timbering—Unusual for a Fireboss to Wink at Unsafe Conditions

FROM some of the letters that have appeared in *Coal Age*, regarding the work and duties of firebosses, it would seem that many of these officials, following their morning inspection of the mine, are put to other tasks than their own particular work.

During the past twenty-seven years, I have filled all the positions inside the mine, from trapper boy to mine superintendent. Practically, all of this time has been spent in gaseous mines employing firebosses or "gas watchmen," as they were called at times.

Except in a small mine or one that had just been opened where the duties of the fireboss did not occupy his whole time, I have never known a man acting in that capacity to be taken from his own particular work and asked to lay track or timber roadways.

Having been employed as fireboss, myself, it has always been my custom to consider the work one of the most important jobs that fall to the lot of underground workers. Its relation to the safety of life and property makes it such. My experience is that there are many duties of a fireboss other than inspecting for gas.

When a fireboss gives the attention he should to the ventilation of the working places, seeing that crosscuts are made at regular distances apart and brattices and stoppings properly built, he has little time for anything else. This is particularly true where the mine has been developed to the extent that there are abandoned workings to be looked after and kept in safe condition and doors, air bridges and other appliances to be examined daily.

Much Depends on the Fireboss

Capable firebosses are valuable men, in a gassy mine, and should be treated as such. Where they are able to work in harmony with the other mine officials and have their confidence and respect, it will generally be found that conditions in the mine are improved. I have known cases where firebosses were afraid to give orders to the men in their charge, because of the union; but such instances are comparatively few.

In my opinion, the fireboss, in a gassy mine, is of all officials the one on which the mining company must most depend. His responsibility is great and requires him to be a man of sober, industrious habits. His character and reputation for honesty must be beyond reproach.

Reference has been made, by writers, to the question of whether the fireboss should be made responsible to the state or to the company. For my part, I cannot see any material difference between the two cases, if the man is honest and conscientious in the performance of his duties. He must comply with the requirements of the mining law and act without fear or favor, whoever employs him.

It is contrary to my belief to think that any company or corporation would want their firebosses to slight their duties; because there is too much at stake in both life and property. It may happen that a mine superintendent, or a foreman, will expect his fireboss to wink at some conditions that he knows entail some risk; but such instances are the exception and not the rule. The fireboss who will consent to do contrary to what his judgment tells him is safe is unworthy of respect, whether he acts according to his own will or under pressure from a superior officer.

Cumberland, Wyo. WYOMING.

Improvement Needed in Shotfiring

Progress slow in methods of blasting coal—Advantage gained by employment of special crew for that purpose — Large proportion of miners shoot their own coal.

WHEN one considers how prone a large number of coal operators are to continue old methods and practices, in the operation of their mine, it would seem that the coal-mining industry in this country is very much like a big overgrown baby, asleep and not mindful of what is going on around it.

This remark is suggested by the reading of an excellent editorial that appeared in *Coal Age*, May 25, p. 870. The article is entitled "Power Drilling"; but, in addition to drawing attention to the use of electric drills or jackhammers, by a few miners who have thrown aside their old hand-drills and adopted these new devices for drilling their holes and cutting hitches or footholds for timbers, the writer alludes to the need of similar improvement being made in the work of shotfiring as now performed in mines.

This is one phase of coal mining that has not been given the attention it should have received. The reason is hard to understand, inasmuch as most mining men willingly admit that the present system of shotfiring entails great risk and is expensive for both the operator and the miner. It is not too much to say that coal operators would be surprised if they could see the amount of coal that is shot to pieces and lost, if miners fire their own shots.

Thoughtful men familiar with coal mining will readily allow that there is room for improvement in this matter. The entire work of drilling, charging and tamping the holes and firing the shots should be in the hands of men whose knowledge and judgment will yield better results.

Special Crew Given the Entire Charge of Blasting

My plan would be to employ a special crew, call them "shotfirers," if you will; but charge them with the whole duty of blasting down the coal, leaving to the present day miner only the work of loading the coal into the cars ready to be hauled out of the mine. Instead of miners, these men would then be called "loaders."

There are advantages, in this arrangement, that should appeal to every coal-mining official. Not only would this dangerous work be more directly in the control of the mine superintendent or foreman, because of having fewer men to instruct in regard to the proper methods of blasting and the use of explosives; but there would be fewer accidents and a larger amount of marketable coal would be produced than by the old method.

In the Interest of Safety

As a means of safety, some companies have employed shotfirers to shoot the holes, which are drilled and charged by the miners. Other companies have gone a step farther and employed "face bosses" to see that the holes are properly placed and charged with the right amount of powder. While this is a step in the right direction, it only touches the margin of the real problem.

It is my belief that an investigation would show that 95 per cent of our bituminous coal is blasted by miners, who use varying degrees of knowledge, experience and judgment in performing the work. The results can readily be imagined and no sane person will deny that there is an inestimable amount of coal lost and lives sacrificed by reason of this condition.

In closing, I want to refer, incidentally, to the benefit to be derived by the miner or loader, as we must now call him, by reason of the fact that he is relieved from the burden of having and maintaining his own drill and pick. Moreover, he is not charged with the expense of powder, nor has he the same responsibility for keeping his place timbered and safe. OSTEL BULLOCK.

Central City, Ky.

Limitation of Certificates

Coal mining, past and present — Need of mine officials keeping themselves up-to-date—Limiting the life of the certificate a means to that end.

COMPARING the mining of coal, only thirty-five years ago, with present-day methods and equipment is like drawing a comparison between the old-fashioned stagecoach and the automobile. We find nothing to justify the comparison. So it is in the mining of coal. Old methods and practices have given place to improved mechanical appliances that have enabled the coal-mining industry to outstrip itself.

In the mind of every practical mining man, there can be no doubt as to the need of mine officials keeping themselves up-to-date, in respect to these new methods and appliances that await their adoption in the mining of coal.

LIMITING LIFE OF THE CERTIFICATE GIVES INCENTIVE TO STUDY

Taking these facts into consideration, I believe it is needful that some means be undertaken that will act as an incentive to mine foremen, mine superintendents and managers to inform themselves and become familiar with all improved means and methods constantly being placed at their disposal.

Speaking of the certification of mine officials, including mine superintendents as well as foremen, assistant foremen and firebosses, while most writers have classed this as important, a few have assumed to think that the certificate is unnecessary in the outfit of a practical mine foreman or other official.

For my part, I consider the certification of mine officials as most important. Indeed, I agree heartily with the suggestion made by some *Coal-Age* writers that the life of a certificate be limited, for the simple reason that, unless this is done, there is provided no incentive that will keep men studying, other than their own personal ambitions.

It is with regret that we are compelled to acknowledge the lack of such ambition, in a large number of mining men holding official positions. How often has it been stated, in *Coal Age*, that when a man has once secured his certificate, in the majority of cases, he ceases to study, read and keep himself informed in regard to new methods and appliances relating to mining.

While I cannot feel that it would be reasonable to compel certified men to go through all that they were required to pass through in order to secure their first certificate, I do feel that every holder of a certificate should be obliged, at certain set periods, to go before a board and take an examination that would prove that he had kept pace with progress, by reading and studying, and is capable and up-to-date on all matters pertaining to the mining of coal, in his present official capacity.

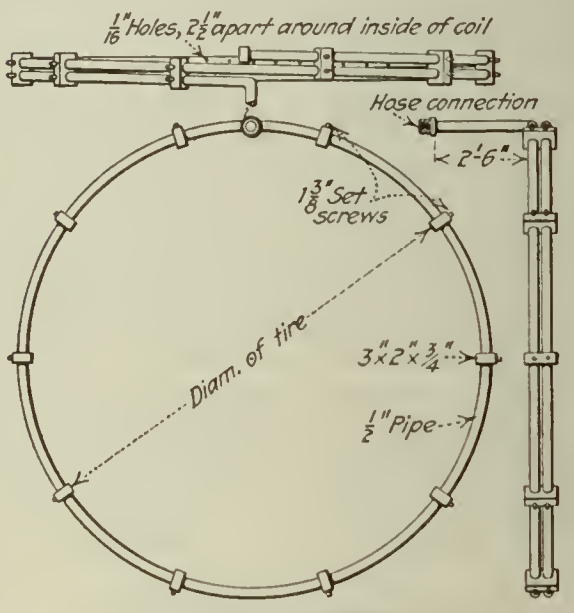
To my mind, this is the surest way of keeping men in touch with the present stage of mining, both in respect to safety and economy. I would not have the old certificate withdrawn, but endorsed by an examining board, from time to time, at such fixed periods as would seem best. I hope to learn the thoughts of others along this line.

Mayport, Pa. JAMES THOMPSON.

Re-tiring Mine Locomotives

Coil of pipes surrounding wheel operated as a blower, using coal oil or gasoline and compressed air.

NOT long ago, I remember, an inquirer asked for a good practical method of removing worn tires from the wheels of a mine locomotive (*Coal Age*, Apr. 20, p. 660). It occurred to me that a rig we have used for that purpose would be of interest to him and others.



Locomotive Tire Heater

We designed the apparatus for our own use, after reading a description of such a device in the *Railway Mechanical Engineer*, Jan., 1920, p. 36. We have used this apparatus now for some time and it has proved highly satisfactory.

In the accompanying figure, is shown a diagram illustrating the construction of the device, which I would call a coal-oil locomotive tire heater. Briefly described, the apparatus consists of a coil of 1 in. pipe, passing twice around the wheel from which the tire is to be removed.

The inside diameter of the coil is made slightly larger than the diameter of the wheel. We are using a 10-gal. Haupt heater coil-oil tank, having a hose connection with the coil of pipe. Compressed air at about 70 to 80 lb. pressure is used to force the oil through the coil of pipe.

As indicated in the figure, 1/16-in. holes are drilled 2½ in. apart around the inside of the coil, starting at a point about 2 ft. from where the oil enters the coil. I believe the apparatus would work successfully, however, with a less air pressure than what we are using.

As stated previously, the use of this device has given complete satisfaction, both in removing wornout tires and applying new ones; and if carefully handled the operation is not dangerous. However, I would suggest keeping it well away from a low roof in the mine when used underground.

J. CAMPBELL, Supt.,
The Lehigh Valley Coal Co.
Drifton, Pa.

Working Contiguous Coal Seams on Moderate Pitches

Main slope driven on the full dip—Use of machines determines direction of driving rooms—Examples of successful workings.

AN INTERESTING question relating to the working of two contiguous seams of coal, lying on a moderate pitch, was answered in *Coal Age*, Apr. 27, p. 702. This is a matter in which I have always been deeply interested and anxious to obtain all the information possible from the experience of others.

In the question to which I have referred, a 15-ft. seam of coal having a hard floor was overlaid with a 7-ft. parting of shale, which was again overlaid with a 4-ft. seam of coal having a fireclay roof. The two seams had an inclination of 23 deg.

SLOPES DRIVEN THREE ABREAST PROVIDE GOOD VENTILATION

As stated in the reply to the question, the method of attack should be to drive the main slope on the floor of the thicker and lower seam. Owing to the large amount of narrow-work, the driving of these slopes three abreast will be expensive, but will doubtless pay in the end. The middle slope can be used as the main intake and haulage road, and the two side slopes as return air-courses for their respective sides of the mine.

The reply to this inquiry assumes that the seams outcrop on the property, and it is stated that the average depth of cover is 700 ft., which would suggest extra care and caution being taken in the working out of the coal. It is questionable whether the shale top of the big seam will make a good roof in working that coal. Therefore, I would suggest leaving, say 2 ft. of topcoal up, in the first working, which will leave 12 ft. of coal to be taken out in two benches.

FIRECLAY ROOF TREACHEROUS

In regard to the upper seam, which is only 4 ft. thick and overlaid with a bed of fireclay, it is my opinion that it will probably be better not to mine this coal at all. The fireclay wou'd make a very treacherous roof, particularly if the strata are wet. However, if the roof can be managed and this seam is worked the coal should be taken

out through a tunnel and hoisted on the main slope in the thicker seam.

Now comes the question as to whether the mine is to supply steam coal or coal for coking. In the latter case, a large percentage of lump coal will not be required, as the product will need to be crushed in either case. On the other hand, if the mine is to supply coal for domestic purposes every effort must be made to obtain as large a percentage of lump as possible. In that case, it will be generally agreed that machine mining should be adopted in preference to pick mining; and just here is the parting of the ways.

It is evident that the answer given to this question contemplates pick mining, since it states that the coal is worked out to the rise of the levels or gangways. Driving the rooms to the rise would eliminate the use of machines on a 23-deg. pitch.

Arrangements for Machines

Without reflecting on the method of pick mining, however, let us assume that this coal is to be mined with machines. In that case, arrangements must be made to drive the rooms practically on the strike of the seam, which was the plan adopted by the Owl Creek Coal Co. and described in my article, which appeared in *Coal Age*, March 16, p. 439.

In that plan, instead of driving the rooms up the pitch, butt headings are driven to the rise of the levels and rooms turned to the right and left of each pair of butts, always giving the rooms a slight inclination up the pitch so as to provide a grade in favor of the loaded cars.

As explained in that article and again referred to in my letter, June 1, p. 926, a small portable hoist is set at the head of each pair of butt headings and attends to the gathering and distribution of the cars in the rooms. The same hoist also handles the machine in passing from one room to another on those headings.

This plan is working successfully at two mines in the Gebo district, where the pitch is 23 deg., and is the only plan that has given satisfaction under these conditions. The chute-mining system, previously used in the Gebo mine, proved unsuccessful and had to be abandoned for the method just described. This mine, to my knowledge, is one of the few pitching seams using machines in mining the coal.

Denver, Colo. C. M. Schloss.

Inquiries Of General Interest

Estimating Number of Cars Needed to Operate Mine

Important to Know Height of Coal in Determining Capacity of Cars and Other Data—Length of Haul—Kind of Locomotive or System of Haulage Employed

AWHILE ago I was called on to solve a problem similar to the one asked in a recent examination and which appeared in *Coal Age*. The question required me to estimate the exact number of cars needed to operate a mine successfully under certain conditions. The answer given to the examination question in *Coal Age*, showed me the method of proceeding.

However, I want to say that in order to arrive at a reliable estimate, in a problem of this kind, it is important to know more data than are commonly given in such a question. For example, one should know the height of the coal, which will determine very largely the size and capacity of the mine cars, besides giving an idea of about the amount of coal a miner will dig in a day.

It is important to know, also, the kind of haulage locomotive employed, whether a storage-battery or a trolley locomotive, as the latter is commonly operated at a greater speed than the former. These and other data such as the length of haul, grade and condition of track materially modify the actual results in practice.

The proposition presented to me was somewhat unusual from the fact that it involved an extra long haul for the very small output desired, as I was asked to estimate on a daily output of only 100 tons, in 8 hr. The main haul was approximately three miles each way, with a 3 per cent grade in favor of the loaded cars.

My report was to state the capacity and number of cars needed, and the type and weight of locomotive required for the most economical operation of the mine. Although my information warranted me in assuming that a 500-volt, direct-current transmission is economical for a distance up to four miles, I decided that this small tonnage would not justify the expense of electrifying the mine for a trolley locomotive.

After carefully considering the problem from every angle, I decided to recommend the use of a storage-battery locomotive. By boosting the battery an hour at noon, each day, the locomotive would have a capacity that would enable it to operate successfully throughout the day.

My estimate was based on a speed of 3 mi. per hr., on the upgrade, and 6 mi. per hr., coasting on the downgrade, which I considered safe. On this basis, the three-mile trip outby, at 6 mi. per hr., would require 30 min.; and the same trip inby, at 3 mi. per hr., 60 min., making the time for the full round trip one hour and a half.

To be on the safe side, I allowed 15 min. for making up and changing trips at each end. This made the full time two hours per trip, or four trips a day. To handle a daily output of 100 tons, on this basis, would necessitate hauling 25 tons of coal per trip.

For ease of calculation, therefore, I estimated on hauling twelve 2-ton cars, or 24 tons of coal per trip. Then, assuming the men would load 8 tons of coal per man per day, there would be need for twelve loaders; and if these were working in pairs each place would produce 16 tons a day, or two tons per hour.

In the 2-hr. interval between trips, each place would then produce two cars of coal and the six working places, together, would furnish the twelve loaded cars needed for the next trip. At the lowest estimate, I concluded there should be twelve cars in transit, twelve cars on the tipple unloading and twelve cars in the mine in process of loading, making thirty-six cars in all. In addition to this number, I added an extra four cars to cover what might be laid aside for repairs, or loaded with timber or other supplies awaiting movement into the mine.

In attempting to check this estimate, however, by computing the time required for a complete cycle of one car, I figured 1 hr. loading, 2 hr. in transit and 2 hr. waiting at the tipple for the next trip, making 5 hr. in all. Each car would then average $8 \div 5 = 1\frac{3}{5}$ trips, per day, and haul $2 \times 1\frac{3}{5} = 3\frac{1}{5}$ tons of coal a day. But this would make the 36 cars haul $36 \times 3\frac{1}{5} = 115\frac{1}{5}$ tons of coal a day, which does not check with my estimate, for some reason that is not clear to me. I would appreciate being told where my error lies.

Mine Engineer.

————, Colo.

The correspondent's error lies in computing the cycle of a single car. For example, each car is held 2 hr. in the mine, although it takes but an hour to load it. Then, it is 2 hr. in transit and is held another 2 hr. on the tipple, which is the time between trips. This makes the total cycle of a single car 6 hr. Each car, therefore, averages $8 \div 6 = 1\frac{1}{3}$ trips per day and hauls $2 \times 1\frac{1}{3} = 2\frac{2}{3}$ tons of coal, per day. The 36 cars will then haul $36 \times 2\frac{2}{3} = 96$ tons of coal, per day, which was the output assumed by the correspondent instead of the required 100 tons a day.

Examination Questions Answered

Kentucky Mine Foremen's Examination, Lexington, May 30, 1922

(Selected, First-Class Questions)

QUESTION—*State what, in your judgment, are the most essential qualifications to make a successful mine foreman.*

ANSWER—He must be straightforward, honest and fair in all his dealings, never making promises he cannot keep. He must be broadminded, kind and patient, but firm, a student of human nature and a man of foresight and good judgment. He must be industrious and have a thorough technical and practical knowledge of mining, gained by study and experience.

QUESTION—*Describe the various instruments that you, as a first-class mine foreman or fireboss, would use to determine the condition of the mine atmosphere, the quantity of ventilation, the temperature, humidity and other general conditions. Explain fully how these are used.*

ANSWER—A first-class mine foreman must have and be able to use a safety lamp of approved type, understand its construction and the danger of its misuse in the examination for gas or when used for work in a gassy mine.

The mine foreman must have and use an anemometer for determining the average velocity of the air current passing in an airway. He must be able to calculate, from the observed reading of the instrument, the quantity of air in circulation. To determine the temperature and humidity of the mine air, the foreman should have and use a wet-and-dry bulb hygrometer; and be able to calculate, from its reading, the degree of humidity or percentage of moisture in the air.

The foreman should have and use a water gage to determine the pressure producing circulation in the airways inby from the point where the observation is taken. He must be able to calculate, from the readings of the gage and the anemometer, the horsepower on the air. From this he should be able to estimate the efficiency of the ventilator, after ascertaining the horsepower of the engine driving the fan.

In addition to these instruments, the mine foreman should have and use a compass for setting sights, giving the desired direction of driving entries and rooms. He must have and use a tape measure for measuring distances and finding the size of airways and breakthroughs in the mine. If the seam has much inclination, the foreman should have a clinometer for measuring the degree of the pitch. Every foreman is supposed to have a reliable watch that he carries with him at all times.

In the examination of abandoned areas or workings, the foreman should have and use a carbon-monoxide detector. For the purpose of accurately determining the percentage of gas in mine air, the foreman should have and use a gas indicator that will eliminate the evil habit of guessing the percentage of gas from the height of the flame cap. This is important, as it is seldom that any two firebosses reach the same conclusion in this respect.

QUESTION—*The figure of a section of an airway is a right-angled triangle, having the base and perpendicular equal, and the length of the hypotenuse 15 ft. What is the area of this figure and what will be the quantity of air passing in this airway when the velocity of the current is 300 ft. per min.?*

ANSWER—Since the square of the hypotenuse of a right triangle is equal to the sum of the squares of the two sides and these being equal, in this case, the square of either side is equal to one-half the square of the hypotenuse, or $\frac{1}{2} \times 15^2 = \frac{1}{2} \times 225 = 112\frac{1}{2}$. Again, the two sides being equal, the square of either side is, evidently, twice the area of the triangle. Therefore, in this case, the area of the given triangle is $\frac{1}{2} \times 112.5 = 56.25$ sq.ft.

QUESTION—(*a*) *If you were in charge of a mine, would you consider it dangerous if dry and dusty at the working face, even if gas was not present? (b) What precaution should be taken under conditions of solid shooting, in a mine of this character?*

ANSWER—(a) A dry and dusty condition, at the working face in a mine, is always dangerous whether or not gas is present; but the presence of gas greatly increases the danger from dust. Also, the danger is much greater where the coal is blasted, particularly if black powder is used for that work.

(b) The practice of solid shooting should not be permitted in a dry and dusty mine. In any event, the working places should be kept free from accumulations of dust and well sprinkled before any shots are fired therein. Only permissible powder should be used. The safest practice is to employ practical shotfirers, to examine, charge and fire all holes drilled by the miners and which, in their judgment, are safe. Each place must be examined for gas before a shot is fired.

QUESTION—(*a*) *What should be the first thing for you to observe as a fireboss, on entering a mine? What constitutes a good safety lamp (b) for general work; (c) for testing purposes?*

ANSWER—(a) On entering a mine and having regained his sight, a fireboss' first duty is to examine the condition of his lamp and know that it is burning properly, before proceeding to the main intake of the mine or section he is to examine. This does not take the place of a fireboss carefully examining and testing his lamp when assembling the same, before entering the mine. On reaching the intake his first act is to note carefully that the usual volume of air is in circulation.

(b) A good safety lamp for general work must be of a type approved by the Federal Bureau of Mines. It must give a good light and not be too sensitive to gas. It must be simple in construction, having few parts that are easily and quickly assembled. The lamp should be protected from strong air currents or a sudden rush of air, by means of a good bonnet. The air should enter the lamp from a point below the frame, in order to reduce as much as possible the tendency of the flame to smoke. Preferably, the lamp should burn a good quality of sperm or cottonseed oil, and be provided with a pricker, for cleaning the wick as may be required.

(c) A good lamp for testing purposes must have a free upward circulation of air within the lamp, which must burn a non-volatile oil and be provided with some form of indicator that will eliminate the bad habit of guessing the percentage of gas present in the air, by estimating the height of flame cap produced.

QUESTION—*Is there any difference between marsh gas and firedamp? If so, what is the difference? Explain fully.*

ANSWER—Yes. Marsh gas is the common name for undiluted methane (CH_4), while firedamp is a mixture of this or other explosive gas with air, in inflammable or explosive proportions. While the term "firedamp" is generally understood to refer to an inflammable or explosive mixture of methane and air, other gases may be and often are present in a firedamp mixture.

QUESTION—*Are there any conditions whereby a large body of pure marsh gas could be rendered more dangerous than a large body of firedamp? If so, explain why.*

ANSWER—This is not a practical question in its application to the presence of gas in mines; because a large body of pure marsh gas is liable to become, by diffusion or the admixture of air, a still larger body of firedamp. Both are equally dangerous, although some may consider a large body of pure marsh gas, accumulated in a mine, a greater menace to safety than the same volume of firedamp; because when the marsh gas is converted into a firedamp mixture by the addition of air, the volume of the mixture is greater than the volume of the original marsh gas.

Smokeless Output During May Exceeds That of April by Over 800,000 Tons

SMOKELESS coal production in the West Virginia fields increased from 2,860,961 net tons in April to 3,687,874 tons in May, as shown in the following table. The May output was 712,163 tons higher than for May last year, only the New River field showing a decrease.

MAY OUTPUT OF SMOKELESS COALS OF WEST VIRGINIA

	Net Tons			
District	1922	1921	1922 Decrease	1922 Increase
Pocahontas	2,019,185	1,322,550	...	696,635
Winding Gulf	798,356	648,311	...	150,045
New River	364,283	557,370	193,087	.....
Tug River	506,050	447,480	.....	58,570
Total, May	3,687,874	2,975,711	193,087	905,250
Total, April	2,860,961	1,978,153	...	.....
Total, March	3,399,571	1,710,151	.....	.....

The N. & W. Ry. hauled 2,525,235 tons of the May output, the Virginian, 651,739 tons, and the C. & O., 510,900 tons. Total coal movement of these railroads in May is shown in the following table:

HAULED BY NORFOLK & WESTERN

Pocahontas	2,019,185	Clinch Valley	227,285
Tug River	506,050	Kenova	164,270
Thacker	637,735		
Total			3,554,525

HAULED BY CHESAPEAKE & OHIO

Logan	1,603,630	Coal River	47,210
New River	301,390	Kentucky	439,700
Winding Gulf	209,510		
Kanawha	76,140	Total	2,677,580

HAULED BY VIRGINIAN RAILWAY

Winding Gulf	588,846	High Volatile	50,066
New River	62,893		
Total			701,805

THE SITUATION, in the opinion of many in Washington, is such as to emphasize the advisability of forming an organization within the coal industry along the lines of the Construction Council recently formed in the building industry. The possibilities of a coal council have come in for serious consideration during recent weeks. The wish has been expressed that such an organization be formed and that every effort be made to induce Secretary Hoover to become its active head. While no opportunity has been afforded for any general consideration of the plan, those who have discussed it believe it would be the most direct approach to the problem of stabilizing the coal industry. Practically the identical idea has been put into effect by the construction industries and somewhat similar ends were sought by the motion-picture industry in engaging the services of Will H. Hays and by the baseball interests in putting their affairs under the direction of Judge Landis.

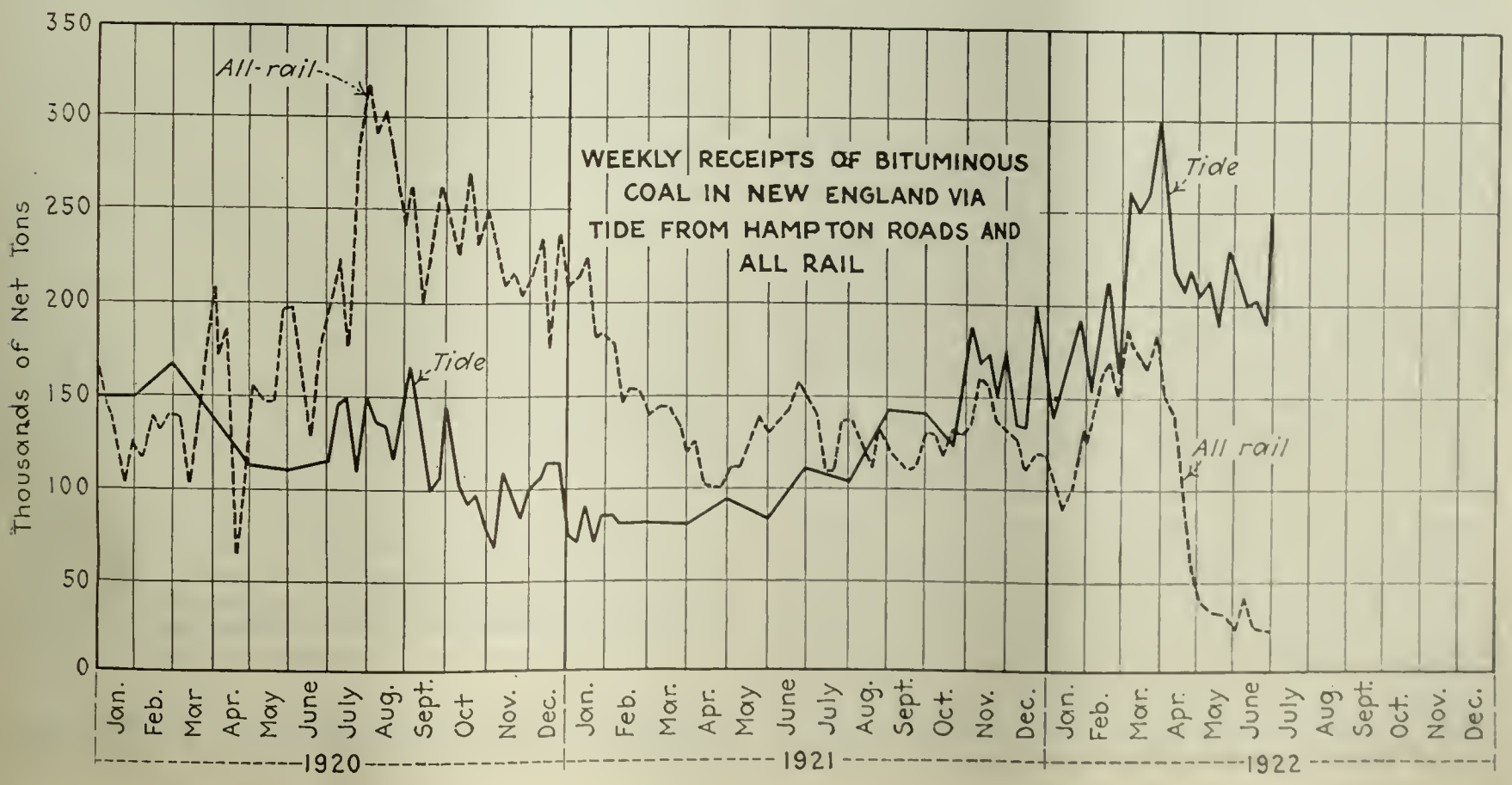
That the coal industry entertains a different feeling toward Secretary Hoover from that which it had at the time the Frelinghuysen bills were under discussion was shown by the anxiety occasioned in the industry when it was erroneously reported that Secretary Hoover had resigned. Numerous appeals reached Washington asking that he be induced to stay on the job at least until the coal situation had been straightened out.

Water-Borne Southern Coals Outdistance All-Rail Fuel in New England

SOUTHERN coals via tidewater seem to have captured the majority of the New England markets which can be served from rehandling points on the coast. All-rail coals practically dominated throughout 1920, with the exception of the period of the switchmen's strike in April, and until August, 1921, reaching the peak during the first week in August, 1920, with a movement of 320,000 net tons. From that week receipts fluctuated, but with a steady downward trend, until a year later they dropped below the tonnage of water-borne coal from Hampton Roads. Since that time the all-rail suppliers have seen more and more of their territory slip over to the sellers of Southern coals, who in one week in March of this year moved 300,000 net tons from Hampton Roads alone.

The decline of the all-rail movement was definitely started when the increase in freight rates, late in 1920, put the Southern coals in better position by reason of the softening of coastwise vessel freight rates. Reduced wages in southern West Virginia mines then furthered the competitive position of those coals. Of course, the present strike has reduced production in central Pennsylvania and affected that tonnage available for distribution in New England, but even with the resumption of mining the relative positions of these two coals will not be disturbed by the July 1 freight-rate reductions, as the greater saving on all-rail freights is partly offset by a smaller reduction—mines to tide—on Southern coal. The remainder of the freight cut differential is easily overcome through low mine costs and the plenitude of coastwise vessels, which means cheap water rates.

The diagram below, compiled from the published reports of the Geological Survey up to the end of June, compares the shipments of soft coal through the New England rail gateways with cargo shipments over piers at Hampton Roads.



Merging of Six Kentucky Coal Companies Represents Capital of $2,500,000

ONE of the biggest mergers of coal interests concluded among southeastern Kentucky coal interests was effected in Cincinnati on July 25, when the Log Mountain Coal Co., the Hignite Coal Mining Co., the Yellow Creek Coal Co., the Mingo Coal & Coke Co. and the Bennet's Fork Coal Mining Co. were consolidated. The financial part of the deal was arranged through Cincinnati, Pineville and northern Kentucky capitalists and launches a $2,500,000 company which will be known as the Log Mountain Consolidated Coal Co.

The formation of the company is the result of efforts begun in 1915 by John Hoffman, president of the Hignite company and vice president of the Kentucky Fuel Co., of Cincinnati. At that time he preached consolidation in order to cut down overhead expense and promote economy of sales. He never gave up the idea though the prospects did not seem favorable at times.

Text of Priority Orders, Issued July 25

SERVICE ORDER NO. 22, issued by the Interstate Commerce Commission Tuesday, July 25, 1922, is as follows:

The subject of routing of freight traffic being under consideration and it appearing to the Commission that an emergency exists upon the lines of all carriers by railroad in the United States subject to the Interstate Commerce Act which requires immediate action, and that each of such carriers, by reason of unfavorable labor conditions and shortage of fuel supply, is unable to transport the traffic offered it so as to properly serve the public.

Therefore, in order best to promote the service in the interest of the public and the commerce of the people, *it is ordered and directed:*

(1) That from and after July 26, 1922, and until the further order or direction of this Commission, all said common carriers by railroad are hereby directed to forward traffic to destination by the routes most available to expedite its movement and prevent congestion, without regard to the routing thereof made by shippers or by carriers from which the traffic is received, or to the ownership of the cars, and that all rules, regulations and practices of said carriers with respect to car service are hereby suspended and superseded in so far only as conflicting with the directions hereby made.

(2) That inasmuch as such disregard of routing is deemed to be due to carriers' disability, the rates applicable to traffic so forwarded by routes other than those designated by shippers, or by carriers from which the traffic is received, shall be the rates which were applicable at date of shipment over the routes so designated, unless the rates applicable over such designated routes are higher, in which event the rates applicable over the route of movement will apply.

(3) That in each instance where the traffic is routed, or rerouted, by carriers by railroad under the authority of this order, the carrier responsible for such routing or rerouting shall, within twenty-four hours thereafter, deposit in the United States mail a notice addressed to the consignee of the traffic, stating the car numbers and initials, places and dates of shipment, the routing, and respective routes over which the traffic is moving and that charges for the transportation of the traffic, including transportation, and schedules of rates, fares and charges, as those terms are defined in said Act, will be the same as they would have been if such routing or rerouting had not taken place, unless, as above provided for, the rates applicable over the route the traffic moves is less.

(4) That in the case of shipments in private cars, which are subject to equalization of empty mileage, and also of fruits and vegetables, live poultry and other shipments customarily reconsigned upon instructions of the consignor, a telegraphic notice of the diversion shall be sent to the consignor by the carrier responsible therefor.

(5) That in executing the directions of the Commission contained in this order, the common carriers involved shall proceed without reference to contracts, agreements or arrangements now existing between them with reference to the divisions of the rates of transportation applicable to said traffic; that such divisions shall be, during the time this order remains in force, voluntarily agreed upon by and between said carriers, and that, upon failure of the carriers to so agree said divisions shall be hereafter fixed by the Commission in accordance with pertinent authority conferred upon it by said Act.

(6) That copies of this order and direction be served upon all carriers by railroad in the United States subject to the Interstate Commerce Act, and that notice of this order be given to the general public by depositing a copy of the order in the office of the Secretary of the Commission in Washington, D. C.

Service Order No. 23, also issued July 25, is as follows:

It appearing, in the opinion of the Commission, that an emergency which requires immediate action exists upon the lines of each and all the common carriers by railroad subject to the Interstate Commerce Act, east of the Mississippi River, including the west bank crossings thereof, and because of the inability of said common carriers properly and completely to serve the public in the transportation of essential commodities, *it is ordered and directed:*

(1) That each such common carrier by railroad, to the extent that it is currently to be unable promptly to transport all freight traffic offered to it for movement, or to be moved over its line or lines of railway, shall give preference and priority to the movement of each of the following commodities: food for human consumption, feed for live stock, live stock, perishable products, coal, coke and fuel oil.

(2) That to the extent any such common carrier by railroad is unable under the existing interchange and car-service rules, to return cars to its connections promptly, it shall give preference and priority in the movement, exchange, interchange and return of empty cars intended to be used for the transportation of the commodities specially designated in paragraph numbered 1 hereof.

(3) That any and all such common carriers by railroad which serve coal mines, whether located upon the line or lines of any such railroad or customarily dependent upon it for car supply, herein termed coal-loading carriers, be, and they are hereby, authorized and directed whenever unable to supply all uses in full, to furnish such coal mines with open-top cars suitable for the loading and transportation of coal, in preference to any other use, supply, movement, distribution, exchange, interchange or return of such cars; *provided*, that the phrase "suitable for the loading and transportation of coal" as used in this order shall not include or embrace flat (fixed) bottom gondola cars with sides less than 36 inches in height, inside measurement, or cars equipped with racks or cars which on July 1, 1922, had been definitely retired from service for the transportation of coal and stenciled or tagged for other service.

(4) That all such common carriers by railroad other than coal-loading carriers, herein termed non-coal-loading carriers, be, and they are hereby, authorized and directed to deliver daily to a connecting coal-loading carrier or carriers, or to an intermediate non-coal-loading carrier, for delivery through the usual channels to a coal-loading carrier, or carriers, empty coal cars up to the maximum ability of each such non-coal-loading carrier to make such deliveries and of each such connecting coal-loading carrier to receive and use the coal cars so delivered for the preferential purposes herein set forth.

(5) That all such common carriers by railroad be, and they are hereby, authorized and directed to discontinue the use of cars suitable for the loading and transportation of coal for the transportation of commodities other than coal, so long as any coal mine remains to be served by it with such cars; and as to each non-coal-loading carrier, so long as deliveries of any such cars to connecting carriers may be due or remain to be performed under the terms of this order.

(6) That all such common carriers by railroad be, and they are hereby, authorized and directed to place an embargo against the receipt of coal or other freight transported in open-top cars suitable for coal loading, by any consignee, and against the placement of such open-top cars for consignment to any consignee, who shall fail or refuse to unload such coal or other freight so transported in coal cars and placed for unloading, within twenty-four hours after such placement, until all coal or other freight so transported in coal cars and so placed has been unloaded by such consignee, and shall notify the Commission of such action. This authorization and direction as to embargoes shall not interfere with the movement of coal to tidewater or the Great Lakes for transshipment to water, nor shall it apply where the failure of the consignee to unload is due directly to errors or disabilities of the railroad in delivering cars.

(7) That in the supply of cars to mines upon the lines of any coal-loading carrier, such carrier is hereby authorized and directed to place, furnish and assign such coal mines with cars suitable for the loading and transportation of coal in succession as may be required for the following classes of purposes, and in following order of classes, namely:

Class 1—For such special purposes as may from time to time be specially designated by the Commission or its agent therefor. And subject thereto:

Class 2 (a)—For fuel for railroads and other common carriers, and for bunkering ships and vessels; (b) for public utilities which directly serve the general public under a franchise therefor, with street and interurban railways, electric power and light, gas, water, and sewer works; ice plants which directly serve the public generally with ice, or supply refrigeration for human food stuffs; hospitals; (c) for the United States, state, county or municipal governments, and for their hospitals, schools and for their other public institutions—all to the end that such common carriers, public utilities, quasi public utilities and governments may be kept supplied with coal for current use for such purposes, but not for storage, exchange or sale. And subject thereto:

Class 3 (As to each coal-loading carrier which reaches mines in Pennsylvania, Ohio, West Virginia, Kentucky, Tennessee and Alabama)—For bituminous coal consigned to any Lake Erie port for transshipment by water to ports upon Lake Superior. And subject thereto:

Class 4 (As to all such common carriers by railroad)—Commercial sizes of coal for domestic use. And subject thereto:

Class 5—Other purposes.

No coal embraced in Class 1, 2, 3 or 4 shall be subject to reconsignment or diversion except for some purpose in the same class or a superior class in the order of priority herein prescribed.

(8) That all rules, regulations and practices of said common carriers by railroad with respect to car service as that term is defined in said act are hereby suspended so far as they conflict with the directions hereby made.

(9) That this order shall be effective from and after July 26, 1922, and shall remain in force until the further order of the Commission.

(10) That copies of this order be served upon the carriers hereinbefore described, and that notice of this order be given to the general public by depositing a copy hereof in the office of the Secretary of the Commission at Washington, D. C.

A CONTRACT WITH the United Mine Workers of America has been signed by the D. B. Gore Strip Mining Co. at Providence, Ky., effective until April 1, 1923. The wage scale ranges from $6.06 for common labor to $235 a month for head shovel men. Negotiations had been under way for several days and were conducted without disorder.

EUROPE IS SEEMINGLY of opinion that it must remain unhealed until America heels it.—*Norfolk Virginian-Pilot.*

Government Control of Coal Distribution Expected To Continue Throughout Winter

By Paul Wooton
Washington Correspondent of *Coal Age*

Washington, July 31.—Actual control of the distribution of practically all the current coal production will be effective within forty-eight hours, Secretary Hoover announced this morning. Henry B. Spencer, administrative member of the President's committee, opened temporary offices this morning in the old War Trades Board Building. Permanent offices are being prepared for the committee in the American Railroad Association Building, 718 18th Street.

Mr. Hoover stated this morning that there is no sign on the horizon to indicate an approaching settlement of the coal strike. He expressed the opinion that 8,500,000 tons weekly will keep the country fairly well supplied with coal if the distribution plan results in an equitable apportionment of the coal mined. He stated that practically all of the western Kentucky operators are now in line.

Officials in Washington are being deluged with requests for coal. These requests are being returned promptly to the governors of the states from which they came. Incidentally there is evidence that some of the governors do not relish the task which has fallen to them. While many governors are quick to resent federal activities which can be interpreted as an encroachment on the rights of the state, there now seems to be a desire on the part of those same governors to suggest that the federal government is in a much better position to say who shall and who shall not have coal. Secretary Hoover has made it plain that the federal government will do nothing more than allocate coal to the primary purchaser and look after the coal supplies for the interstate railroads.

While, generally speaking, the public utilities still are fairly well supplied with coal the telegrams reaching Washington indicate that there are many weak sisters among them.

The advance in the wage scale from the 1917 to the 1920 basis in some of the non-union districts is explained on the ground that poor car supply had reduced the number of working days to the point where an additional wage inducement was necessary to keep the men interested.

THAT CONTROL of coal distribution must continue for the remainder of the calendar year and possibly for the remainder of the coal year is becoming more and more apparent. A large corps of workers will be required. It is probable that a deficiency appropriation of $200,000 will be asked for the purpose.

The problem before the government differs considerably from that with which the Fuel Administration had to deal during the war. The situation now is a traffic problem. It is somewhat similar to the situation handled successfully by the Central Coal Committee in 1919 and 1920. As a result of the excellent work done by that committee it is probable that the new organization will be formed along the line of that committee. It may be stated, however, that the methods used by the Central Coal Committee in regard to paying for coal will not be followed. Since the situation is being controlled through the powers vested in the Interstate Commerce Commission, the execution of any plan must be carried out by the railroads. For that reason Henry B. Spencer, the former chairman of the Central Coal Committee, has been chosen as the fifth member of the President's committee.

In addition to the need for an appropriation it is apparent that the administration soon will request legislation giving out-and-out power to fix prices and to seize coal. There is a possibility that a revolving fund will be asked, so that the administrative committee can buy and sell coal when occasion demands.

Even if arbitration negotiations were begun at once it is realized that some time necessarily must elapse before the union fields actually would be producing coal. By that time the country will be so far behind in coal production that supplies will be insufficient for all purposes. For that reason there is certain for many months to be a trying problem in the attempt to see that the more essential activities receive necessary fuel requirements. Control of distribution has not begun as yet, and it will be several days before the necessary machinery can be put into shape for its inauguration. The fact that the job is a railroad traffic problem probably is the reason why Dr. Harry A. Garfield was not requested to take over actual administration of the work. The desire was voiced in official circles that he be made the administrative member of the President's committee as recognition of the work he did during the war and to prevent what would seem to be a further mark of ingratitude for the valuable public service that Dr. Garfield rendered as Fuel Administrator. So far as can be learned, no invitation was extended to him. The reason, doubtless, was that he already had announced that he would not accept such an appointment although the apparent fact that the actual administrator in this situation must be a traffic man may have been the compelling one.

Railroad Strike Situation Encouraging

Reports reaching Washington during the last three days as to the improvement in the railroad strike situation have been encouraging. Apparently, the railroad executives were not thoroughly aroused to the seriousness of the situation before the shopcraft strike. As a result there was hesitancy in taking drastic action to operate with new men. The seriousness of the situation soon became apparent, however, and the results of the delayed effort are only now becoming apparent, it is believed. Traffic is moving better through all the vital junction points and there have been encouraging responses to the railroads' invitations for outside shopmen. The situation will be relieved further, it is believed, as industry is slowed down by lack of coal, thereby making available more men from whom the railroads can draw workers.

The coal operators report much better prospects of obtaining men for the mines that they are opening in the union fields. Once it is established that protection is adequate, it is believed that enough men can be obtained in the Pittsburgh district and in central Pennsylvania to produce a considerable tonnage of coal. It is apparent, however, that the building up of output from mines in the union districts will be a slow process. John L. Lewis' efforts to call together a rump conference of operators in the Central Competitive Field is not being taken seriously by coal operators or in official circles. While it is admitted that there are certain operators in each of the four states who would join Mr. Lewis in this effort, the tonnage that they would control would be insignificant as compared with the total output of the Central Competitive Field. Nevertheless, Mr. Lewis' utterances indicate that the idea of negotiation is being kept alive.

Secretary Hoover on July 30 announced the details of his plan covering coal distribution. His statement reads as follows:

"The federal government will limit its activities in coal distribution entirely to interstate questions. Mr. Spencer has been appointed Fuel Distributor, not Fuel Administrator, because the federal distribution is concerned with coal distribution between the different states, not with coal administration in the sense of the war organization.

"The control of coal distribution to individual consumers within the state boundaries is entirely in the hands of state authorities except for railway coal. The methods of handling coal for railways responsible to the Interstate

Commerce Commission will be determined directly from Washington in maintaining interstate commerce.

"Distribution problems vary in different groups of states; that is in New England, Middle Atlantic, Southern, Middle West, Northern Lake States, Intermountain and Pacific States. The last two groups are able to look after themselves and are not now embraced in active administration. Each state outside the latter groups has been requested to canvass its situation as to stocks and requirements in order of the priority in different classes—public utilities, public institutions, households and industrial coal.

"Each state has been asked to make such rules and regulations as it may see fit to control speculation and distribution within the boundaries of the state. It has been suggested that the co-operation of their state wholesale and retail coal dealers' associations should be secured. The federal government has no authority and can exert none in this matter beyond moral pressure.

"Each state that must import coal from other states has been asked to create a central state agency or committee for the purchase or guarantee of purchases of coal that may be imported into the state from other states or from abroad, all coal to be consigned to an agency designated by the state. By this arrangement a great deal more mobility is given the state authorities in shifting coal to meet its local emergencies. Furthermore, this arrangement will remedy the financial impossibility of asking coal producers to ship to strange consumers whose reliability must be established. The repudiation of coal during the last strike caused great losses and litigation.

"The Federal Fuel Distributor will place these state central purchasing agencies or committees in contact with the coal producers in states of coal surplus and will undertake to see that coal is sold to the central purchasing agencies at a fair price. The state purchasing agencies will indicate the destinations within the states to which coal is to be shipped.

"The federal distribution will prorate the available supplies between states following the general basis of priorities declared by the Interstate Commerce Commission. Where coal is already flowing through natural channels to priority concerns approved by the state agencies, it will continue, but it will form part of the state quota.

"The whole plan is one of complete decentralization into the hands of the state authorities, the federal agencies acting solely in interstate commerce."

Secretary Hoover emphasizes the fact that his organization is not a replica of the Fuel Administration. He announced that instructions had been issued to permit bunkering only to the next port of call. After Aug. 1 all ships sailing from foreign ports must bunker for the round trip. While Canada will not be treated differently than would be the case were it part of the United States, there will be insistence that she take full advantage of opportunities to secure imports from elsewhere.

With the return of H. Foster Bain, director of the Bureau of Mines, from Alaska, he will represent Secretary Fall on the President's committee. George Otis Smith, director of the Geological Survey, will continue to co-operate with the committee, but from this time forward will devote more of his time to the compilation of data for the subsequent use of the fact-finding commission.

Secretary Hoover announced that every effort is going to be made to decentralize the handling of the coal situation. Great reliance is being placed upon the state governors, the state public utilities commissions and upon the railroad administrative officers and coal operators in the different districts. Mr. Hoover stated that there would be no direct effort from Washington to prevent retail profiteering. This he is leaving to the states, although every effort will be made to co-operate closely in any action they may take.

M. H. Aylesworth, executive secretary of the National Electric Light Association, and A. I. Phillips, engineer for the American Gas Association, have been in Washington making arrangements preparatory to the opening of Washington offices so that the public utilities can co-operate closely with the government during the emergency. The utilities expect to work largely through the state public utilities commissions.

The governors of the following states have undertaken to erect the necessary administration to control profiteering and distribution of coal within their states: Ohio, Indiana, Illinois, Michigan, Wisconsin, North Dakota, Minnesota, Maine, Massachusetts, New Hampshire, Connecticut, Rhode Island, New York, New Jersey, Maryland, Pennsylvania, West Virginia, Iowa, Oklahoma, Florida, Kentucky, Tennessee and Louisiana. Kansas already has an establishment under its Industrial Court. It is not considered to establish coal control in the intermountain and Pacific states, as they have supplies of coal and fuel oil.

The following have so far been designated as members of the advisory committee of operators from the producing coal districts under the chairmanship of C. E. Bockus, of Virginia: E. L. Douglas, of Kentucky; George S. Francis, of Pennsylvania; E. C. Mahan, of Tennessee, and W. J. Magee and E. E. White, of West Virginia; also C. E. Tuttle to advise as to Lake and Northwest movement, and Le Baron H. Willard to advise on bunker and tidewater movement.

Three Coal Roads Declare Embargo in Favor of Coal and Food

THE Norfolk & Western, Chesapeake & Ohio, and Louisville & Nashville railroads have declared embargoes over their lines against the acceptance of any freight except foodstuffs, livestock and fuel. This course was taken under the Interstate Commerce Commission's declaration of an emergency, which authorized roads embarrassed by the chopmen's strike to establish priority in transportation.

The embargoes are designed to conserve all the equipment and facilities of the three carriers for the transportation of coal. All three had been carrying record-breaking quantities of coal until the shopmen went out, after which their tonnage was immediately cut in half.

Managements of the roads notified the Interstate Commerce Commission that they would modify the embargo orders as rapidly as conditions permitted, and would gradually accept other classes of freight for movement as they were able to transport it without interfering with the shipment of coal.

Here's a Rocky Mountain Invitation

"COAL men from anywhere and everywhere will be welcome at our fall meeting in Glenwood Springs," is the invitation which the Rocky Mountain Coal Mining Institute issues to the world for its three-day session in beautiful Glenwood Springs, Col., beginning Sept. 7. The Institute has planned a program which includes the pleasures afforded by the mountain region around Glenwood Springs, in addition to technical meetings of wide scope. Papers scheduled for the meetings are these: "Electricity in Coal Mining," by L. M. Cargo and H. S. Sands, of Denver, Col.; "The Practical Use of Pulverized Fuel in Power Plant Work," by T. H. O'Brien, general manager of the Inspiration Consolidated Copper Co., Inspiration, Ariz.; "Wire Rope in Mining," by W. R. Abbott, of Denver, and J. F. Howe, of Worcester, Mass.; "Practical First-Aid Work," by W. F. Murray, of Dawson, N. M.; and "Co-operation in the Coal Industry," by Harry F. Nash, vice-president of the Oakdale Coal Co., Denver.

RESULTS OBTAINED BY W. J. DUNKLEY, gas engineer of the U. S. Bureau of Mines, in the course of experiments made at Ottawa, Ill., in the use of mixed coal and coke fuel for water-gas manufacture, show that capacities up to 97 per cent of the rated capacity with good coke fuel can be obtained, using 70 per cent Illinois coal and 30 per cent coke from Kentucky coal, with 6 ft. gas sets operating up to 10 hours per day. The generator fuel consumption was about 33.5 lb. of mixed fuel per 1,000 cu.ft. of gas made.

"HERE'S A DANGER SIGN. Watch me go past and find the trouble."

He found it. Somebody found him.

Middle West Has Hectic Time of It; "Something New" About to Happen in Illinois and Indiana

By E. W. Davidson

STRIKE developments in the Midwest coal-mining region have been swift and baffling during the past week and promise to be just as swift if not so baffling in Ilinois during the next few days. While Michigan and Indiana were trying without success to induce miners to work enough mines in those states to supply state institutions—Governor McCray of Indiana finally gave the men until Tuesday, Aug. 1, to do it peacefully or he would see that it was done by force—things were popping over in Illinois.

On Monday the operators of Illinois met to consider the situation. They were in session all day in Chicago. Frank Farrington, president of the Illinois miners, was in Chicago the same day. Wednesday Farrington got his state executive committee together in St. Louis, appeared to sound out the sentiment of the striking miners, and then called a state union convention for Aug. 3 in Peoria, Ill. Word naturally went around that Farrington was breaking finally with national headquarters and was going to get authority from the convention to enter into peace negotiations with the Illinois operators. The state thought its mines were about to be opened.

The next day Farrington called off his convention, saying the Associated Press had befuddled the matter by stating, in the news story of the convention order, that the session was called to permit a test of strength between Farrington and Lewis. Later that same day Farrington retracted his charge against the Associated Press and laid it at the door—or mouth—of John Watt, state secretary-treasurer of the union. Watt is reputed to be a Lewis man. Farrington said Watt was "a victim of running off at the mouth" and that statements of Watt and others had made strike settlement in Illinois a dead issue.

Meantime John L. Lewis had broadcasted to the whole country the news that he was on the point of obtaining a four-state conference with operators. With no more explanation for his sudden change of convention plans, Farrington took his foot in hand and scurried to Philadelphia to attend Lewis' conference of union state presidents preparatory to the announced four-state conference with operators. Before going, Farrington replied to an invitation of Acting Governor Sterling of Illinois that he would like to confer with Sterling on the acting governor's plan to get a few of the mines of the state open to supply state institutions with coal, but he really couldn't do a thing about it even if he conferred.

Up to Saturday night no date or place had been announced for the Lewis four-state conference with operators. Indiana on Friday had declined absolutely to have anything to do with such a conference and Illinois took the same attitude but had not, up to that time, received any invitation from Lewis to attend, so it was unnecessary for that state formally to write its refusal. However, the full pressure of Ohio in favor of the conference had been exerted upon both Indiana and Illinois, with no more success, it appears, than was had with the Pittsburgh operators of Pennsylvania.

"Well," commented an Illinois operator's official, "Lewis is stalling around and using up a few more days, anyway. Every day this strike continues, and every day the time approaches when the public will begin to cry for a settlement on the miners' terms, the better the union's grip on the situation."

This same official prophesied that before the end of the first week in August there will be decisive developments in the Illinois situation which will get a grip on the attention of the whole nation. He would not divulge what these developments are to be. The operators' associations have already declared in favor of the opening of enough mines to insure the production of sufficient coal, under union auspices. to stave off fuel famine in Illinois. Since the federal government appears to have no intention of directing any coal from Kentucky and the East into Indiana or Illinois under the new car-distribution plan, it seems that Illinois and Indiana must dig their own coal. Governor McCray and the operators of Indiana have worked out a plan for it in that state under the protection of state troops.

Midwest Coal Men Hope for Success of Plan Of Control by Distribution of Cars

THE general sentiment of the coal trade in the Middle West seems to be favorable to the new federal plan of controlling the distribution of coal through car supply. The superior men in the industry are hoping Mr. Hoover will be successful in this newest effort. Not that they think his scheme is fair and reasonable—or even legal—in every respect; but they are for him anyway.

Practically every man who expresses an opinion about it says that no doubt the Hoover plan of regulating distribution is all right and should work well; but when that same method is used to restrict the price to $3.50 a ton they think a transgression of the law will have been made.

"But I doubt if anybody is going to fight it; that's the point," commented an operator whose string of mines includes one that will be affected at once by the federal scheme. "If anybody tried it, his case would dally along in the courts, while his mine stood idle, until some time in the next generation. So what good would it do to dash into court? Wise men are going to dig coal, sell it at $3.50 and keep it up—so long as this government board continues to supply them with a full quota of cars. But if the car supply fails—then will be the time to kick the Hoover price out."

Hoover Conference Results in Formation of Connellsville Operators' Association

FOLLOWING the return of an operators' committee from Washington, where they held a conference with Secretary Hoover, a public meeting was held in Uniontown, Pa., when the committee reported that the price-control plan through distribution of cars had "teeth" in it and that there was nothing to do but comply. As a result of that public meeting has grown the first organization of Connellsville coal operators, the Fayette-Greene Coal Operators' Association.

George Whyel was named president; W. W. Parshall, vice-president, and E. D. Brown, secretary. The executive committee consists of the officers and the following: W. C. Hood, representing the H. C. Frick Coke Co.; John Sincock, of W. J. Rainey, Inc.; M. B. Cooper, of the Hillman interest; C. F. Lingle, representing the Greene County operators; H. M. McDonald, John B. Moore and W. D. McGinnis.

While Connellsville is one of the principal coal-producing regions in the country it has never been represented by an organization of operators. The Coke Producers Association, an exclusive organization of coke operators, has been inactive for some years.

Experiments on the treatment of lignite, raw and carbonized, by the Trent process are being made in North Dakota by W. W. Odell, fuel engineer of the U. S. Bureau of Mines. Construction of a vertical lignite carbonizing oven has been completed.

Cancellation of the Assigned-Car Hearing has been announced by the Interstate Commerce Commission. The matter will be taken in a new proceeding at some future date after the passing of the emergency.

Borah Coal-Commission Plan Held in Abeyance by President Harding

SENATOR BORAH, chairman of the Senate Committee on Education and Labor, held a conference July 28 with President Harding on the Borah bill proposing that a commission study the coal question, with a view to reporting a plan for permanent legislation to control the coal industry.

President Harding advised Senator Borah that he was in full sympathy with the purposes of the measure. The President asked Senator Borah to visit him again early this week and go over the matter further, when the President expects to know more about the outlook for a settlement of the strike.

Since introducing his resolution Senator Borah evidently has learned that the work he prescribes for three commissioners at $8,000 a year is an undertaking which will require a large organization to carry through and will cost hundreds of thousands of dollars. The task is even more complicated than the valuation of the railroads and many years would be required to gather accurately the information which he proposes should be done in nine months.

Senator Borah's bill, introduced July 25, proposing that a commission be created to inquire into the advisability of nationalizing the coal industry, provides that the commission be composed of three members, to be appointed by the President, subject to the advice and consent of the Senate. Members of the Senate and House, however, shall be ineligible to serve on the commission.

One member of the investigating body, the measure provides, shall be chosen from a list of three nominees presented by the National Coal Association, one from three names submitted by the United Mine Workers and the third shall represent the public, but must not be interested in a business way in the coal industry. The salary of each commissioner is to be $8,000 a year. The commission shall cease to exist one year after the passage of the act unless otherwise provided by Congress.

It shall be the duty of the commission "to investigate fully the conditions, ascertain the facts, and study the questions relating to the coal industry with a view of aiding, assisting and advising the Congress relative to legislation either in the nationalization or the regulation and control of the coal industry by the government. To this end the commission shall ascertain and report to the Congress and to the President, first, as to the ownership and title of the mines; second, cost of production; third, profits realized by the operators or owners of said mines during the last ten years, labor costs, wages paid, irregular production and suggestions as to the remedy for the same and all facts, circumstances or conditions which would be deemed essential in determining and establishing a wise policy relative to the said industry by the government."

The bill also provides that the commission shall submit recommendations relative to:

"(a) Standardizing the mines upon the basis of their productive capacity and regarding the closing down of mines which by reason of their natural limitations fall below the standard.

"(b) Standardizing the cost of living for mine workers and the living conditions which must be supplied or afforded in order to surround the workmen with reasonable comforts, recognizing the psychological effect of such surroundings in respect to their efficiency.

"(c) Standardizing a basis of arriving at the overhead cost of producing the coal and delivering it at the door of the consumer, recognizing in this compilation that the standardized cost of living to the miners must be the first and irreducible item of expense.

"(d) The advisability or necessity of nationalizing the coal industry.

"(e) The feasibility or necessity of governmental regulation and control of the coal industry."

The commission is to render its first report and recommendations as soon as practicable but not later than nine months from the passage of the bill. In making its investigation the commission may require by subpoena the attendance of any person and the production of any book, paper, document or other evidence from any place in the United States at any designated place of hearing, and no person shall be excused from attending and testifying or from producing evidence on the ground that the testimony or evidence may tend to incriminate him. The penalty for violation of this provision is $5,000 fine or imprisonment for one year, or both.

For defraying the expenses of the maintenance and establishment of the commission, including the payment of salaries, provision is made for the appropriation of $100,000 or so much thereof as may be necessary, to be available until one year after the passage of the act.

Harding on National Wage Scales

IN REPLY to a query from the Governor of Michigan President Harding telegraphed that state executive on July 28 as follows regarding the policy of the United Mine Workers on national wage scales:

"It is a matter of record that coal operators and mine workers in many districts have been quite ready to come to an understanding in very short order, but the policy of the national organization is hostile to any district or state arrangement. This apparently is one of the issues involved and is one which must be definitely settled. I do not know of any way of settling it under the legal authorities which are now possessed by either state or federal government. Manifestly, legislation must be provided, and I mean to submit the whole problem to Congress at the earliest consistent time possible after the House reassembles.

"If the coal producers of the United States were so organized that a national body were to determine the policy of every member and permit no sales of coal except on dictation of terms by the national officials, every state legislature and Congress itself would instantly put an end to such a practice. The mine workers unhesitatingly assumed national dictation. It is the big issue involved in the present dispute. Frankly, I think it must be delt with if we are to have any security and with any assurance of a supply of fuel."

BRITISH COLLIERY OWNERS TO ERECT 10,000 HOUSES.—A scheme for the erection of colliery villages being undertaken by a British industrial association composed of colliery owners is based upon the principle of trading without profit. The program, it is stated, includes the erection of about 10,000 houses at the rate of 2,000 a year without any form of government subsidy. It is proposed to make application for a loan from the Public Works Loan Board. The difficulties which confront the mine owners in respect of the housing question, particularly where houses are provided free, was indicated at the annual general meeting of one of the large colliery groups last month. It was stated then that a workman's cottage could be erected at a cost of £400, which was estimated to work out at a cost of 1s. 7¾d. per ton of coal, assuming 1¾ workers per house and an average output of 250 tons per person employed.

MEMBERS OF THE HOUSE OF LORDS call themselves gentlemen, but they wouldn't give Lady Rhondda a seat.—*New York American.*

A GLANCE AT the proposed tariff schedules confirms rumors that the crumbling Peak of Prices is to be restored to its former lofty grandeur.—*Brooklyn Eagle.*

"SIGN SAYS THIS LADDER'S UNSAFE. What of it? I ain't got time to go around."

So he went right up—and came right down again in a heap.

Seventeenth Week of the Coal Strike

EDITORIAL REVIEW

INTEREST in the railroad strike eclipsed that in the coal strike last week. The administration at Washington directed its principal efforts in the direction of getting the railroad men settled once more in their jobs and to rounding out the federal, state and local organizations for administering the priority orders. For the time being the government has been directly engaged in making what coal there is go further and in increasing the output from the non-union fields, crippled since July 1 by the rail strikes.

Efforts of operators in union fields to get their mines in operation have been practically fruitless. In the Pittsburgh district, where most was expected and where military protection has been provided, almost no coal has as yet been loaded out, and in Ohio no attempt has been made to operate any except the strip mines which were in operation in the early part of the summer and have been closed by intimidation of their workers.

Illinois and Indiana operators cannot work their shaft mines without licensed labor and have made no attempt to resume production. The Governor of Indiana has threatened to call the Legislature and to ask it to repeal the law which acts as a bar to coal production. This would be a blow to the miners.

No effort has been made to get out coal in the anthracite region and it is understood none will be until the union puts the men back.

On the union side John L. Lewis has been diverting attention from the question of the union's attitude toward arbitration by talking a great deal about getting sufficient operators together to start a joint interstate conference. In this he is quite persistent, despite the reiterated refusals of substantial groups of producers. There appears to be as wide divergence of opinion among the miners as in the ranks of the soft-coal operators, but John L. Lewis manages to hold the workers together.

There was no material change in the situation in the Connellsville coke region during the past week.

Miners Will Not Be Driven Back to Work at Starvation Wages, Says Lewis

BEFORE leaving New York for Philadelphia to confer with the presidents of the unions in the anthracite fields on July 26, John L. Lewis, president of the United Mine Workers of America, issued the folowing statement:

"Ten days have elapsed since the President directed the coal operators of the country whose miners are on strike to return to their homes and resume the production of coal, following which he telegraphed the governors of the several commonwealths urging them to accord military protection to all coal companies employing strike breakers.

"Despite the promulgation of this policy by the Federal Government and its punctual application by several governors, there has been no increase in coal production. Not a single union miner has returned to work throughout the length and breadth of the land and it must now be obvious to all that the American miner will not be driven back to work at starvation wages and under non-union conditions by any fanfare of trumpets or vain military display. The assembling and training of engines of war to awe American citizens who are merely exercising their inherent constitutional right to cease work in order to maintain their industrial and social status as citizens of the Republic would be a national farce did it not possess the elements of tragedy.

"The presence of state troops in large numbers in communities where no transgression of the law has occured in itself constitutes a menace to domestic tranquillity and creates a situation repugnant to the ideals of every free-born American. Aside from the question of equity and constitutional rights which are involved, the public is being heavily taxed to maintain military forces in the field to assist mining corporations who deny industrial justice to their employees and are applying labor-crushing anti-union policies. The employment of the citizen soldiery of our country in the protection of imported strike breakers in the mining industry is bound to lessen the respect of a large part of our citizenship for the National Guard as an impartial institution.

"The lamentable breakdown of the federal policy actually lessens the desire of the public for further experiments of this sort. The public is primarily concerned with its future coal supply and the summer is on the wane. Time is an important factor. The loss of an additional ten days to further develop fantastic schemes in the field of industrial experimentation can hardly be afforded.

"The mine workers are resolved not to be driven back to the mines by any threat of force and neither do they intend to return until the coal operators of the country are required to meet them in joint conference in order that a new wage scale may be negotiated.

"The principles of collective bargaining are at stake, and the right to employment at a living wage is an issue which must be considered.

"The coal strike, now in its seventeenth week, involving more than 600,000 men and affecting the welfare of our nation, is in itself a colossal industrial tragedy which reflects no credit upon our antiquated industrial relations or American statesmanship. Such a condition, by every rule of reason and logic, is indefensibly wrong and is an outrage to every moral and economic principle.

"The miners are anxious to settle this strike and resume the production of coal. We are ready to meet in joint conference with the coal operators at the earliest moment if such a conference can be arranged in harmony with the contractual obligations of the coal companies and in line with the procedure which has prevailed in the industry for more than a quarter of a century.

"The adjustment of a national strike in this national industry cannot be accomplished through the instrumentality of state or district settlement. No district conference or agreement will be sanctioned by the Mine Workers Organization. The Mine Workers' representatives will hold themselves in readiness to respond to any logical and practical attempt to effectuate an adjustment."

Miners Return to Work in Increased Numbers in Central Pennsylvania

SLIGHT increases in the number of miners who have returned to work were reported all along the line of the Cambria-Somerset-Indiana sector of the coal-strike area of central Pennsylvania up to July 28. The largest additions at the mines were reported from Colver and Twin Rocks. About one hundred reported for work at the mines of the Ebensburg Coal Co. at Colver and the largest production since the walk-out at this mine several weeks ago was reported. Ten cars were shipped from the Twin Rocks district, three of which were from the Commercial Coal Mining Co., which is operating under guard.

Operations were resumed at No. 9 mine of the Bethlehem Mines Corporation at Heilwood with a few men returning to work and Mine No. 11 is expected to reopen this week. Officials are confident that the majority of the men will return to work.

At Windber the Reitz Coal Co. has a full force of men at work and production will be at a pre-strike rate within the present week. About 100 cars of coal was shipped from the Windber district, showing a substantial gain. Additional men are back to work at Kelso. Calls for guards have been received at National Guard headquarters at Ebensburg from a number of other operations.

United Mine Workers in the field are redoubling their efforts to restrain the men from returning to work, with the result that James H. Maurer, president of the State Federation of Labor, has opened headquarters in Johnstown and is addressing meetings of miners at various places.

Michigan Union Officials Refuse To Comply with Governor's Request

OFFICERS of the Michigan district of the United Mine Workers have definitely refused to comply with the request of Governor A. J. Groesbeck that they return to work to produce coal for state and municipal needs. The reply to the Governor, signed by Thomas L. Jones, district president, asserts that for the miners of Michigan to resume work before the end of the strike would be to "dig their own graves." It is pointed out that one year ago state institutions of Michigan were contracting with producers outside the state for coal supply, as was also the Bay City School Board.

"Inasmuch as the Michigan mine worker was denied the opportunity to supply coal for municipal and state institutions it is not to be expected that we are going to do it at this time when great principles are at stake," says the communication to the Governor.

Operators of Southwest Indorse Harding Plan for Resumption

A SPECIAL convention of the Southwestern Interstate Coal Operators' Association at Kansas City, Mo., on July 24, 1922, gave consideration to the report of the majority committee of the bituminous coal operators to President Harding in reply to his proposal to the operators and miners for an arbitration commission. Its provisions were regarded as being ample and sufficient to have brought about a peaceful and orderly settlement of the strike. Unanimous approval and endorsement was given the plan as serving the best interest of the public, the bituminous operators and the employees in the coal industry and regret was expressed that the miners declined.

Consideration also was given to President Harding's later invitation to resume operation of mines with such voluntary labor as could be obtained.

The report of the convention says that the members of the Southwestern Interstate Coal Operators' Association, "realizing and appreciating their obligation to the public as producers of coal, feel that in this hour of need, as loyal citizens of our government, it becomes our duty and we hereby pledge our unanimous and hearty response to the call of President Harding for the resumption of coal mining at the earliest possible moment; notwithstanding the many obstructions and difficulties that must be overcome in such an effort.

"In order to carry out this response to the President's direction as effectively and efficiently as possible, we make the following recommendations:

(1) That the operators in each state represented in this meeting shall appoint a committee of five operators, as a state executive committee for said state. It shall be the duty of said committee to confer and arrange with the county and state authorities for such proper protection as may be necessary to protect life and property in the mining industry. Said committee shall in conjunction with each local mine owner and the association officers have jurisdiction in each state over all matters applying to and governing the preliminary operation of mines.

(2) All association mines that are now operating shall be encouraged to increase their operations and production to maximum capacity.

(3) That the offer of employment by association members shall be made to experienced mine workers now in the field, who in the judgment of the management are most suited for the various classes of work.

(4) That the wage scale to be paid for day rates, tonnage, dead work and yardage work shall be in conformity with the majority report of the bituminous coal committee made to President Harding.

(5) That the rules and regulations governing contract conditions for the operation of mines, adopted by the General Scale Committee and approved by the last special convention of the association shall be adopted and put into effect in connection with the above wage scale and all members shall be required to comply with said rules and regulations governing their mines.

(6) We wish the public to understand that the Southwestern Interstate Coal Operators' Association is not antagonistic to union labor, when properly conducted nor to the United Mine Workers, nor to collective bargaining, but having failed to secure a continuation of the Southwestern Interstate Conference, convened March 29 and which adjourned April 10, wherein the miners refused to undertake negotiations for a wage scale and in view of the four additional efforts by letters and telegrams to the national and district officers seeking to reconvene the Southwestern Interstate Conference to consummate a wage scale, and which were declined by the miners, we now find it necessary to recognize our obligations to the public and to our government in its call to resume mining operations and realizing the difficulties of this undertaking, through the probable resistance of the organized forces of the miners and labor generally, we ask the public to be patient in its demands for coal and to render such co-operation and assistance as all good citizens should, who believe in the orderly and peaceful procedure of industry, exercising its legal and lawful rights to meet the needs of a nation in its dire distress, and to further assist in the encouragement and enforcement of laws by all legal constituted authorities.

Court of Appeals Sustains Injunctions Except in Regard to Tent Colonies

THE U. S. Circuit Court of Appeals at Richmond has sustained Judge George W. McClintic, of the U. S. District Court for the Southern District of West Virginia, on the appeal taken by the United Mine Workers of America from the injunctions granted in five fields and has modified the injunctions granted by the lower court only to the extent that the Borderland case was modified and that is with reference to the maintenance of tent colonies.

Injunctions were obtained on Monday, July 24, by additional companies in the Kanawha field to halt the activities of the United Mine Workers in attempting to interfere with the operation of mines. The temporary restraining orders were issued by the U. S. District Court for Southern West Virginia and cover the mines of the following companies: Southern States Coal Co., Black Bird Coal Co., Valco Coal Co., Lincoln Coal & Coke Co., Piney-Pocahontas Coal Co., Glenn Coal Co., Lomo By-Products Coal Co. and Black Band Consolidated Coal Co.

Local unions at the following places are covered by the injunctions: Morrisville, Cofoco, Cheylan, Handley, Kayford, Burnwell, Dry Branch, Plymouth, Mordue, Marmet, Malden, Whitesville, Crown Hill, Shrewsbury, Montgomery, Sharon, Raymond City, Coalburg, Winifrede, East Bank, Colcord, Big Chimney, Petona, Eldale, Gallagher, Smithers, Wevaco, Cannelton, Leevale, Boncar, Wake Forest, Highes-ton, Dana, Sharples, Montcoal.

Production in Western Canada Improved Slightly Late in July

THE British Columbia situation with respect to coal production showed little change during the latter half of July. In the Crow's Nest field the mines still are closed owing to the strike. The collieries of the Nicola-Princeton area are operating much as usual, although the Coalmont Collieries are doing somewhat better, their output averaging 800 tons a day, which is a considerable jump. On Vancouver Island the Canadian Collieries (D), Ltd., at Comox and Wellington have not yet been required to work full time to meet the demand. The Western Canadian Fuel Corporation, however, is reported to have signed contracts that will absorb its capacity production for a time. Consequently the mines at Nanaimo and in that immediate district are active. In the north there is some prospecting of the coal fields adjacent to the Grand Trunk Pacific Ry. and it is assured that mines will be operated on a small scale to meet the coal requirements of Prince Rupert and other local centers during the winter.

NO LABOR TROUBLE has been noted in the northern coal fields of Colorado since the National Guard and the Colorado Rangers were first sent into the strike districts. Rangers are widely scattered over the entire coal area in the state. Ten rangers appear to have more effect than a company of troops, as most of them are personally acquainted with the strikers and retain their respect.

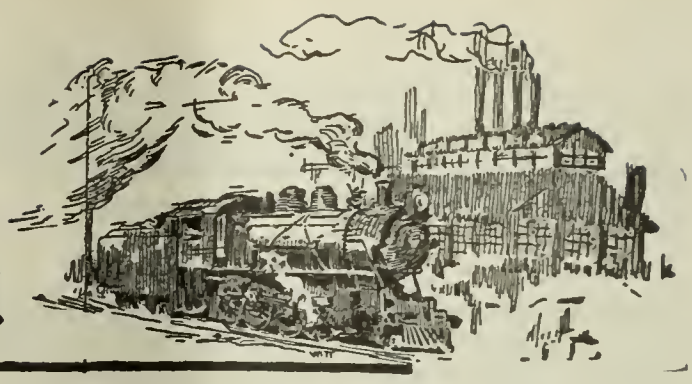
A prominent merchant of Denver, Col., writes us: "We have practically no coal strike here in this state. We have to thank our Governor for this state of affairs. We had sad experiences during former coal strikes, when the National Guard had to be called out after much damage was done.

"This time the State Rangers were in the different coal camps the day before the strike started. The result was that we had no violence since and the mines are operating.

"Our Governor, Oliver H. Shoup, deserves the thanks and recognition for the stand he has taken."



Production and the Market



Weekly Review

THE steadying influence of the government on the price and distribution of coal is now making itself felt. Production is again on the increase as the tangles caused by the rail strike are being straightened out. The Geological Survey estimates the output last week at 3,900,000 tons, a gain of 200,000 tons, or 5 per cent over the previous week. This increase came mainly from the non-union fields in the South, but Pennsylvania contributed some.

Prices continue strong. *Coal Age* Index of spot prices of bituminous coal at the mines rose 96 points to 556 on July 31. This corresponds to an average spot price of $6.73. Prices on Western coals, particularly those from Kentucky, declined with the collapse of the boom on the Chicago market a week ago. Cincinnati, Columbus, Cleveland and Boston were the most active markets as the week opened.

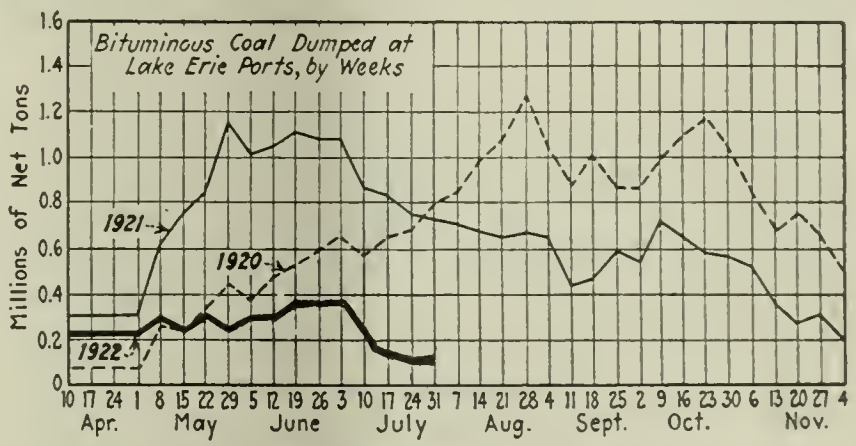
Government Price Control Now a Moral Influence

Washington's machinery for handling the details of distribution is in the making and the control over prices is yet but a moral influence. The structure is being built from the top down, but it is being well built, extending into the states and cities through the co-operation of state commissions and local fuel administrators. Secretary Hoover is getting ready to meet a situation that is more than transient, a shortage that is yet to be fully felt and that will not be over until next spring.

The railroads are the only consumers that have found it necessary so far to take advantage of the priority orders—the Pennsylvania is taking 20 per cent of output on its lines. These orders were primarily for their protection and they are now using them to get coal. Where the roads demand the coal, shippers are letting them have it below the market rather than have it confiscated.

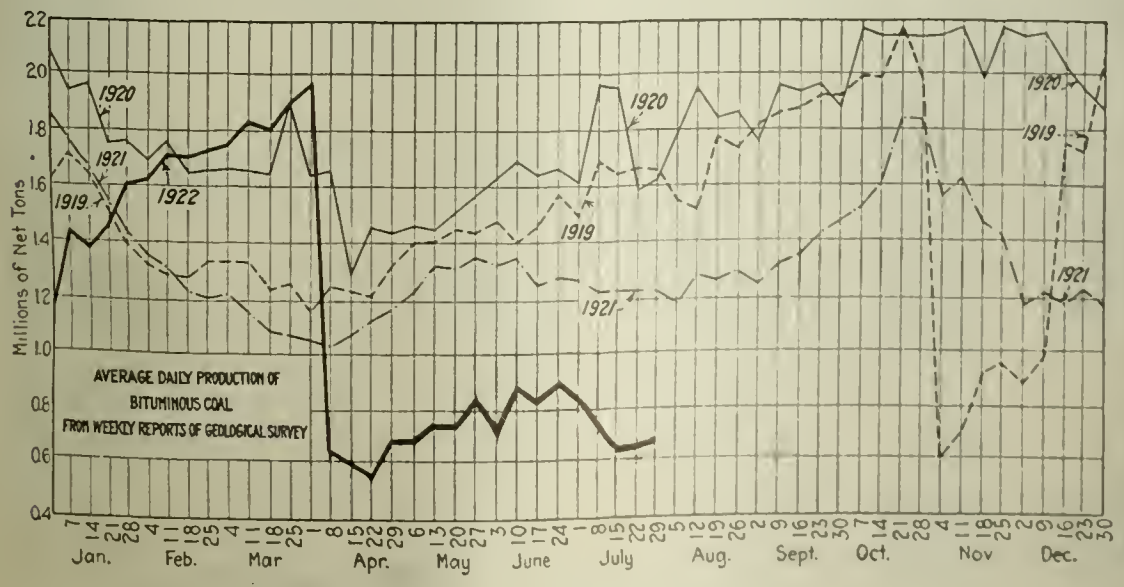
Buying of British coal, the feature of last week's review, has abated somewhat, mainly because both coal and ships have become scarce if wanted for immediate delivery and because prices advanced sharply. Whereas two weeks ago English coal could be had c.i.f. New York for around $7.50, it is now obtainable for late August and September delivery at around $10.

A survey just completed by officials in Washington of the Lake coal situation indicates that it is physically possible to move enough coal to give the Northwest reasonable supplies if the Lake movement is begun by Sept. 1. Such a program, however, presupposes full co-operation on the part of ship owners and that there will be no delays to vessels in obtaining coal for loading at the lower ports.



Anthracite shipments embrace mine storage and an increasing volume of river steam coals. Pea and smaller sizes are about all that are moving from the storage piles. Retailers are reordering heavily of pea, using this as a substitute for the family sizes. Railroads also are taking pea coal and are requesting the companies to reserve them a considerable amount of this tonnage in lieu of the smaller sizes. It is likely therefore that this grade will soon be off the market.

Coke offerings have decreased considerably. Connellsville spot coke is extremely scarce, the improvement in operations recently noted having referred chiefly to



Estimates of Production

(Net Tons)

Week ended	1921	1922
BITUMINOUS		
July 8 (*b*)	6,165,000	3,678,000
July 15 (*b*)	7,401,000	4,123,000
July 22 (*a*)	7,380,000	3,701,000
Daily average	1,230,000	617,000
Calendar year	217,410,000	199,354,000
Daily av. cal. yr.	1,274,000	1,162,000
ANTHRACITE		
July 8 (*b*)	1,525,000	23,000
July 15 (*b*)	1,876,000	31,000
July 22 (*a*)	1,837,000	27,000
COKE		
July 15 (*b*)	44,000	100,000
July 22 (*a*)	41,000	104,000
Calendar year	3,517,000	3,514,000

(*a*) Subject to revision. (*b*) Revised from last report

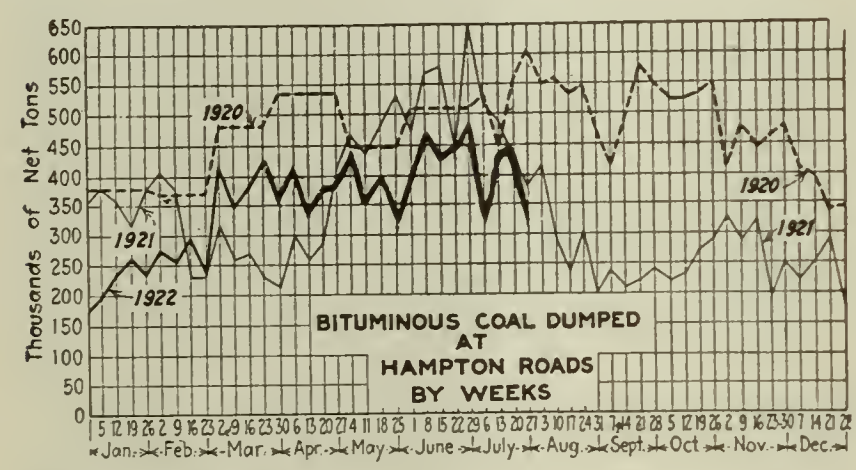
furnace ovens rather than to merchant ovens. In this section byproduct ovens are now largely dependent on their reserve coal stocks, as shipments from West Virginia and Kentucky have almost ceased.

BITUMINOUS

Returns on coal output in the seventeenth week of the strike (July 24-29), according to the Geological Survey, give the first test of the response to the invitation to reopen mines. "There has been a slight recovery as compared with the sixteenth week," the Survey says. "Production is running at the rate of 3,900,000 tons, against 3,700,000 tons last week. The increase is due partly to more men at work in Pennsylvania, partly to improved car supply in southern West Virginia, and partly to heavier shipments from Alabama and the Far West. Production of anthracite remains practically at zero.

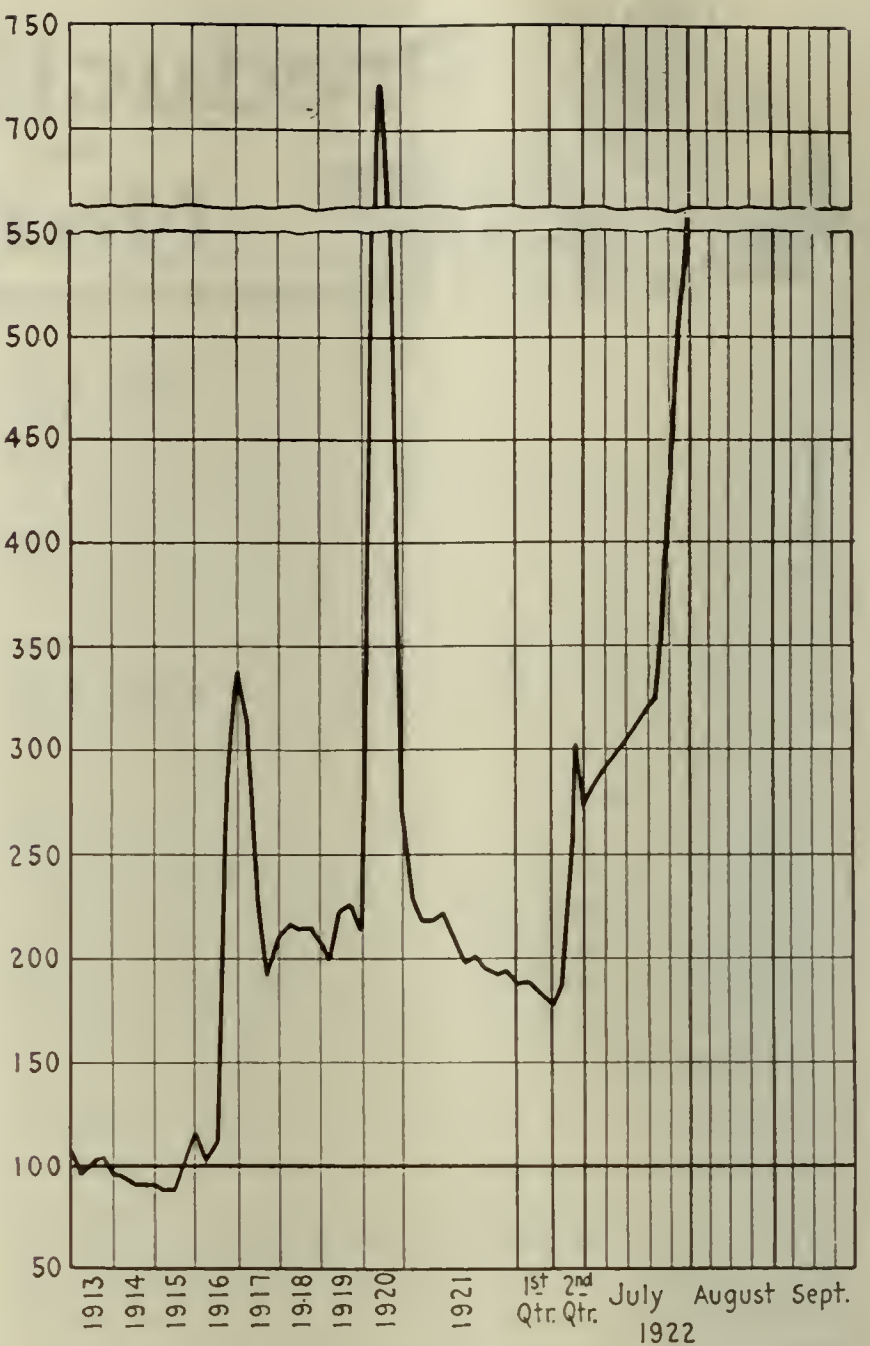
"Loadings on Monday, July 24, were 13,083 cars. This was 417 cars above the preceding Monday, but 3,664 cars below the last Monday before the shopmen's strike. On Tuesday and Wednesday loadings declined, but on Thursday a slight recovery was noted.

"It thus appears likely that the total output for the seventeenth week will be less than 4,000,000 tons, probably only 3,900,000 tons. In the lowest week of the strike 3,575,000



tons were produced and in the highest week (June 19-24) 5,363,000 tons. The decrease since June is attributable to traffic congestion resulting from the shopmen's strike. In the Middle Appalachian region the congestion is still acute, although a slight improvement over last week has been reported from certain districts.

"There is no indication of increased production in response to the invitation to reopen mines in any of the strongly organized districts. More coal is coming out of the former non-union fields of Pennsylvania and a little more from the Fairmont and Kanawha districts of West Virginia, but



Coal Age Index 556, Week of July 31, 1922. Average spot price for same period $6.73. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the total output of the United States, weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. (Pittsburgh District, Illinois, Indiana and eastern Ohio prices not included in figures for last week.)

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F O. B. Mines

	Market Quoted	July 3 1922	July 17 1922	July 24 1922	July 31 1922†
Low-Volatile, Eastern					
Smokeless lump	Columbus	$3 65	$3 95	$6.00	**$8 00**@ **$9 00**
Smokeless mine run	Columbus	3.45	3.75	6.00	**7 50**@ **8 75**
Smokeless screenings	Columbus	3.25	3.45	5 50	**7 50**@ **8 50**
Smoke'ess lump	Chicago	3.65	4.15	8.25	*7.75@ 8.50*
Smokeless mine run	Chicago	3.40	4.15	8 25	*7.75@ 8.50*
Smokeless lump	Cincinnati	3.75	4.40	5.40	**3.75**@ **8 00**
Smoke'ess mine run	Cincinnati	3.45	3.80	5.25	**3 50**@ **7 50**
Smokeless screenings	Cincinnati	3.25	3.25	4 90	**3 25**@ **7 00**
*Smokeless mine run	Boston	6.20	6.55	7.65	**7 50**@ **8 75**
Clearfield mine run	Boston	3.45	3.40	3.65	**5 50**@ **6 50**
Cambria mine run	Boston	3.70	3.85	4 00	**6 50**@ **6 75**
Somerset mine run	Boston	3.50	3.50	3.75	**5.50**@ **6 50**
Pool 9 (Super.Low Vol.)	New York	4.65			
Pool 9 (Super.Low Vol.)	Philadelphia	4 55	4.75		**7.50**@ **9 00**
Pool 9 (Super.Low Vol.)	Baltimore	4 00	4.50	4 75	**7.00**@ **7 50**
Pool 10 (H.Gr.Low Vol)	New York	4.40	4.80	8.75	
Pool 10 (H.Gr.Low Vol.)	Philadelphia	4.25	4.55		**7 50**@ **8.50**
Pool 10 (H.Gr.Low Vol.)	Baltimore	4.00	4.50	4.75	**7 00**@ **7.50**
Pool 11 (Low Vol.)	New York	4.15	4.60	8.25	**7 50**@ **8 00**
Pool 11 (Low Vol.)	Philadelphia	3.90	4.40		**7 50**@ **8 50**
Pool 11 (Low Vol.)	Baltimore	3.90	4 30	4 75	**7 50**@ **8 00**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	4.25	4 70	8 75	*7.50@ 8.00*
Pool 54-64 (Gas and St.)	Philadelphia		4 40		**7 50**@ **8 75**
Pool 54-64 (Gas and St.)	Baltimore	3.90	4.10	4.75	**7 00**@ **7.75**
Kanawha lump	Columbus	3.65	4.00	6.00	**7 25**@ **8.75**
Kanawha mine run	Columbus	3.40	3.65	5.90	**7 00**@ **8 50**
Kanawha screenings	Columbus	3.15	3.40	5.90	**7.00**@ **8 50**
W. Va. Splint lump	Cincinnati	3.65	4 25	5.15	**3 75**@ **9 00**
W. Va. Gas lump	Cincinnati	3.65	4 25	5 15	**3 75**@ **9 00**
W. Va. mine run	Cincinnati	3.45	4.00	5.25	**3 50**@ **8.50**
W. Va. screenings	Cincinnati	$3.25	$3 60	$4 75	**$3 25**@ **$8 50**
Hocking lump	Columbus	3 65	3.80	5.75	**7.50**@ **8 75**
Hocking mine run	Columbus	3.40	3.70	5.50	**7 00**@ **8 50**
Hocking screenings	Columbus	3 10	3.40	5.50	**7 00**@ **8 50**
Pitts. No. 8 lump	Cleveland	4 25	4 75	7.25	**8 00**@ **9 00**
Pitts. No. 8 mine run	Cleveland	4 00	4 40	7 25	**8 00**@ **9 00**
Pitts. No. 8 screenings	Cleveland	4 00	4 40	7.25	**8 00**@ **9 00**
Midwest					
West Ky. lump	Louisville	4 40	6.15	10 25	*7 00@ 7 50*
West Ky. mine run	Louisville	4 40	6.15	10 25	*7.00@ 7.50*
West Ky. screenings	Louisville	4 40	6.15	10.25	*7.00@ 7.50*
West Ky. lump	Chicago	4 45	6.50	11.00	*8.00@ 8.25*
West Ky. mine run	Chicago	4 45	6.50	11.00	*8.00@ 8.25*
South and Southwest					
Big Seam lump	Birmingham	2.35	2 35	2.40	**4 00**@ **5 00**
Big Seam mine run	Birmingham	2.15	2 20	2.35	**4 00**@ **5 00**
Big Seam (washed)	Birmingham	2 15	2.40	2.50	**4 00**@ **5.00**
S. E. Ky. lump	Chicago	3.65	4.15	9.40	*7 75@ 8.25*
S. E. Ky. mine run	Chicago	3.40	4.15	9.40	*7.75@ 8 25*
S. E. Ky. lump	Louisville	3.75	4.40	9.25	*7.00@ 8.50*
S. E. Ky. mine run	Louisville	3 50	4.15	9.25	*7.00@ 8 50*
S. E. Ky. screenings	Louisville	3 50	4.25	9.25	*7.00@ 8 25*
S. E. Ky. lump	Cincinnati	3.70	4.25	7.00	**7 00**@ **8 50**
S. E. Ky. mine run	Cincinnati	3 50	4 00	5.00	**3 50**@ **8 50**
S. E. Ky. screenings	Cincinnati	3 20	3.75	4 65	**3 25**@ **8.50**
Kansas lump	Kansas City	5.00	5 00	5.00	5 00
Kansas mine run	Kansas City	4.25	4 75	4.75	4 75
Kansas screenings	Kansas City	3.05	4.25	4.25	4 25

*Gross tons, f. o. b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.
NOTE—Smokeless prices now include New River and Pocahontas.

the additional supply from these sources is not yet significant in comparison with the requirements of the country."

The mine reports show how serious has been the effect of the railway shopmen's strike on mine working time. Losses due to traffic congestion grew steadily worse and extended into practically every field east of the Mississippi in which mines are now active. In the Harlan field, where a large majority of the mines were already shut down full time because of transportation disability, practically no improvement occurred, and in the Hazard district transportation losses increased 71.2 per cent in the week of July 15. "All districts in Southern West Virginia, where but little difficulty had previously been experienced in handling traffic, showed greatly increased losses through transportation," says the Survey. "The most serious of these were in Logan, Pocahontas, Tug River, and Kenova-Thacker."

Hampton Roads dumpings decreased during the week ended July 27 to 324,377 net tons, compared with 445,030 tons the week of July 20. Two piers recorded losses and one, the Virginian, had a slight gain.

Shipment of coal to New England by rail is limited to a few hundred cars per week each of soft and hard coals. In the week of July 22 there passed through the gateways 433 cars of anthracite and 445 cars of bituminous coal. The anthracite is nearly all pea and smaller sizes. In the same week shipments of coal to New England through Hampton Roads declined to 176,878 net tons, compared with 236,003 tons the week before.

Lake shipments have about reached the bottom figure. In the week ended July 31 total dumpings at Lake Erie ports were 146,163 tons, of which 15,781 tons were bunker coal and 130,382 tons were cargo. Total dumpings for the season to date are only 4,535,210 tons, as compared with 13,418,819 tons in the corresponding period of 1921. The Northwest is facing an almost certain shortage this winter unless shipments up the Lakes take an immediate spurt. There is almost no unsold tonnage on the docks and the majority of this is being reserved for old customers.

ANTHRACITE

Production of anthracite during the week ended July 22—about 27,000 net tons—was practically all steam coal dredged from the rivers. Mine storage stocks now consist mainly of pea coal and smaller sizes and retailers are taking the former for distribution as a substitute for their trade. Both householders and dealers are placing orders for the family sizes to be delivered as soon as mining is resumed.

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 inclusive	April 3 to July 15, 1922 inclusive	Week Ended July 15
U. S. Total	45.6	55.7	....	....
Non-Union				
Alabama	63.5	64.6	75.4	92.2
Somerset County	55.5	74.9	45.1	38.8
Panhandle, W. Va.	55.3	51.3	44.6	53.3
Westmoreland	54.9	58.8	82.6	89.5
Virginia	54.8	59.9	79.6	64.1
Harlan	53.3	54.8	48.0	7.6
Hazard	51.7	58.4	56.7	28.8
Pocahontas	49.8	60.0	74.8	45.2
Tug River	48.1	63.7	81.4	56.4
Logan	47.6	61.1	73.8	34.3
Cumberland-Piedmont	46.6	50.6	16.0	22.1
Winding Gulf	45.7	64.3	71.0	67.3
Kenova-Thacker	38.2	54.3	78.3	59.4
N. E. Kentucky	32.9	47.7	55.8	39.2
New River‡	24.3	37.9	27.7	46.2
Union				
Oklahoma	63.9	59.6	14.7	16.1
Iowa	57.4	78.4	0.0	0.0
Ohio, Eastern	52.6	46.6	0.0	0.0
Missouri	50.7	66.8	2.0	4.1
Illinois	44.8	54.5	0.0	0.0
Kansas	42.0	54.9	15.7	24.0
Indiana	41.4	53.8	0.0	0.0
Pittsburgh†	41.2	39.8	0.0	0.0
Central Pennsylvania	39.1	50.2	11 8	13.2
Fairmont	35.3	44.0	4.0	4.6
Western Kentucky	32.5	37.7	62 8	71.6
Pittsburgh*	30.4	31.9	0.0	0.0
Kanawha	26.0	13.0	5.6	8.1
Ohio, southern	22.9	24.3	0.0	0.0

* Rail and river mines combined.
† Rail mines.
‡ Union in 1921, non-union in 1922.

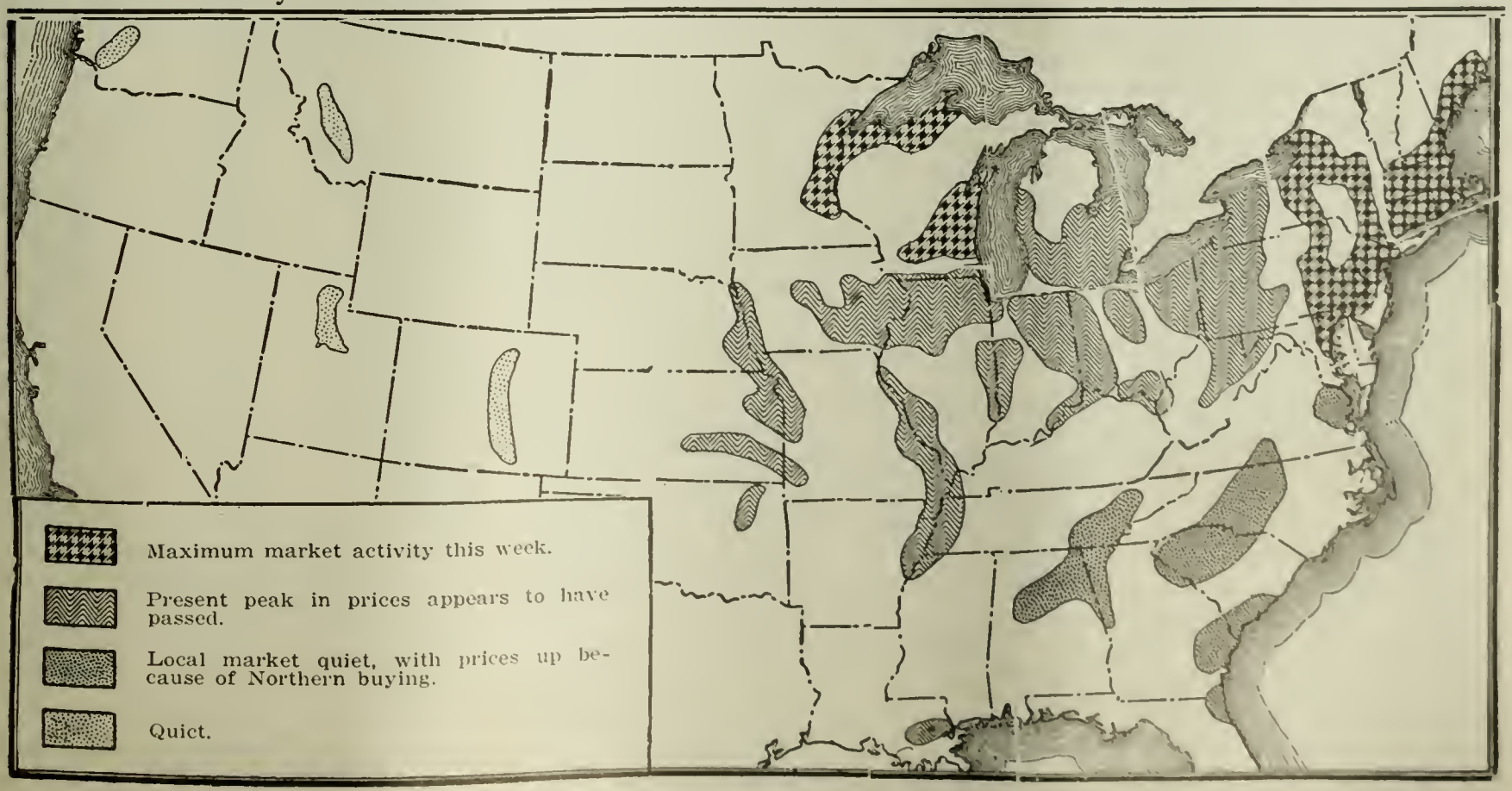
Car Loadings and Surpluses

	All Cars	Coal Cars
Cars loaded:		
Week ended July 15	860,907	77,334
Previous week	718,319	68,996
Same week a year ago	774,884	151,288
Surplus cars:		
July 8	405,120	146,743
July 1	405,180	147,558

COKE

Beehive coke production was 104,000 net tons during the week ended July 22. The output appears to have found a level at about 100,000 tons per week, the figure for the week ended July 15. The principal factor in the increase was in the Connellsville region, although this was confined mainly to furnace ovens. The amount of spot coke offering therefore has not been increased proportionately and as a result spot prices have climbed further.

Relative Activity of Markets for Bituminous Coal at End of Seventeenth Week of Strike



Foreign Market And Export News

American Shippers Active in British Market; Production Registers Slight Increase

AMERICAN shippers are actively seeking tonnage to replace their strike losses. Public utilities and railroads have been the heaviest buyers, and now that the United States Government has given priority to these consumers, considerable tonnage of domestic-mined coals will be available to them. This makes the American market a rather uncertain and temporary one for the British shipper.

British production during the week ended July 15 was 4,627,000 gross tons, according to a cable to *Coal Age*, as compared with 4,598,000 tons for the previous week.

Some improvement is indicated in the British coal trade. Steam and gas coals especially are in better demand than for some weeks, and from 6d. to 1s. per ton increase is being obtained for the better qualities of steams.

Among the inquiries received in the North of England are 30,000 tons of gas and coking coals for autumn shipment to the Stockholm gasworks, 8,000 Wear specials for the Bordeaux gasworks, and one British gas company is in the market for around 500,000 tons. Up to 30s. is now the price of best gas coke and there is an appreciable market at that price. The Baltic and Holland are the most promising buyers.

Coal Paragraphs from Foreign Lands

ITALY—Cardiff steam first is now quoted at 36s. 6d., according to a cable to *Coal Age*, as compared with 36s. 3d. last week.

The Italian Government has issued an announcement covering the prices at which its surplus stocks of German coal may be purchased for industrial use. Westphalian and Silesian steam, gas, and furnace coal may be purchased for 150 lire per metric ton on board cars in transit or 165 lire f.o.b. Italian port. The sale price of Westphalian coke for metallurgical purposes is fixed at 230 lire on board cars in transit or 240 lire delivered at a port. Silesian coke, which can be shipped only by rail, will be sold at 220 lire on board cars in transit.

INDIA—The market is firm. Mills are purchasing and it is understood that more than 15,000 tons are in stock. The rates are: Bengal 1st., Rs. 36; English coal, Rs. 39; African coal, Rs. 34.

Hampton Roads Market Demoralized

The market was demoralized with prices soaring at Hampton Roads last week, with demand double the supply. Slight improvement in coal movement was noted on all roads, although surplus supplies did not increase to any appreciable extent. Export business dwindled to nothing.

Terminal facilities were in normal condition, but movement of coal from the mines continued interrupted. The prospect for improvement was said by coal men not to be bright. Schooners and barges, prepared to carry coal to Northern points, were lying idle in the harbor.

The price of coal, soaring as high as $11 per ton in some instances, reached the highest point since the peak of business in 1920.

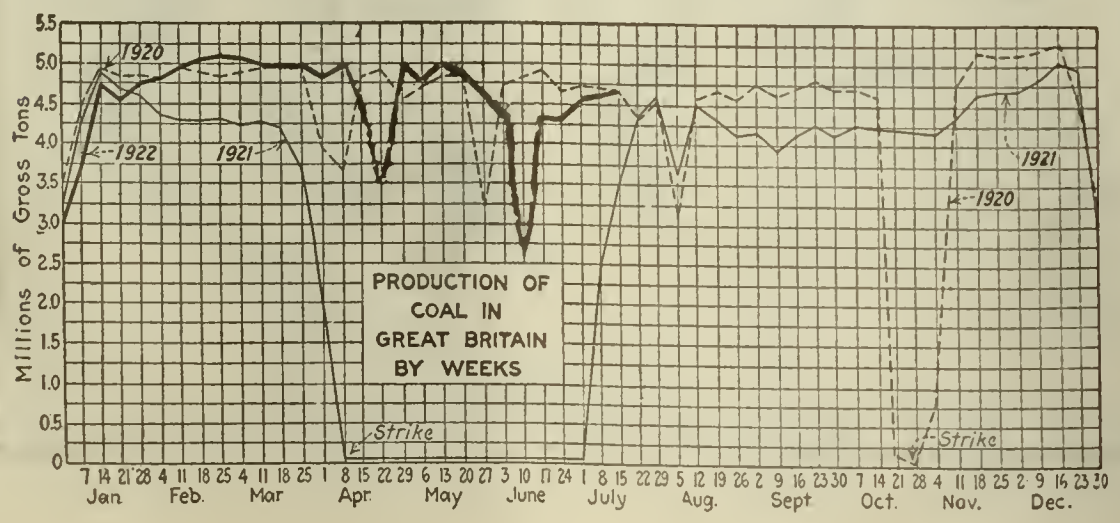
June Reparation Deliveries

Deliveries from Germany to France, on reparation account, in June were:

	Metric Tons
Coal	385,500
Coke	501,900
Briquets (lignite)	22,400

The importation of British coal into Germany has lately assumed larger proportions owing to the insufficient supplies of German coal and the great demand has already led to an increase in price. A number of works imported British coal with a view to exchanging it through the Coal Syndicate for coke allotted to the railways. Now the Reichskohlencommissar has ordered that imported coals be partly taken into account in making allotments of inland coal and this appears to have led already to a noticeable decrease in the demand for British coal.

Production in the Ruhr district during the week ended July 15 was 1,760,000 metric tons, according to a cable to *Coal Age*. The output in the previous week was 1,629,000 tons.



Hampton Roads Pier Situation

	Week Ended July 20	July 27
N. & W. Piers, Lamberts Point:		
Cars on hand	567	600
Tons on hand	31,485	34,770
Tons dumped for week	194,896	111,026
Tonnage waiting	2,000	61,100
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	1,053	745
Tons on hand	59,450	41,450
Tons dumped for week	107,710	111,620
Tonnage waiting	62,825	79,749
C&O Piers, Newport News:		
Cars on hand	555	637
Tons on hand	27,750	32,000
Tons dumped for week	94,833	66,977
Tonnage waiting	19,765	17,970

Slight Stimulus to French Demand

Slight reductions in prices July 1, to some extent stimulated demand but not sufficiently to improve the situation in the Nord and Pas-de-Calais.

It is hoped that an agreement between owners and men on a lengthening of the day's work underground will be reached soon and that no stoppage of work will take place at the end of the present agreement, on Aug. 25.

The price of German coke for French blast furnaces has been raised from 93 fr. per ton at the German frontier in July to 97 fr. in August.

The present price of Sarre run-of-mine, 50 per cent of lumps, is 63@68 fr. less a bounty of 3@5 fr. for summer delivery up to Sept. 30 and of 1@2 fr. for contracts.

FRENCH COAL PRODUCTION, IMPORTS AND EXPORTS IN MAY AND DURING THE FIRST FIVE MONTHS OF 1922

Coal	May, 1922 Metric Tons	January-May, 1922 Metric Tons
Production	2,595,391	13,009,716
Imports	2,058,448	9,506,506
Exports	180,824	490,465
Coke		
Production	82,131	385,335
Imports	521,630	2,000,672
Exports	18,734	190,790
Briquets		
Production	212,285	1,075,367
Imports	112,592	653,809
Exports	8,224	47,261

Pier and Bunker Prices, Gross Tons

PIERS

	July 22	July 29†
Pool 11, New York	$10.00@$11.00	**$10.50@$11.50**
Pool 1, Hamp. Rds	7.00@9.00	**8.00@11.00**
Pools 5-6-7 Hamp. Rds.	7.00@9.00	**8.00@11.00**
Pool 2, Hamp. Rds.	7.00@9.00	**8.00@11.00**

BUNKERS

Pool 11, New York	10.00@11.00	**10.50@11.50**
Pool 1, Hamp. Rds.	7.00@9.00	**8.00@11.00**
Pool 2, Hamp. Rds.	7.00@9.00	**8.00@11.00**
Welsh, Gibraltar	43s. f.o.b.	43s. f.o.b.
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	43s. f.o.b.	43s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	42s. t.i.b.
Welsh, Messina	39s. f.o.b.	39s. f.o.b.
Welsh, Algiers	38s. 6d. f.o.b.	38s. 6d. f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b.	65s. f.o.b.
Welsh, Maderia	42s. 6d. f.a.s.	42s. 6d. f.a.s.
Welsh, Teneriffe	40s. 6d. f.a.s.	40s. 6d. f.a.s.
Welsh, Malta	44s. 6d. f.o.b.	44s. 6d. f.o.b.
Welsh, Las Palmas	40s. 6d. f.a.s.	40s. 6d. f.a.s.
Welsh, Naples	38s. f.o.b.	38s. f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore	55s. f.o.b.	55s. f.o.b.
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Port Said	49s. f.o.b.	49s. f.o.b.
Alexandria	43s. f.o.b.	43s. f.o.b.
Capetown	35s. 3d.	35s. 3d.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	July 22	July 29†
Admiralty, Large	25s.	**29s. @ 30s.**
Steam, Smalls	18s.@18s.6d.	**17s.@21s.**
Newcastle:		
Best Steams	24s.@25s.	24s. @ 25s.
Best Gas	21s.6d.	**25s.**
Best Bunkers	22s.6d.@24s.	**23s.@25s.**

†Advances over previous week shown in **heavy type**: declines in *italics*.

North Atlantic

British Coal Now a Factor; Softening Tendency Seen

Uncertainty Exists as to Delivery—Price Decline Would Be Disturbing, as High Prices Were Paid for Foreign Fuel — Government Activity Calms Consumers.

BRITISH coal is becoming a factor at North Atlantic ports. Many orders were placed last week and more are in prospect, although much uncertainty exists as to the question of delivery. The market shows tendencies of softening and a price decline would soon place these shippers at a disadvantage as the tonnage now on the way from Great Britain was purchased at high prices. British coal was quoted at $10, New York Harbor, early in the week.

Governmental action in the coal crisis is having a soothing effect on consumers, and there is not the urgent rush for coal that was so apparent a week ago. Receipts are still very light, however, and spot tonnage is difficult to obtain.

CENTRAL PENNSYLVANIA

The Consolidation Coal Co. at Jerome, Somerset County, was the first company to resume operations under guard, the output amounting to an average of 10 carloads a day.

The commercial Coal Mining Co. at Twin Rocks, Cambria County, has asked for guards. The mines at Vintondale and Webster mine No. 10, at Gallitzin, also has resumed work under guard. Others are expected to follow. Car shortage cut down production, but this has been overcome.

Prices on the spot market rose rapidly and reached as high as $8.50, but little coal was sold at this price, as practically all that is mined in the district is sold under contract.

NEW YORK

The market was a trifle easier at the end of the week. There were many orders placed for British coal during the week although there was a wide range in quotations. Toward the end there was a softer market and exporters were wondering when they could expect deliveries. About fifty boats of the Shipping Board have been placed into service. Most of the orders had been booked for early August delivery and it was expected the first of these would arrive here about Aug. 10. Quotations at the end of the week were around $9, New York.

A new factor which may have its effect upon the receipt of British coal here is the attitude to be taken by the Longshoremen's Union which may refuse to handle it. The matter is now under advisement and the action taken by the men may not become known until the first cargo of British coal is in the harbor.

Southern coals are coming forward in good quantity, most of it already under contract. Several of the City Departments may run short of coal because of the strike and the failure of dealers to submit bids at the last opening, on July 18.

Quotations for unclassified Johnstown coals said to be of Pool 10 quality were around $8.25 at the end of the week, while coal said to be of Pool 11 quality was quoted at $7.25@$8.

PHILADELPHIA

The amount of coal coming here is much below that needed to replenish stockpiles, but despite this there have not been to date any notable shutdowns. Large users are active and have forced the small consumer to buy at $7.50@$9 per ton.

Sellers are not seeking any business at present prices, although willing to buy when given definite orders. Strong efforts are being made to hold prices in check, and for this reason many commission houses are idle. The bulk of current production is taken over by the railroads or going on contracts.

The P. R. R. is in strong operating condition and is moving all shipments offered promptly.

Quite a few houses unaccustomed to tide business have made foreign connections, and there is an increasing tonnage of British fuel being sold here for August delivery. On steam coal from Wales there have been offerings of $9 a ton, and high-volatile English gas coal at $8, all delivered at the piers.

BALTIMORE

Co-operating with the Federal Government plan of coal distribution, Governor Ritchie consented to name a coal commission for the state of Maryland, as a joint move by the chief executive and the Public Service Commission of the state. While the plans have not been definitely laid down it is probable that they will involve the sending of all requests for bituminous supplies through the Maryland Coal Commission, who will have the right to give priority on these requests.

Another duty of the Maryland Commission will be to see that coal reaches its proper destination and is unloaded within twenty-four hours in order to release cars.

Meanwhile there is no general break in the price at this point. The general run of quotations on any and all all-rail coal is still running $7@$7.50. During the present week there has been some little shipment of Somerset coal on this basis, but this movement has not been heavy and there has been practically no shipments here from other regions.

A considerable amount of English coal is now on the way to this port. The status of this English coal, in particular, is in question. Those coal men who engaged to bring it over here at a high price to themselves in order to give relief to the public should certainly be protected in its distribution so that they will be able to make a fair profit.

UPPER POTOMAC

Transportation difficulties are playing no part in holding back production in the Upper Potomac region, for the Western Maryland is placing all the cars needed and is moving coal at the rate of about 100 cars a day, giving this field an output of about 25,000 tons a week. Approximately 35 mines are operating in this territory.

FAIRMONT

General preparations were being made during the last week in July to resume operations at many of the mines idle since the beginning of the strike, provided it was possible to obtain military protection and transportation facilities were adequate. Even with only 160 mines operating cars are difficult to obtain, although there has been a slight improvement in transportation.

West

KANSAS CITY

Kansas mines are doing better than those of the surrounding states that are unionized and will be able to supply public institutions and utilities and also a large part of the steam coal requirements. Arkansas may be able to care for a part of the domestic requirements. Fuel oil is quite a factor in this section now at $1.65 per bbl. This makes it equivalent to steam coal at $4.95

The split among the miners in the Kansas field will also help. Their allegiance is about equally divided between Howat and Lewis. Howat's fight against the Kansas operators turns out to be in the best interests of these same operators. Most of the production in that field today is the direct result of this fight.

SALT LAKE CITY

Utah operators are receiving many large orders from interests outside the state. These are hard to fill. Local retailers are buying more than they have done for some time. There is nothing like a rush, however. Slack is becoming scarce, retailing at $4.50 with an additional 50 cents for the screened article. Other small grades, while not so scarce as slack, are hard to get.

There is no actual car shortage, but a little tightening of this service is noticeable. The strike situation is about the same. The national guard is still in charge.

DENVER

Demand is picking up noticeably with the approach of fall. Prices are not ascending, however, in spite of the fact that demand already has far exceeded the present capacity of the state's mines to produce. Gov. Shoup's ultimatum against high prices is effective. There is no sign of a public panic over coal because Colorado, with its mines running at between 70 and 80 per cent full, is "sitting prettier" than most other states.

Anthracite

Pea, Last of Family Sizes, Nearly Gone from Yards

Railroads Urge Its Conservation for Use Instead of Smaller Sizes—River Steam Coals Active—Abandon Hope of Hard-Coal Supply for Up Lakes—Place Orders for Fuel When Available.

PEA COAL—the last of the family sizes—is fast disappearing from the retail yards. Dealers are still ordering for replenishment but reserves at the mines are getting low and railroads are urging conservation of this coal for their use as a substitute for the smaller sizes. River steam coals are very active. Hope of getting an adequate supply of hard coal up the Lakes has about been given up.

Retailers are active in placing orders with their suppliers, for delivery when coal is again available. This process is being followed out also by the householder, and business on this basis constitutes the only life in the domestic anthracite market today.

NEW YORK

The pea coal supply is rapidly disappearing and with it the storage buckwheat. Some of the larger dealers have heavy tonnages of the latter on hand but the call for it is increasing. Consumers, realizing more than ever the seriousness of the situation are taking in pea coal to tide them over the cool days in case there is a delay in securing their regular supply of the larger coals. It was also announced that some of the railroads are using pea coal in place of buckwheat.

While no plan of distribution has been mapped out it is very apparent that when coal does begin to filter into this market the dealers are going to spread it as far as possible among their customers.

Some of the smaller operators have buckwheat stocked around their mining plants but owing to the attitude of the miners on strike are not having it loaded for shipment.

PHILADELPHIA

On account of the heavy undelivered tonnage the retail men are working hard to get in proper line with their shippers, and even with companies who have not heretofore had them on their books. The producers have been flooded the past week with requests that orders be entered for shipment at such time as the strike is ended. Many of the companies are accepting orders on this basis, although a few decline to take any action until coal is once more being mined; on the other hand at least one concern was soliciting business on this basis recently.

In the meantime the dealers are experiencing good business on pea coal, particularly those who were foresighted enough to lay in heavy additions to stock when the rush for this size developed during the past ten days.

Prices at retail still present a great variation, running as low as $9.75 by one chronic price cutter, after which there are quotations rising 25c. a time until the so-called standard price of $11 is reached, at which most sales are made. It can almost be said that the large sizes of coal are cleaned out of the yards, although there are a few exceptions where good stocks are still on hand and $15 is asked for stove and nut, as compared with the ordinary price of $14.25.

In the steam trade river barley remains the only available fuel, with the demand increasing from day to day. While some sales are being made at $2, most of this is for coal under order for some time, and the bulk of the business now is running between $2.50 and $3.

BUFFALO

There is a growing feeling of concern over the failure to take any visible steps toward getting the miners to work. At the same time the actual demand for coal is still light and probably will continue so till autumn sets in.

An effort is being made here to organize the anthracite interests, so that the distribution of what little there is left shall be to the best public advantage. Distributors generally refuse to deliver coal to anything less needy than hospitals. The small amount of steam sizes is fast going into the hands of steamboat men and others for special fuel. Hope of getting a supply to the upper lakes in the fall has about been given up.

BOSTON

The day approaches when retail dealers will be down practically to bare boards. The public still seems not greatly alarmed, but conditions, of course, grow steadily worse. Coke producers are sold up for six weeks to come and oil installations are increasingly hard to arrange for.

At wholesale there is little change. The supply of pea size is fast being depleted. The railroads are making every effort to have reserves on their lines saved for locomotive use.

BALTIMORE

Dealers are in entire accord with Governor Ritchie in the thought that they have the machinery to distribute fairly. In the pinches during the coal scarcity periods of the recent war times, they alloted coal on the half-ton, one-ton and two-ton basis, and kept everybody supplied. As it stands the yards are swept bare, except for a small quantity of pea, and a large majority of the homes are without supplies usually in bins at this season.

Coke

BUFFALO

The supply is now confined to the byproduct plants, some of these in the Connellsville region. Purchases as high as $16 for foundry have been made, to which add $3.24 for freight to Buffalo. No beehive coke is offered. Some of the local byproduct plants will shut down in a few days unless a supply of coking coal is obtained. Iron ore is coming in at the rate of 50,000 tons or upwards a day by lake.

CONNELLSVILLE

Coke offerings in the open market have undoubtedly decreased considerably in the past 30 days. Reports of improvement in operations have referred chiefly to furnace ovens rather than to merchant ovens, and another factor, perhaps, is that several weeks ago one or two of the operators made contracts in foundry coke to the end of the year, involving coke that otherwise would have continued to come into the open market.

Practically all classes of consumers are now out of the Connellsville market, on account of price, except foundries, and even this demand is far below normal, partly because operations are lighter and partly because there are still stocks of some size. There was some stocking after the strike started, but at much lower than prices prevailing at the present time.

The market advanced about $1 in the week and is strong now at $14 for furnace and $15 for foundry. Byproduct ovens are running largely on stocks of coal, as shipments from West Virginia and Kentucky have almost stopped. Several plants have decreased production and not a few furnaces have been banked or blown out. A few byproduct plants still have stocks for 30 days' operation at their recent rate.

The *Courier* reports production in the Connellsville and Lower Connellsville region in the week ended July 22 at 56,580 tons by the furnace ovens, an increase of 4,280 tons, and 12,090 tons by the merchant ovens, an increase of 470 tons, making a total of 68,670 tons, an increase of 4,750 tons.

UNIONTOWN

The week has shown no change whatever in the strike situation itself in this region. The call by the Rainey interests for their striking employees to return to work was unproductive of results. Another company of state police has been detailed to this region but no national guardsmen are on strike duty and probably will not be unless some serious outbreak occurs.

Formal acceptance by the principal operators in this region of the Hoover price-control plan means a quick drop in the price of Connellsville coal from $8 to $3.50.

For the present the team track operators are out of business, the $3.50 figure not permitting them to operate profitably. However, Secretary Hoover indicated that where operating costs go above the sum the Washington committee reported, the administration may consider a higher price.

Chicago and Midwest

Buoyant Hopes Ascend As Market Goes "Flop"

A Certain Optimism Over Illinois Is Felt While Federal Control of Cars Drops Kentucky Prices—Full Car Supply Pleases Kentucky.

ALL through the midwest there were sighs of relief and the lessening of a great tension when the government's plan of controlling coal distribution—and incidentally, price—went into effect. Excitement over coal buying came to an end in the western Kentucky field. Buyers refused to pay any more sky figures for fuel, cars in both the eastern and western Kentucky fields began to appear in normal numbers for the first time in more than a month along the Louisville and Nashville with engines borrowed from many roads, and "normalcy" seemed much closer. At the same time, in Illinois, there began to spread a certain feeling of optimism regarding affairs in that state. "Something good is about to happen" was the sentiment among coal men who are usually first to hear of developments, and, all in all, the region went home over Sunday for a comfortable week-end.

The effect on coal prices of the events of last week was marked indeed. The "hooraw!" method of buying and selling coal was banished. The prospect of Hoover control of prices and the prospect of the railroads and big utilities getting all the coal they need for the time being withdrew those ardent coal purchasers from the market. The drop of western Kentucky coal resulted until the region closed the week Saturday noon with quotations at $8@$8.25 in Chicago, and a prospect of much coal before the middle of this week. Eastern Kentucky followed. The market came to a grand pause to see what was going to happen next.

The feeling of operators in the Kentucky fields was wholesome, however. Eastern Kentucky, almost to a man, was delighted at the prospect of getting a full car supply after a three weeks' period of much less than half that number of cars and many of the leaders among the western Kentucky men counseled the hot heads among their number to accept the Hoover plan with good grace because it would be more profitable in the long run for them to sell a maximum output at $3.50 than to sell one day's output a week at $10. Further, it was easily seen, any operator who chose to fight the government control of cars probably would find his case dragging in the courts long after the present ravenous demand had passed.

ST. LOUIS

This market exhibited the same general response as the rest of the Midwest region to the government's new effort to control the distribution and price of coal. Quotations broke sharply at the end of last week, although practically all available coal is gone and even coke is cleaned up. On Monday and Tuesday prices reached their peak.

Then came the St. Louis meeting in which Frank Farrington, Illinois miners' president, called his state convention and gave great hopes for a resumption of mining. The market then started its drop. By the time Farrington had canceled his convention call the Washington plan was known and in the public hope of immediate $3.50 Kentucky coal, sky prices sank.

There is a persistent feeling of optimism in the coal trade. Confidence is strong enough that "something is going to happen" so that gloom is somewhat dispelled even though there seems little likelihood of much free coal becoming available to this market from the Kentucky and Eastern fields.

SOUTHERN ILLINOIS

Calm still prevails though it is evident, here and there, that a good deal of propaganda work is being done by the Farrington and Lewis factions within the United Mine Workers to strengthen those two main divisions. The spirit of the union—and its community influence—was shown last week when a meeting of all sorts of citizens in Williamson County was held to protest violently against any program of operating mines there under guard.

There are evidences at some of the mines that the operators are getting ready for a resumption of work. This is especially true of the Peabody group.

WESTERN KENTUCKY

The end of the "wild time" came at the close of last week, bringing a distinct feeling of relief to many an operator in spite of the sharp drop in the market. Some are angered by the new government p'an of controlling price by car distribution, but the assurance of a car supply looks better to most men than a battle in the courts.

The softening of railroad congestion along the L. & N. lines is viewed most hopefully. Railroad conditions generally throughout this end of the state are improving, with a consequent uplift of spirits in the coal fields. "Full car supply" are words that sound as good to many an operator as "ten dollar coal." There is a good prospect now of full-time operation, even if practically all of the output for the next three or four weeks must sell at $3.50, the average operator will be well off and happy over it.

CHICAGO

The bottom began falling out of the western Kentucky market here early in the week when the government plan for car control and the loan of motive power between railroads was announced. Buyers withdrew, railroads and utilities felt reasonably assured they were going to get coal at $3.50 within a few days, and trading arrived, by the end of last week, at a standstill. Western Kentucky had declined from $11.50 to $8 in four days and other coals on this market were drawn down too. What little eastern Kentucky the traders here could get sold readily enough at the same level as the other. Smokeless was practically unobtainable.

The great activity now, on the part of coal men, is to get priority from the control board for orders they have taken. A stampede by mail, by wire and by personal solicitation toward one or another member of the board started as soon as appointments were announced. The trade here expects there will be little free coal on the market for two or three weeks unless—and there is much whispering over this point—Illinois should start operating mines under martial law.

LOUISVILLE

The hectic excitement appears to be over, at least for the time being. Last week's peak prices have disappeared, the flush mob of buyers waving fists full of currency in the faces of operators is no longer a mob but merely a calm and scattered little group. And in the readjustment, compelled partly by the new government plan of controlling distribution and partly by the hesitancy of buyers to take any coal at flighty prices when a new low level is in sight, the market has subsided markedly.

Both western and eastern Kentucky coal slid downward to a level of about $7 by the end of last week. Most of that which was traded was coal already rolling. With the railroads getting their new priority rights over all others, industrial buyers appeared to believe coal not already in transit could never be delivered to them. So they merely picked up what they thought to be almost the last free coal to be available for some time, and took it only on a swiftly declining market.

Canada

MONTREAL

Welsh coal is en route to Montreal to meet the fuel shortage. A cargo of 2,400 tons of anthracite left Cardiff recently on the S. S. Lord Londonderry, consigned to L. Cohen & Son, and will be distributed to householders at $17 @$18 per ton.

Two cargoes of steam coal also are on the water, consigned to the F. P. Weaver Coal Co., Ltd. One cargo is for a large Montreal manufacturing company, and the other will be used to meet smaller orders.

Local dealers state that in the face of a coal shortage in the Province of Quebec estimated at 300,000 tons they are confident that means will be found to furnish Montreal with sufficient coal during the coming winter. Their general counsel is that the average householder would do well to try to obtain about 25 per cent of his winter's supply, as they feel fairly certain that normal production in the Pennsylvania anthracite region will have been resumed before two months of the winter season are past.

Eastern Inland

Non-Union Receipts Low; Industries Not Pinched Yet

Inquiries Increase in Volume—Anxiety Felt About Future Supply—Belief That Price Will Be Fixed Holds Down Quotations—Northwest Situation Grows Perilous.

INQUIRIES for fuel are increasing daily, but as yet industry has not been seriously affected by a coal shortage. Receipts of bituminous coal from the non-union fields, however, are the lowest in years and anxiety is felt in all sections about the future supply. The expectation of consumers that a fixed price will soon be established has held the market from a continuance of last week's soaring prices. Spot coal is difficult to obtain, but the trade is not taking advantage of the situation by boosting prices further.

Car and coal shortages have lowered the Lake dumpings. The needs of the Northwest are fast becoming urgent and a few weeks more delay will spell a certain coal famine for that section next winter.

CLEVELAND

Domestic demand for coal in the Cleveland district is showing considerable strength. If it were possible for retail dealers to obtain coal, business in the fuel line could be maintained at a rate materially above that ordinarily prevailing at this season. Strike conditions, of course, have helped to strengthen the present demand. Some hope is seen by coal dealers and jobbers here in the priority orders issued by the Interstate Commerce Commission. It is believed that movement of loaded coal cars through the clogged Cincinnati and Columbus gateways will be speeded by this action.

The Chesapeake & Ohio and other railroads operating in Ohio report their sidings blocked with coal cars in Cincinnati and Columbus, while the Big Four yards are comparatively free. Belief is that through the enforcement of the priority orders much of this load will be shifted to the Big Four. This probably will expede shipments of Southern coal.

An especially strong domestic demand exists here for Pocahontas and other West Virginia coals. Stocks in the retail yards are getting extremely low. One large jobber and retailer states that its orders are being filled from stocks of coal which have been left over. Pocahontas shoveled lump is being quoted at $9.50 a ton, and forked Pocahontas lump is being sold for $11 a ton, delivered. It is reported that the Cleveland Electric Illuminating Co. has just purchased 100 carloads of coal from mines around Pittsburgh which are now producing or are about to produce coal.

COLUMBUS

Just prior to the issuance of priorities there was a hurry to get under cover by consumers not in the favored list. Buying was wild and prices ranged from the federal levels to as high as $9.50. It was not so much a question of price as of the ability of operators and jobbers to deliver the coal promptly.

Anxiety is felt in all localities about future fuel supply, as many manufacturers have low reserves. Public utilities and railroads are in a safe position, but other industries have been scurrying around.

The lake trade shows a still further decline owing to car shortage and transportation disability. During the week ending July 26 the H. V. Docks loaded 48,013 tons, as compared with 57,354 tons the previous week. The total handled by these docks to date is 1,503,705 tons. Up to July 23 of last year these docks had loaded 2,238,170 tons.

PITTSBURGH

Operators state that miners went into four mines in the Pittsburgh district on July 27—Montour No. 4, Henderson No. 2, Atlas and Wilson, all in Washington County—while officials of District No. 5, U.M.W., assert that no coal has been produced at these mines.

The priority order for coal has not affected coal movement in this district thus far. The P. R. R. and the P. & L. E. roads announce that as they are operating at 100 per cent efficiency there is no occasion for them to modify their practice. The relatively small amount of Pittsburgh district coal available, and that from strippings, has been reduced by timidity of the workmen, and trading has been practically confined to Connellsville coal.

There was excited buying up to July 26, with the price advancing until the market was rather firm at $8.50 for steam grade. Then buying began to taper off, consumers expecting a fixed price, much lower, to be established soon. By the end of the week the market had become quiet, with the price down to $7.50. Buyers seem to expect that the set price will be $3.75 for lump, $3.50 for mine-run and $3.25 for slack, but Connellsville operators have already indicated an expectation of being able to obtain $1 more.

EASTERN OHIO

Persistent rumors that a joint conference of operators and miners of a part of the old Four-State field is to be held in Cleveland soon has given renewed hope to the eastern Ohio coal trade that a coal shortage may be averted by the early resumption of mining.

Inquiries for fuel are increasing daily but there has been no appreciable interruption to industry because of fuel scarcity. The volume of non-union coal reaching this section is the lowest in years. Spot prices have stiffened materially during the past week, the range on any coal obtainable being from $8@$9 per ton.

The Wheeling and Lake Erie Ry. is taking coal pro rata from each mine in accordance with the I. C. C. priority orders.

Several blast furnaces in the Youngstown district were banked during the week because of fuel shortage. The Toronto (Ohio) plant of Follansbee Bros. Sheet and Tin Plate Company is reported to be closing this week because of lack of coal. A strip mine near Steubenville where the workers quit because of intimidation on the part of union miners had been supplying coal to this plant.

DETROIT

Efforts to relieve the dangerous condition confronting Detroit as a result of rapidly diminishing coal supply are being made by a special fuel committee appointed by Detroit Board of Commerce.

Prices on bituminous at the mines have advanced to $8 and $10 per net ton, though jobbers say producing companies whose coal was sold ahead are filing such orders on the Hoover price basis or in some instances at a lower cost to the buyer where coal is available for shipment.

Neither steam nor domestic coal buyers are purchasing coal except when necessary to meet current requirements, the present high cost, in their opinion, making it undesirable to stock up at this time. Retailers fear they would be accused of profiteering in attempting to deliver such costly coal to their customers, while the steam plants do not see their way clear to absorb the high cost in the selling prices of their products.

NORTHERN PANHANDLE

The trouble at Cliftonville on July 17 has not affected production at other mines but the output of the field as a whole had been reduced approximately 20,000 tons a week owing to congestion on the railroads. There is a strong demand for fuel in all markets with prices steadily on the upgrade. The demand at the lakes is particularly strong.

BUFFALO

The situation turns on the soaring price of coal, caused by delay in getting miners to go back to work. They have been able to get enough outside work to keep them in money and they want the shortage of coal to continue, for that shows what their hold on the situation is.

Car shortage caused by the shopmen's strike is causing most difficulty now. It is said that there is coal enough stranded in cars on the Baltimore & Ohio lines alone, bound mostly to the lake region, to supply everybody. Mine owners in that territory report to Buffalo buyers of their coal that it is on track, but there is no motive power to move it.

As a rule the consumers have coal, but many are getting uneasy and bid up for it. Most of the sales are at $8@$9 at the mines, but sales have been made above $9. A little gas coal is offered here on track at $9 by a dealer who says he paid $8.50 for it.

Northwest

Helpless But Composed Northwest Faces Future

Stocks Exhausted, It Cannot Help End Strike Which Victimizes It—Holds Prices to Slow Rise—Industries Share Their Fuel Piles.

AROUND the Upper Lakes industries and small consumers alike face a shivery situation. Nobody is absolutely certain that the government will be able to direct much coal to that region. Its stocks are about gone, the docks are practically empty of free coal and almost no shipments are arriving.

The only thing the Northwest can do, helpless as it is to play a hand in the settlement of the mine strike, is conserve what coal it has. This it is doing by various means including a general movement in which several "wise" industries are sharing their fuel with "foolish" but necessary plants. Prices are steadily rising in the face of this shortage, but the rise is not uncontrolled. The Northwest is keeping its head.

MINNEAPOLIS

The Northwest is in the desperate plight of being unable to do anything to help settle the coal strike. Neither miners nor operators are in intimate contact with this district, and there is no influence which could be brought to bear direct. Belated investigations, surveys and inquiries under way in different directions can collect information, but no fuel. They will be valuable in assuring the consumers of the exact status of things, so that there need be no worse alarm than the cold facts justify and they will aid materially in the equitable distribution of such coal as may be obtained.

As a result of the frequent reports of the desperate condition of things, people are approaching a panic. Premium prices could be readily obtained for prompt delivery, but profiteering is discouraged. Retail prices of prepared sized coke, heretofore selling at $14 in these cities, have been advanced to $15. The coking plant managers claim that the advance is still low and the coke is worth considerably more than this figure. Coke will have to be used rather freely as a substitute for anthracite. The needs of the Northwest are for from 1,000,000 to 1,250,000 tons for the winter. The quantity on the docks, including everything down to anthracite dust, is less than 250,000 tons. The desirable sizes are nearly exhausted. The tonnage needed is not so large and could readily be handled in the period remaining before the close of navigation. But when resumption of mining comes, it will come with the immediate urgent demand from all sections for coal, and the Northwest will hardly have much chance for more than a minimum share. The soft coal requirements, while several times as large, have so many more sources to draw from, that they do not seem as desperate.

DULUTH

The situation here has become acute. Business as a whole is on tenter hooks. The most accurate estimates available place free stocks of coal here at but 100,000 tons and some of this is available only to regular customers. Only five out of the twenty-three companies at the Head of the Lakes are taking business.

The condition of anthracite is similar. There is none to be had in Duluth or Superior except a small quantity of egg. Dealers are taking orders for delivery when they get the coal, and it seems probable that many householders, who have not filled their bins, will pass a cold winter. Customers who contracted for large amounts some time ago are now actively moving this.

Companies are inducing concerns which laid in their stocks early to divide with less foresighted neighbors. This move is meeting with some success among public utilities. It is increasingly hard to keep the boats of the smaller independent lake steamer companies going. Bunker coal is scarce, at $8.50—an advance of $2.50 in two weeks. Bituminous prices generally are up 50c. over last week.

MILWAUKEE

Like all other cities, Milwaukee is in the throes of coal agitation. A canvass of the receiving yards reveals the fact that the only hard coal available at this time is a limited quantity of pea and buckwheat. Dealers are refusing orders for soft coal for winter use in homes, conserving it for industries. They hold that supplies for boilers and furnaces in apartments and houses can be obtained later.

Most industries supplied by this market use Eastern screenings. Pocahontas can be had without trouble. Much of the coal on the docks at present is being held to fill contracts. One dealer is delivering on contract for $5 per ton, which cost him $9.75, and others have similar experiences. There is no tendency at present to advance prices yet.

Receipts by Lake are about at a standstill, due to the growing scarcity of cargoes at lower ports, and also to the high price of bunkers, which makes the operation of steamers unprofitable. Only two cargoes, aggregating 10,000 tons, were received last week, making the total receipts of soft coal 740,960 tons against 1,497,993 tons during the same period last year. Last year the hard coal receipts to date aggregated 493,708 tons. No hard coal has been received this year. These figures do not take into account receipts of coal by car-ferry, which mainly go through the port to their destinations.

New England

Threatened Coal Shortage Has Become a Reality

Double Strike Curtails Output in Pocahontas and New River—Contract as Well as Spot Product Cut Down—Priorities Will Further Embarrass Ordinary User.

DEVELOPMENTS are so rapid that each day's news is history by nightfall. The strikes have so seriously affected the output in the non-union fields, notably in Pocahontas and parts of the New River district, that the threatened shortage of a fortnight is now a reality. Few of the agencies have coal in any quantity at Hampton Roads and the great bulk of contract coal has been effectually cut off. Railroad priorities are expected further to curtail the supply for normal uses, and the trade is wondering precisely what is to befall.

Sundry high quotations are reported, but the quantity of coal changing hands must be very small; $9, f.o.b. vessel has been rumored, and very likely will be much exceeded within a few days.

The transactions at the Roads have been of small tonnage for clearance purposes. High figures are also rumored on cars Boston, but in most cases rehandlers have little or none to spare.

The natural tendency here of both buyers and sellers is to stand pat for the present. Factors who ordinarily have cargoes regularly arriving are now suffering a dearth of supply and on that account are trying hard to keep what they have. Some are closely interested in British coal and there is active canvassing now for orders against cargoes due to arrive early in August. So far the prices heard are around $9.50 on cars Boston and Portland.

At Hampton Roads the wholesale cancellation of charters because of the lack of coal at the piers has resulted in an accumulation of bottoms. To an extent coastwise freights are easy at 85c.@90c. to Boston, but takers are quite as scarce as coal.

The few desirable grades available from central Pennsylvania are also commanding what would very recently have been considered high figures; $7@$7.25 per gross ton has been rumored on Cambria coals, especially when available at New York piers. Screened gas coal has been quoted up to $9.50.

Cincinnati Gateway

Price Situation Upset in Belated Housecleaning

Less Favored Industries Bid Feverishly for Available Tonnage—Small Mines Insist on Top Price, Leaving Little for Jobbers and Wholesalers.

PRICE conditions for the past week have been badly distorted. As the government was about to step in there was a belated attempt at housecleaning and all firms that had car numbers on spot coal were disposing of them to the highest bidder. This, however, did not mean any wide range of profit to jobbers and wholesalers, for most of the coal was coming from small mines that exacted the last penny that buyers would pay. Industries placed low in the priority list were all caught in the rush for coal and with a prospect of waiting for a month for a new supply were disposed to pay any price asked.

Clarification of the situation was promised through the arrangement effected under Secretary Hoover at the Washington conferences. The Cincinnati trade has been disposed to stay within bounds and did so until forced into higher prices by the operators who had free coal and wanted the top of the market. Whatever arrangement is made in Washington will be followed here.

CINCINNATI

Lake business has been begging for coal for the past week and where tonnage was necessary to fill cargoes partially made up on contract stuff the high price of the market was paid. During the past few days—since it was shown that the government intended to take a hand—both the lake and the steel people have disappeared as buyers, though the railroads remained actively in the market until the last minute.

The railway situation seems much better at this writing. The Norfolk & Western worked 800 cars across the scales at Portsmouth in one day, as against 1,600 cars normal. Russell Ky. and the C. & O. scales there also report improvement. Movement of L. & N. coal likewise is better.

The local retail situation is unchanged. Prices that were established the first of the month still hold. An abortive attempt to advance the price of high-volatile and smokeless domestic was frowned upon and those who put the prices up the latter part of last week had to get back in the traces.

Blocks of twenty and thirty cars that had passed the scales or were in transit, fetched the highest price, that about $9. Any sizing of southeastern Kentucky coal that had been started to market was worth $8.50.

HIGH-VOLATILE FIELDS

Kanawha

The effort of mines formerly in the union category to produce coal has been materially checked in this field owing to the growing inability of the carriers to keep the mines supplied with cars. Nevertheless about half the mines in this region are attempting to operate at least part of the time, and operators, acting as a unit, have declared their intention of opening the mines throughout the field in response to the President's invitation, provided transportation facilities are furnished to move the output. Prices offered for coal range all the way from $4 to $7 and $8 a ton. Producers as a rule, however, are shipping to their regular customers at the Hoover prices. The lake demand is unusually strong and inquiries are heavy from Western markets. At the same time Eastern buyers are also seeking large tonnages.

Logan and Thacker

A car shortage is making heavy inroads on production in the Kenova Thacker district. Because of congestion on the Norfolk & Western mines are operating only three or four days a week. A strike of Norfolk & Western clerks has tended to make matters worse. Buyers are bidding as high as $5 and $6 a ton.

Not more than half the production possible during June is being reached in the Logan district owing to the difficulty being experienced in moving coal. Because of the conditions described the Logan output has been reduced from 360,000 tons a week or more to 180,000 tons, with mines not running more than half time. The whole situation in this district now hinges on the transportation situation.

Northeastern Kentucky

Mines are being crippled by generally inadequate transportation facilities, which has curtailed production to 55,000 tons a week or just about 43 per cent of capacity. The demand is unusually heavy. Crippled transportation facilities are holding back movement to the lake.

LOW-VOLATILE FIELDS

New River and the Gulf

New River production would be virtually normal but for the rail strike, but the output is materially curtailed and much difficulty is experienced in moving it, as a result of the growing congestion on line. Unable to obtain empties regularly, mines are not working more than half time. As far as the coal strike is concerned that is no longer a serious factor. The market is extremely active and prices are soaring, although producers as a rule are not quoting above the Hoover price maximums. Consumers are willing to pay $5 and more a ton.

Production in the Winding Gulf region has been reduced to about 60 per cent of potential capacity by the rail strike. The demand is unusually heavy but can be met only to a limited extent since production has been reduced to between 100,000 and 120,000 tons a week. The scarcity of fuel is forcing prices up despite the fact that most producers are not quoting above the Hoover maximum.

Pocahontas and Tug River

Losses in production in the Pocahontas region as a result of the rail strike are greatly outstripping outputs. Against a total production of about 250,000 tons a week, the shortage of cars and general railroad disabilities are causing a weekly loss now of about 320,000 tons. The strike of clerks on the Norfolk & Western late in the month tended to make matters worse. Mines are not working more than three days a week. The movement of coal both to Tidewater and Western markets is extremely slow, with customers clamoring for delivery.

Tug River production, too, is falling behind, as a result of the rail strike. The N. & W. is doing the best it can to keep coal moving to markets, but connecting lines are experiencing difficulty in handling loads and getting empties to the N. & W.

South

BIRMINGHAM

The local market reached peak demand during the latter part of last week. Brokers and agents were deluged with inquiries from every quarter and numerous representatives of industrial interests and foreign brokers were in the field buying up everything in sight. Prices for spot coal soared rapidly, ranging $4@$6 per net ton mines for mine-run or washed, without particular attention to grade.

The strain has now eased off to some extent though the market is still strong and active, with demand in excess of supply. The sales agencies of the larger producers have no surplus and the spot supply comes principally from the smaller mines which have done no contracting and from operations which have temporarily resumed to participate in the active market. Coal of good quality for steam use is still available on twelve-month contracts at $2.25@$2.75 per ton mines. The output of domestic sizes is pretty closely sold up and spot coal is hard to find, quotations at present being in line with the figures on mine-run and other steam sizes.

Production is at the peak in so far as the car supply and transportation service will permit; the latter is improving.

VIRGINIA

Handicapped by a shortage of cars, mines in southwest Virginia are unable to produce as much coal as they did during June, the loss from a car shortage amounting to almost 100,000 tons a week during the latter part of the month, reducing the output of this territory to about 64 per cent of capacity. The car shortage is being most severely felt on the Interstate Railroad and the Norfolk & Western. On the C. C. & O. production is being maintained at nearly 90 per cent.

News Items From Field and Trade

CONNECTICUT

Fire recently damaged a portion of the coal yards on Steamboat Road, Greenwich, belonging to the **Maher Brothers Corporation**, coal and lumber dealers. The loss is estimated at $10,000.

ILLINOIS

W. R. Kernohan, district sales manager at Chicago for Cosgrove & Co., with fourteen men from his territory attended the company's annual conference of sales and operating men at Johnstown, Pa., July 24 to 27.

E. R. Keeler, sales manager of the Taylor Coal Co., Chicago, has returned from a trip into the northern Great Lakes country.

Ridgely Rhea, formerly Chicago sales manager for the Deep Vein Coal Co., of Indiana, has joined the Sterling-Midland Coal Co., a Chicago wholsesale concern. The new Chicago manager for the Deep Vein Co. is Emmett P. Lowery, from the Indianapolis office of the company.

INDIANA

The non-union wagon coal mine a few miles east of Evansville, which was visited a short time ago by a body of masked men who damaged some machinery at the mine, will be reopened ,according to a statement of Bourke Samples, operator of the mine. Guards have been employed to watch the mine.

The City Coal Co., Jasonville, Ind., has contracted with Krehbiel Company, Chicago, Ill., for the tipple equipment for its new mine near Sullivan, Ind. The equipment includes a Jacobsen horizontal screen with a loading boom for the railroad coal and a separate screen for preparing local trade coal.

KANSAS

A. H. French has resigned as district sales manager for the Midland Coal Co. at Pittsburg, Kan., to become general manager of the Jefferson Highway, a New Orleans to Winnipeg road route, effective Aug. 1. **G. W. Rice**, who has represented the Midland in Miami, Okla., takes Mr. French's place in its organization.

E. D. Stone, claim agent for the Western Coal & Mining Co. at Pittsburg, Kan., for ten years, has been promoted to general sales manager, with headquarters in Kansas City, Mo. He succeeds **George J. L. Wulff**, who became president of the company soon after the death of W. P. Hawkins, of St. Louis, several months ago. **Holmes Wager**, for a number of years cashier, becomes general claim agent at Pittsburg.

Ernest Hamilton, dinky engineer for the Ellsworth Coal Co., at Minden, Mo., has applied for a patent on a steam engine, the model for which he spent eight years in developing. He asserts that his engine develops more power with less bulk and fewer working parts than any other on the market. The chief advantage he claims for it, however, is that it is foolproof.

KENTUCKY

Recent incorporations in Kentucky include the following coal companies: **Boone-Jellico Coal Co.**, Pineville, capital $50,000, by J. A. Emslie, F. M. McDermott, Wheeler Boone, James Henderson, J. A. Phillips, A. G. Patterson, G. M. Patterson, M. J. Moss, Jr., and R. B. Moss. **Frost Coal Co.**, Wilton, $10,000, by Charles Frost, John Frost and H. A. Steele. **Coperas Cave Coal Co.**, Beattyville, $10,000; Thomas Porter, William Porter and Logan Thomas. **East Point Block Coal Co.**, Auxier, $2,000; J. F. Auxier, N. C. Auxier and Paris Bowling.

The Millers Creek Kentucky Mining Co., headed by R. W. Brunk, is installing an aerial tram across Big Sandy River at Auxier, and doing development work preparatory to producing as soon as the tram is completed.

Coal production in Letcher County Kentucky has been decreased 50 per cent on account of the railroad strike, according to various estimates. The unemployment situation is reported to be serious.

The Prestonsburg Coal Co. has moved a large part of the equipment from the worked out mine near Prestonsburg to its new operation on Bull Creek, Floyd County. A Morrow shaking screen and loading boom tipple and about two miles of railroad spur from C. & O. have recently been completed.

MINNESOTA

E. E. Heiner, president of the Superior Coal and Dock Co., visited Duluth-Superior harbor recently to inspect the improvements on the company's dock here. A 10-ton bridge and a new screening plant have just been installed. The capacity of the two is about 600 tons an hour.

E. W. Johnson has become manager of the St. Paul Coal Co. He was for twelve years with the People's Coal & Ice Co., of St. Paul, being vice-president when he left that company.

The City Council of Minneapolis has asked the City Attorney for an opinion as to whether the city may engage in the fuel business. This is based upon a court decision which held that the city of Waseca, Minn., could engage in a municipal fuel enterprise.

MISSOURI

The Hawk Point Mining Co., has been incorporated at St. Louis, Mo., to sell coal at wholesale and retail, to mine and operate coal mines and do a general coal and mining business. The company has a capital of $2,500, the shareholders being Ben Kolbenschlag, L. H. Richert and G. W. Reid.

A movement is reported to be on foot in St. Louis, Mo., to combine most of the retail coal yards of the city into one huge corporation backed by New York and Chicago capital. Already options are said to have been taken on a number of yards and it is said the plan includes the purchase of about fifty yards now owned by ten or more of the principal retail companies of the city.

The Kirksville Coal Co., of Kirksville, Mo., has started the work of opening the new shaft at the Rye Creek mine, and development work will go forward rapidly. An agreement has been reached with the United Mine Workers of America whereby a local union will be formed for the new mine and development work will continue to a point of actually selling coal even if the coal strike is not settled by the time that stage is reached. The new shaft is about 100 yards from the old shaft, which will be used as an airshaft. Members of the firm of Hoff & Co., of Des Moines, Iowa, which is financing the project, will come to Kirksville at once to oversee the work and complete the legal and financial arrangements. The Commercial Club of Kirksville has been appealed to for assistance in getting the needed train service to carry the men to and from work and help solve the housing problem that will come up when the new mine is in operation.

The Columbia Collieries Co., St. Louis, Mo., is installing a steel tipple equipped with a Jacobsen horizontal balanced screen and a Krehbiel Co. loading boom at its mine at Winkle, Ill.

OHIO

The Alcorn-Hahn Supply Co., Youngstown, has been chartered with a capital of $50,000 to do a general retail business in coal and coke. Incorporators are Joseph L. Acorn, Dale R. Nolan, Charles S. Braun, Arman J. McFarland and Sarah J. Alcorn.

The Murphy Coal Co., Columbus, has been chartered with a capital of $75,000 to do mining in both Ohio and West Virginia. Incorporators are Edward F. McNamigal, H. H. Long, G. K. Mitchell, E. H. Davis and E. H. Margrand.

The V. V. Coal, Gravel & Transport Co., Zanesville, has been incorporated with a capital of $100,000 to retail coal among other things. The incorporators are J. O. Sloan, W. L. Jamison, J. N. Vernon, R. H. Valentine and J. MacVernon. Messrs. Sloan and Jamison reside in Columbus, while R. H. Valentine is a resident of Marietta. The others live in Zanesville.

The Ford Williams Coal Co., Wadsworth, has been chartered with a capital of $40,000 to mine and sell coal by Ford Wiliams, Charles W. Williams and others.

The Ivanhoe-Elkhorn Coal Co., Portsmouth, has been chartered with a capital of $50,000 to mine and sell coal by B. F. Vincent, H. C. Stalter and others.

Recent visitors from the coal fields to the Cincinnati market were: **R. M. Tudor**, manager of the Supreme Elkhorn Coal Co., Allen, Ky.; **L. Vaughan**, of the Draper Eagle Coal Co., Logan County; **Abner Lunsford**, of the Banner Fork Coal Co., of Kentenia, Ky.; **R. Kilburne**, of Coal River Collieries Co., Prestonburg, Ky.; **J. O. Watson**, of Fairmont; **B. Baldwin**, of the Central States Coal Co., Graham, W. Va., and **R. R. Hooper**, of the Merrill Coal mines of Lawson, W. Va.

The Big Mountain Coal Co., recently formed to operate a jobbing concern has been re-organized by P. A. Coen and the capital has been increased to $50,000. New officers are P. A. Coen, president; S. C. Sharp, vice-president, and C. H. Austin, secretary.

PENNSYLVANIA

The following charters were recently granted at the State Department, Harrisburg: **Huether Coal Co.**, mining and preparing coal for the market, Hastings; capital, $30,000; A. B. Clark, treasurer, Hastings. Incorporators, H. J. Huether, B. A. Lantzy and A. B. Clark, Hastings. **Adelaide Coal Co.**, Connellsville, $5,000; Philip Galiardi, Connellsville, treasurer. Incorporators, G. Corrado, Philip Galiardi and R. Galiardi, Connellsville. **Johnstown & Somerset Coal Mining Co.**, Johnstown, $24,000; Gordon C. Hutchison, 387 Somerset Street, Johnstown; Harry H. Gardner, Gordon C. Hutchison and J. L. Penny, Johnstown.

On page 156, *Coal Age*, issue of July 27, it was stated that the Bachman mine, in the New River Field, is again under the control of the Maryland New River Coal Co., former owners. This statement is in error. The property has never been abandoned, and is now being operated by the owners, the Atlantic Coal & Iron Co.

The Valley Camp Coal Co. has been supplying the City of Pittsburgh, under contract, with coal to run its pumping stations, etc., during the strike period. For this purpose union miners were employed to get out approximately 300 tons of coal per day from one of the company's mines. On the advent of state troops at the mine these miners refused to work. The company, represented by Harry Kinloch, signed a contract with the City of Pittsburgh as a second party whereby coal was to be mined from the Mayview mine, owned by the city, the company paying a royalty of 15c. per ton to the owner and using union miners. It may be interesting to note that representatives of District No. 5 of the United Mine Workers of America gave their approval.

UTAH

W. H. Wattis, of Ogden, well known for his interests in coal mines of the state and other large industrial projects, is a candidate for the Republican nomination for the Senate during next election.

J. M. Smout has bought the interests of J. W. Smith in the Brigham City Coal Co., Brigham City.

The Llon Coal Co.'s retail yards at Ogden have been acquired by a company that will be known as the Ellis Fuel Co. Wallace Ellis will be general manager. Officials of the Llon company, whose mines in Wyoming and Utah produce about half a million tons of coal annually, said they had decided to confine their efforts to the production and wholesale distribution of coal. At one time they operated a chain of twenty-three retail stores.

The Utah Coal & Coke Co. has made application for the diversion of water from the MacVichle Spring, in Carbon County, for the purpose of supplying a mining camp, which the company proposes to build a few miles north of Sunnyside.

The Industrial Commission of Utah has changed the base rate for workmen's compensation insurance in underground coal mining from $2.30 to $2.60.

WEST VIRGINIA

Operations are to be conducted upon a fairly large scale, according to the present plans of the **Springdale Coal Co.**, which has just been organized and chartered with a capital stock of $300,000. This company will engage in the coal business in Fayette County, near Springdale, headquarters to be at Morganette. Leading figures in this concern are: Annie Coombs, C. M. Lilly, C. A. Hawley, C. O. Dunn and E. L. Ellison, all of Beckley.

The Vestor Coal Co. has been formed by Morgantown people with a capital stock of $25,000, offices to be at Huntington. Leading figures are Richard A. Poland, Hudson Chaney, Vista Mullon, Mott Flaherty and Ralph Chaney, all of Morgantown.

Organization of the **Guyan Valley Fuel Co.** presages the development of coal property in the Logan field on a small scale, this company being capitalized at $25,000. Its headquarters will be at Huntington. Identified with the new concern are: A. D. Callihan, P. M. Stone, of Crown; J. D. Callihan, Dixon Callihan and E. G. Prindle of Huntington.

Walter R. Thurmond, president of the Logan Coal Operators' Association and also president of several large coal companies in the Logan district spent a few days in Washington during the latter part of June with a view to securing a better car supply if possible for the Logan region.

E. W. Ziler, sales manager of the West Virginia Coal & Coke Co., was a visitor in southern West Virginia recently.

C. H. Jenkins, of Fairmont, secretary treasurer of the Northern West Virginia Coal Operators' Association was a visitor in Washington early in July.

Thomas W. Arnette, of Fairmont, president of the Antler Coal Co., has gone to Denver, where he will spend about two months for the benefit of his health.

William K. Hatfield, of Morgantown, general manager of the Rosedale Coal Co., has resigned to engage in the buying and selling of coal lands. **Cecil H. Humphries**, who has been acting as Eastern representative of the company, has been appointed to succeed Mr. Hatfield. The latter has been in charge of the affairs of the company since it took the lead in opening its mine on an open-shop basis in the Morgantown field.

There having been an unusually large number of fatal accidents in West Virginia in connection with the mining of coal, in the month of June, Chief R. M. Lambie of the Department of Mines has issued a warning to mine officials appealing for closer supervision. Out of the total number killed, twenty were employed less than one year in the mine in which the accident occurred and fifteen of those killed were employed less than one month. This is sufficient to show that the new employees, whether experienced or not, not being familiar with the local conditions and methods of work, must have close supervision. There were forty-one deaths and twenty of such were due to fall of coal, timbers and slate. Seven workers were killed in mine car accidents and three in motor accidents. Six met death through electrical shock and one was killed by an explosive. Of the remaining four fatalities, one was due to a mine car accident on the outside of the mine and three to miscellaneous causes.

Clarence D. Robinson, one of the leading operators of Fairmont was a recent visitor in the Morgantown market.

Buckner Clay, John D. Preston and R. S. Spilman have incorporated the **Rock Lick Smokeless Coal Co.**, of Charleston., for $1,000,000, and will mine coal in Fayette County.

ALBERTA

Mine-rescue and first-aid contests were held at Banff, Alberta, on June 30 and July 1 under the auspices of the Canadian Institute of Mining and Metallurgy. In the mine-rescue event there were thirteen entries, the Fernie (B. C.) team winning first place and taking the championship shield, the Charbonier Cup, individual cups and medals. Its score was 480 out of a possible 500. Others finished as follows: 2d, Michel; 3d, Bellevue; 4th, Blairmore, (No. 2); 5th, Gibson Colliery, Drumheller. In the senior first-aid contest there were eight entries and the results were: 1st, Drumheller Coal & Land Co.; 2d, Coleman International; 3d, Canmore; 4th, Lethbridge. There were seven teams of Boy Scouts in the junior first-aid event and the winners were: 1st, Lethbridge (No. 1). 2d, Lethbridge (No. 2); 3d, Calgary. The ladies first-aid event was won by a Calgary team. Premier Greenwood, of Alberta, presented the awards.

WASHINGTON, D. C.

For the year beginning July 1 the War Department has available, under Congressional appropriations just approved by Congress and the President, $3,500,000 for fuel for the Army. For the Military Academy at West Point, there is available $80,000 for the purchase of fuel during the year.

Traffic News

The Montana Coal & Iron Co., in a brief filed with the I. C. C. in the Western coal rate case requests the same rates per ton per mile on coal from Bear Creek, Mont., as are applied from Red Lodge, Sheridan and Kirby to all points in Montana, Washington, Idaho and Oregon, and a differential basis of rates on slack under lump coal.

The Indiana Power Co., of Vincennes, Ind., alleges unreasonable rates on coal switched at Edwardsport, Ind.

The Lincoln Gas Coal Co., Pittsburgh, alleges unreasonable rates on coal from its mines on the B. & O. between Pittsburgh and Wheeling to points in the Eastern and New England States. The company requests rates not in excess of those from other mines in the Finleyville, Moundsville and other districts on the B. & O.

The I. C. C. has decided, in the complaint of the West Kentucky Coal Bureau, that the rates on bituminous coal from western Kentucky mines on the Louisville & Nashville R. R. to Chattanooga, Tenn., and points in Georgia are unreasonable. It is held, however, that the maintenance of rates on bituminous coal from mines in Alabama, eastern Tennessee and southeastern Kentucky to Savannah and Port Wentworth, Ga., for export, while no export rates are made to these points from western Kentucky mines, is prejudicial to the western Kentucky mines.

Examiners of the I. C. C. have made recommendations as to the following coal rates: Rates on bituminous from points near Evansville, Ind., to Zion City and Chicago are not unreasonable. Rates on coal from Acmar, Ala., to Pensacola, Fla., and handling charges at the Pensacola dock are not unreasonable. Demurrage charges on coal at Worthington, Minn., and Hammond, Wis., are reasonable.

The I. C. C. has denied the application of the Illinois Central and Indianapolis Southern railroads to establish rates on bituminous coal and briquets from mines and stations on their lines and on the Chicago & Illinois Midland and other roads in Illinois and Indiana to points on the South Dakota Central.

The Ballard & Thompsons Railroad Co., operating a line connecting the properties of the American Fuel Co. with the D. & R. G. R. R. at Thompsons, in Grand County, has applied to the Public Utilities Commission for permission to operate as a common carrier. It is held that both the needs of the coal companies and the residents at Sego make it necessary for the operation of the road as a public carrier.

The I. C. C. held a hearing in Minneapolis during the third week in July upon the proposed cancelling of through rates on coal from Kentucky to the Northwest, and substituting the joint rate. This would increase the rate by 93c. The railroads urged the change and coal shippers opposed.

Deciding the complaint of the **Green Rock Coal Co.**, the I. C. C. holds that the rates on bituminous coal from Riceville, Ky., to interstate destinations are unreasonable because they exceed the rates from Group 5 district of the C. & O.

The railroads having cancelled the schedules, the commission has vacated its suspension and investigation of rates on soft coal from **Curtis Mine**, Colo.

In the complaint of the **American Smelting & Refining Co.**, the commission has decided that the demurrage and average free time at Baltimore on coke for exports are not unreasonable.

Representatives from the Chamber of Commerce of Toledo, Cleveland, Canton, Akron and other northern Ohio cities are preparing to aid the Southern Ohio Coal Exchange in its fight against the new differentials in coal freight rates as between Ohio fields and the inner and outer crescents of West Virginia. It is asserted that the new rates put into effect July 1 do not give the full 10-per cent reduction to Ohio fields when shipping to northern Ohio or for lake traffic.

Association Activities

Northern West Virginia Coal Operators' Association

The Northern West Virginia Coal Operators' Association made it plain in a telegram to President Harding on July 20 that they proposed to make an earnest effort to carry out his wishes with respect to a resumption of coal operations, and a general determination to resume wherever possible was reflected by the issuance of additional injunctions. Holding a meeting, members of the association accepted the President's invitation to open the mines and acquainted the President with their decision in the following telegram:

"The members of the Northern West Virginia Coal Operators' Association are heartily in accord with the invitation to resume operations, as expressed by you, and are at this time actively engaged in an earnest effort to carry out your wishes. We have conferred with Governor Morgan, who is thoroughly acquainted with our plans to date."

Officials of the United Mine Workers contend that union men will not return to work until an agreement is entered into.

Northwestern Dock Operators' Association

Henry E. Smith of St. Louis, was elected president of The Northwestern Dock Operators' Association at its recent meeting in Chicago. Mr. Smith is vice-president of M. A. Hanna Coal & Dock Co. The other officers chosen were: Vice-president, J. L. McMahon of Milwaukee, Western manager of the Youghiogheny & Ohio Coal Co.; secretary-treasurer, W. A. Prinsen, of Chicago.

Coming Meetings

New York State Coal Merchants' Association will hold its annual meeting at Richfield Springs, N. Y., Sept. 7-9. Executive secretary, G. W. F. Woodside, Arkay Bldg., Albany, N. Y.

National Safety Council. Eleventh annual Safety Congress at Detroit, Mich., Aug. 28 to Sept. 1. Executive secretary, W. H. Cameron, North Michigan Ave., Chicago, Ill.

Coal and Industrial Exposition under the auspices of the Huntington Chamber of Commerce will be held Sept. 18-23 in the Chamber of Commerce Bldg., Huntington, W. Va. **The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers** will again hold its annual meeting in the same building during the exposition.

National Exposition of Chemical Industries will hold its eighth national exposition at the Grand Central Palace, New York City, Sept. 11-16. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Institute of Mining and Metallurgical Engineers will hold its fall meeting during the week of Sept. 25 at San Francisco, Cal. It is proposed to arrange for a party to leave New York on Sept. 10, stopping at different cities en route. Secretary, F. F. Sharpless, Engineering Societies Building, New York City.

American Chemical Society's annual fall meeting will be held Sept. 4-9 at Pittsburgh, Pa.; divisional meetings will be held at Carnegie Institute of Technology and general meetings at Carnegie Music Hall.

American Mining Congress. Twenty-fifth annual convention and exposition of mines and mine equipment will be held at Public Hall, Cleveland, Ohio, Oct. 9-14. Executive offices, the Hollenden Hotel; E. C. Porter, convention manager.

The Rocky Mountain Coal Mining Institute will hold its next meeting at Glenwood Springs, Col., Sept. 7-9. Secretary, F. W. Whiteside, Denver, Col.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, *Editor*

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A Substitute for President Harding's Proposal

CLEVELAND is staging a two-ring show this week. One is the Eastern Ohio operators' party with Mr. Lewis, to which we refer elsewhere on this page. The other is a horse of another color. It may almost be described as the "dark horse," for it was but announced on Tuesday with all details officially withheld until Wednesday. It is a plan to settle the present suspension of mining. It is not a settlement for the issues of the strike. Briefly, it is this—mine owners and mine workers are to resume operation with the *status quo* of March 31, 1922—wage scales, check-off, everything. They are then to go home and forget the controversy and cool off for 30 days. By Oct. 31 they are to elect an advisory committee composed equally of operators and miners, which committee is to make detailed, deep and complete study and investigation into the coal industry. It finally will report its recommendations, not binding on any one, as to the best way to conclude future wage scales, whether by districts, states, groups of states or nationally. This committee is to give equal consideration to the competitive relationships of the operators and the necessity for full compensatory wages for the men. A lot of other things are suggested.

The essential thing is that the moot point of HOW is put aside. Mr. Lewis does not get his four-state conference, nor the operators get their district agreements. Which it is to be will be recommended by this committee. Since neither side is called on to concede the point, and since the resumption for the winter at the 1920-1922 wages has already been discounted in most fields, made certain in fact by the proposal of President Harding last month, there is not much left to argue about. It may be, as some thus early would think, but another string in John Lewis' bow, but since he has the bow, what matters another string? It is a plan parallel to that proposed by the President on July 10, with the difference that John Lewis will accept it,

Negotiating a Truce

LAST February the United Mine Workers declared war on the American people. They said they would exert their full economic force to prevent the liquidation of their wages from the post-war peak. They have succeeded so far. In the face of economic conditions wholly opposed, contrary to every canon of sound industrial readjustment, the miners' union has stood off wage reductions, even consideration of wage readjustments, and when they go to work some time this Fall or this Winter, it will be for the most part at the wages they struck to maintain. This is not a concession in advance of the fact, but an actuality. It is a tribute to superior organization, unified command, better generalship and more efficient use of the common type of munitions, propaganda—if you do not object to the use of the word.

A war is not over until someone surrenders. No one has surrendered so far. It is true that the principality that regards Cleveland as its capital and metropolitan center is treating with the union this week, but the bulk of the operators in that conference, the leaders at least, never were in the war. They had no quarrel with the union and have put no army in the field. The operators of Eastern Ohio have not capitulated to the union. Their course has been consistent from the start. They have been one of the neutral states in this strife. In the crucial test of 1921 that field suffered, by comparison, not at all from non-union competition. They could continue to pay the highest rates to their men and it would be no skin off their knuckles if the consumer had to pay them in accordance for coal.

Eastern Ohio in the last six months of 1921, when competition in the sale of coal was so keen that men ceased to be friends, operated at the rate of 52.6 per cent of full time. Her nearest union competitor, southern Ohio, managed to record 22.9 per cent in that same period. Pittsburgh all-rail mines run at 41.2 per cent. The non-union fields of southern West Virginia, with lower costs both by reason of better natural conditions and liquidated wages could register no better than from 49.8 for Pocahontas to 24.3 for New River. Is it any wonder that Eastern Ohio has not been in favor of fighting it out with the union? How can anyone call a fellow a quitter when he never started? So it cannot be heralded as a victory for John Lewis that he has lined up that group of operators.

Where John Lewis has scored a triumph has been in holding his forces intact through the summer and until the public necessity for coal has driven first the hard coal producers and then a substantial portion of the soft coal operators to offer a resumption of work on the old and highest scale, for the winter. The question of supply of fuel for homes, transportation and industry for this winter has long since become so acute that the President has virtually taken charge of the situation. He is after coal production for the people. He asks the contestants to forget their strife for a while and give us the needed coal, and urges the submission of the points at issue to the third party, an impartial tribunal.

Plainly enough the policy of the administration at Washington in both the coal and rail strikes is to establish the principle of arbitration in these major industrial disturbances. Nothing can be fairer. The inhabitants of the east bank of the Rhine, however, never crowded the hotels at the Hague in 1914 and came somewhat reluctantly to Versailles in 1919. John Lewis surveys his ranks and states that the only council table he will put his feet under is one of his own

choosing. So he calls in the few who have no quarrel with him and they bring some adherents and attrition of the operators' ranks begins.

Since March the various coal operators' local associations have been regularly offering to meet their men, through the regular union representatives, in district conferences. Time after time they have called for conferences, set dates and opened the boxes of cigars, but nobody from the union came to the meeting. John Lewis had told the men that the only way to prevent a reduction in wages, to forestall the otherwise inevitable loss of some of the gains of the war and post-war inflation was to stick together; that district settlements forshadowed less than district settlements and disruption of the union. He got the message over and no power of operator persuasion has been able to jar loose a single element of his membership. His ranks held.

Now, with coal stocks lowered to the point where cumulated demand insures full running time for all the mines and offers even the operators of the more sorely beset of the union operators a market for what they may be able to produce at such prices as will warrant any old wage scale, Mr. Lewis attempts to turn the flank of the enemy with some of the tactics he resisted for five months. Having successfully withstood the enticements of district settlements offering local enrichment to small groups of mine workers, he seeks to entice small groups of operators from their common policy of district settlements to participation in a national wage conference

Congress Views a Hornet's Nest

THROUGHOUT the week the office of the Federal Coal Distributor has been busy day and night. It already has been demonstrated that H. B. Spencer and his associates have a comprehensive grasp on the situation and are entirely capable of carrying out the very remarkable plan which Secretary Hoover has worked out—remarkable particularly in respect to putting responsibility outside of Washington. The trouble is they are being called upon to make bricks without straw. Just how much of a success they will be able to make of the job, in view of the flimsy authority to which the Federal Government can lay claim, is questionable. One thing is certain, the coal operators are on trial. They have been put on their honor but if they yield too generally to the temptation of accepting prices above the maximum agreed upon, it is believed that nothing then can prevent regulatory legislation. This is not an argument for fixing prices, but a conclusion. Just now Congress regards the strike as something of a hornets' nest. The administration has won little commendation for its efforts. Because of the danger of being stung, Congress will keep away from the hornets' nest until after the strike.

Two Hundred Thousand Dollars

HIGH-SOUNDING resolutions of horror at the Herrin massacre, in which a score of non-union men were murdered after they had surrendered to a mob—presumably a union mob—and resolutions calling upon the state and national authorities to bring the culprits to swift justice are easy to pass and put in the mail. But what do they accomplish? It is well for the public to express its opinion on such matters, but, unfortunately, the peculiar situation at Herrin and in the remainder of the solid-union south of Illinois makes it so difficult for state and government to enforce the authority of the law that the citizenry of the state and nation can better aid by lending assistance more concrete than words. Money is the answer.

In handling a situation such as that in Williamson County, where morals are no higher than they obviously are, one of the most powerful magnets to be used in search of the truth is cash offered to obtain evidence. State Attorney Edward Brundage, of Illinois, recognized that after his first visit to the troublous region. He offered $1,000 cash for evidence that would result in conviction of the guilty. He obtained some evidence, but, apparently it is little enough. With a fund available two hundred times as large as that offered by Mr. Brundage a tremendous impulse should be given to the swift and sure apprehension of the men who instigated, abetted and executed the Herrin horror. Two hundred thousand dollars should encourage enough willing but fearful citizens of Williamson County to yield up facts at the risk of their lives so that that "bloody" section of the State of Illinois could be purged to a point where honest people there could once more tell the truth and law and order prevail.

Interminable Roadways

SOME are disposed to think that only in big mines are long roadways and a haphazard system of development to be deprecated. After all most of what has been said of these larger producers by Wilcox and Pleschner is true also of small drift mines.

When even a 1,000-ton mine is laid out with only a main entry and several interminable room entries there is bound to be excessive air resistance or excessive splitting and, what is as bad, much loss of air from leakage and much expense for maintaining stoppings and roadways. Development also is sure to be slow and must be run double shift.

Many small mines, especially in low coal, fail to be productive because of lost air, excessive road upkeep, frequent stoppings, repairs to brattices, too many poor communications, making supervision and management difficult; attempt to maintain several expensive drainage ways and too frequent night work on headings. Where a room heading supplies a full load for a locomotive the length of the heading may be of little consequence. The locomotive has to go as far whether the work is in panels or goes on indefinitely or to the crop. But where the locomotive has to haul from two headings to obtain a full trip it is a distinct disadvantage to have the headings long, for much time is wasted in running so far under partial load.

Unfortunately an elaborate layout serves often only to cause delay in the first stages of development. At that time one main entry (including, of course, a return airway) is all that is needed. The room entries are short, the resistance to the air is light, the leakage through the stoppings is negligible and the expensive layout necessary to guard the future is regarded as extravagant. But after awhile the simple method, adequate enough for early operation, becomes wholly unsuited to later conditions. Nowhere is coal enough removed, and a squeeze is likely to occur. With all the robbed portions of the mine cleaned out and entirely caved the newer parts are safe and may be relied on.

Methods and Practices of E. E. White Coal Co. At Stotesbury, W. Va.

By Alphonse F. Brosky*
Pittsburgh, Pa.

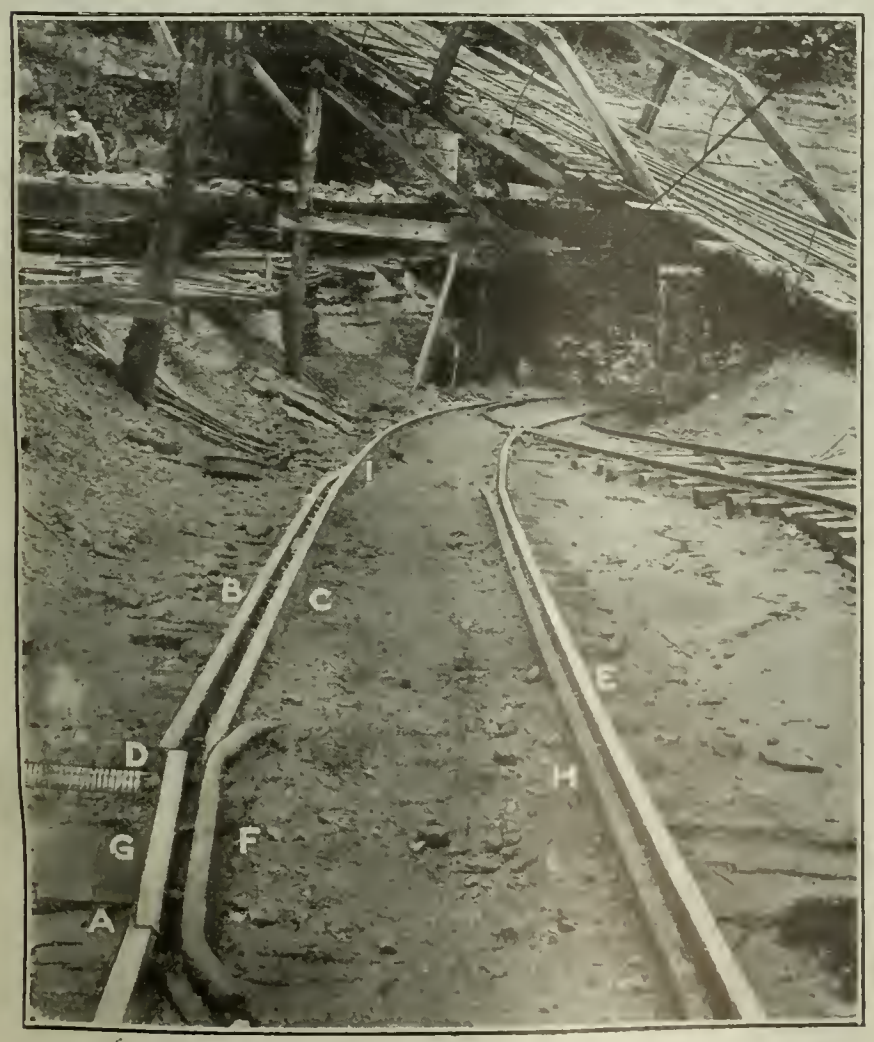


Track Device Tests Automatically Presence of Loose Wheels—Rebuild Locomotives Periodically According to Determined Schedule—Foundry Established at Mine—Tire Removals Facilitated—Larry Adapted to Steep Hillside Dump

A FREQUENT source of accident around coal mines is wheels that become loose and out of gage by the loss or shearing of retaining pins or the loosening of bolts. No assurance can be felt that wheels will not become loose even when they are of the tight-wheel type, in which, of course, the axle revolves with the wheel. Whether the wheels have plain or roller bearings they are apt to become loose and the so-called "loose wheel" that revolves on the axle is prone also to loosen in the same undesirable sense. All wheels therefore need inspection if derailments are to be avoided.

*Bituminous editor, *Coal Age*.

Note—Frontispiece shows tipple of E. E. White Coal Co.



DETECTOR FOR LOOSE WHEELS AT STOTESBURY MINE

Placed on the track by which empty cars leave the tipple, this device tests every car as often as it is dumped. By the operation of the spring rail *G* one wheel of every axle on which the wheels have become loose is directed so that it travels on the roughened rail, *B*, causing the car to which it is attached to bump noisily and attract the attention of nearby workmen.

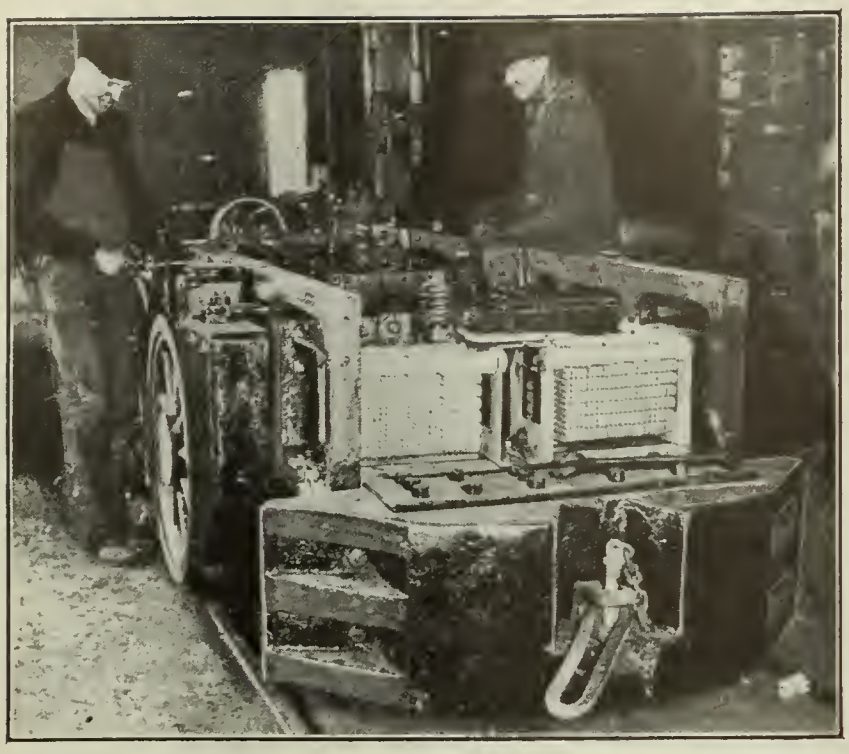
At many mining plants the mine cars are periodically inspected, particular attention being paid to the condition of the wheels and axles. However, as such cars are heavy and as the inspection usually is made with the cars on the track, judgment is left to the eye alone and not, as it should be, to some mechanical test. Consequently a faulty wheel often goes unnoticed. At other places the man who attends to the lubrication of the wheels or axles is instructed to watch for any defects, but, unfortunately, it is much easier to bend over slightly and fill up the oil reservoirs than to get down on one's knees and crawl around in the effort to detect a faulty wheel or axle.

For this reason inspection is often omitted or else made in such a haphazard manner that it might just as well be dispensed with. In still other cases inspections are never made and defects are corrected only when they assume a dangerous form and are readily discernible by the eye. A greater tractive effort of the locomotive is necessary when the wheels become loose. This deficiency inevitably makes itself felt in higher power bills.

At the Stotesbury mine of the E. E. White Coal Co., at Stotesbury, W. Va., an ingenious track device has been designed which will make evident such wheels as have too much play and will sound an alarm when they are found. With this arrangement no one is required to give up his time to inspection, as the action of the device is automatic and, what is still more to its advantage, each car is inspected every time it passes over the empty track at the tipple. Unlike a personal inspection it is foolproof, for every car that passes over the device is made to sound an alarm if the wheels under test do not continue within the limits of the track gage. One of the several men who work on or about the tipple will hear the alarm and run the car without delay on the track leading to the shop.

With the following description and the illustration shown it will be possible for the blacksmith at almost any mine to fabricate the rails of which the device is composed. As may be seen by referring to the illustration, the entire length of the detecting track is no greater than that of the standard rail—that is, about 30 ft.

It is inserted on the empty or return track leading from the tipple, so that the cars pass through it by



REBUILDING SIX-TON LOCOMOTIVE IN MINE SHOPS

Each locomotive before leaving the shops is rebuilt "like new." The grids in the foreground are not new but have been rebuilt. At least three men are working on the motors at all times. The locomotives consequently do not develop small defects such as too often delay trips, waste time from the face to the railroad track and lower railroad rating.

gravity. To the left of the illustration of this device will be seen the 4-ft. latch rail, *G*, fishplated loosely at one end, *A*, so that it may be thrown in line with either of the two rails, *B* or *C*, on the left. The tension spring, *D*, on the forward end of the latch holds it in line with the outer rail, *B*.

Imagine a standard pair of wheels, properly attached to an axle and truly in gage, passing through this track. Rail *C*, is in gage with rail *E*, but the guide rail, *F*, attached to the latch rail, *G*, will not permit the passage of a left-hand wheel over rail *C* until the latch is swept from the normal position as shown to one in which rail *G* is in line with rail *C*. This is accomplished against the tension of the spring at *D*.

The right-hand wheel is pulled by the guide rail *F* (the gage of which with respect to *H* increases) toward rail *H* until the flange of the wheel comes into contact with it. In this position the flanges of the wheels on either side rub the two guide rails *F* and *H*, and only a small width of the tread on each wheel rides upon the rails *G* and *E*. But as the gage between *F* and *H* increases the latch rail and its guide are pulled into gage against the tension of the spring until the latch lines up with *C*, thus permitting the left wheel to pass over it and out to the point where the trip is made up.

If one of the wheels, being loose, is free to increase the gage between the wheels when passing through this track, which will not be thrown, and the wheels will ride on rails *B* and *E* instead of *C* and *E*. On the ball of rail *B* are welded a number of vertical offsets or humps about one-half inch high. These make the car bump up and down when a wheel passes over them, and this is a signal to the men at the tipple that a defective car is passing over the track. At point *I* is located a small latch loosely fishplated so that wheels riding either on rails *B* or *C* may pass this point.

The entire length of the rail on the right-hand side is fishplated and secured to the ties in the ordinary manner and is paralleled by the inner guide rail, which is bolted to it and held at a distance of 2 in. from it by separating collars through which the bolts pass.

The double rail on the right acts as a raceway, holding the flanges of the right-hand wheels against the inner guide rail. The tension spring at *D* should be strong enough only to pull back the latch to the position shown, after a normal car has passed. A spring with a tension of about 30 lb. should do this work.

The blacksmithing job required is easy, for the material needed is available at any mine. Even the small separating collars and the spring are likely to be found there. The cost complete is nominal, and the saving made by detecting a loose wheel before it has time to cause a smashup at frogs and switches will repay the expenditure.

We have been reading so much lately about mine locomotives and their care that we sometimes feel that the subject has been overstressed. But the E. E. White Coal Co. follows a policy regarding its locomotives that would increase the tonnage at any mine at which it was adopted.

The ideas which suggested the present policy came from two sources. One of these is the railroad. In the care of steam locomotives and, to a lesser extent, of other rolling stock the railroads have ever followed the maxim that "a stitch in time saves nine." As everyone knows, railroad locomotives are given a daily inspection and every evil is remedied regardless of the time or the extent of the repair job.

Run Mine Railroad as Railroads Are Run

Steam valves are replaced if leaky and all joints are made secure, and this is followed by attention to mechanical details, including a general tightening up of loose parts. Even though the steam locomotive is notoriously inefficient, it is truly remarkable how few are the delays on the railroads that can be attributed directly to the failure of the locomotive. The secret of this continuity of service may be found in frequent overhauls and inspections.

At the Stotesbury mine at least one locomotive is in the shop at all times. They are taken there in turn, not because there is something radically wrong with them but because it is thought that by so doing the interruptions due to locomotive ailments will be minimized. The policy is no longer an experiment, as gratifying results have justified its permanent adoption.

A new locomotive with a proper consideration for its limitations will run a long time without requiring much care. Gradually, however, it will run down; certain parts will have to be replaced because of wear and others as a matter of safety. Virtually this mine never has any old locomotives, as they are completely torn down, one at a time, and rebuilt, putting in new parts where advisable. The electrical features receive the greatest attention in these overhaulings, partly because they cause most of the trouble and largely also because their defects are not immediately apparent.

Gears, pinions, bearings and the like may be inspected and their real condition thus determined, but electrical equipment may disclose no weaknesses when inspected physically and yet may be found faulty when tested electrically. On the other hand, the opposite may be true—an electrical test may satisfy the observer whereas a physical inspection may show that the insulation is in poor condition. Armatures, controllers, resistors, coils, cables and so forth do not have lives of equal length, for the intensity of duty of each varies.

Under given conditions and with careful usage the average life of the part may be determined—the length of time, that is, during which the respective parts functioned satisfactorily. By allowing a life for each slightly shorter than that observed in use and making replacements and repairs accordingly the locomotives may be kept going for a long time without frequent and annoying trips to the shop.

In keeping costs an adaptation of the Indianola mine system is employed to cover the electrical equipment used underground. Each section of the mine is put in charge of an electrician, who is held responsible both for the upkeep and the cost of the electrical equipment in his section. In this way a check is made on the work done by the shopmen, as the electricians are willing to have their equipment overhauled at stated intervals, but do not like having a job that is not done properly charged up to their department.

The upkeep costs of locomotives, pumps, cutting machines and wiring per ton of coal mined are kept separately for each mine section, and it is the constant aim of each electrician to keep the cost per ton at the lowest possible figure. It might be said here that if the cost of new parts and the workmen's time only is considered this system of renewal is much more costly than the old system where repairs are made only as needed, but if the greatly increased tonnage obtained under the new system as compared with that under the old is taken as a measure, then a saving is effected in favor of the new.

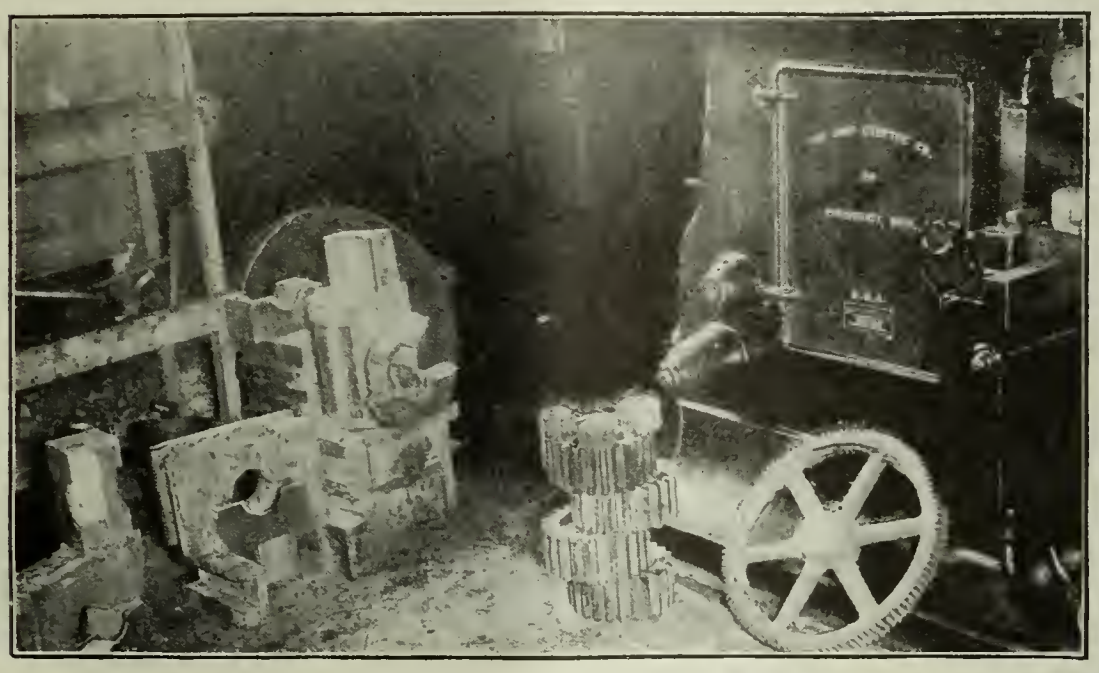
The loss of tonnage under the old method of not repairing until a breakdown occurs should be charged up against the old system. After the practice of making repairs before a failure occurs had been in force a year the tonnage coming from the mine in one month was increased from about 40,000 to 51,000 tons as compared with that attained when the new system had just been introduced.

Some mines in West Virginia, and for that matter in other states also, are situated in such isolated regions that only with great difficulty and loss of time are supplies obtained. A complete stock of repair parts cannot be carried without an excessive interest charge, but there are times when a gear or something similar is needed to complete an urgent repair job, and at such times the delay creates a perplexing problem for the management of the mine.

If the plant has been provided with a well-equipped machine shop, a small bronze foundry may well be added so that parts needed in a hurry may be molded, poured and machined in less time than would be consumed in placing an order for them at some distant point. A small bronze foundry, having a capacity of 400 lb. in one heat, occupies one corner of the blacksmith shop at the Stotesbury mine.

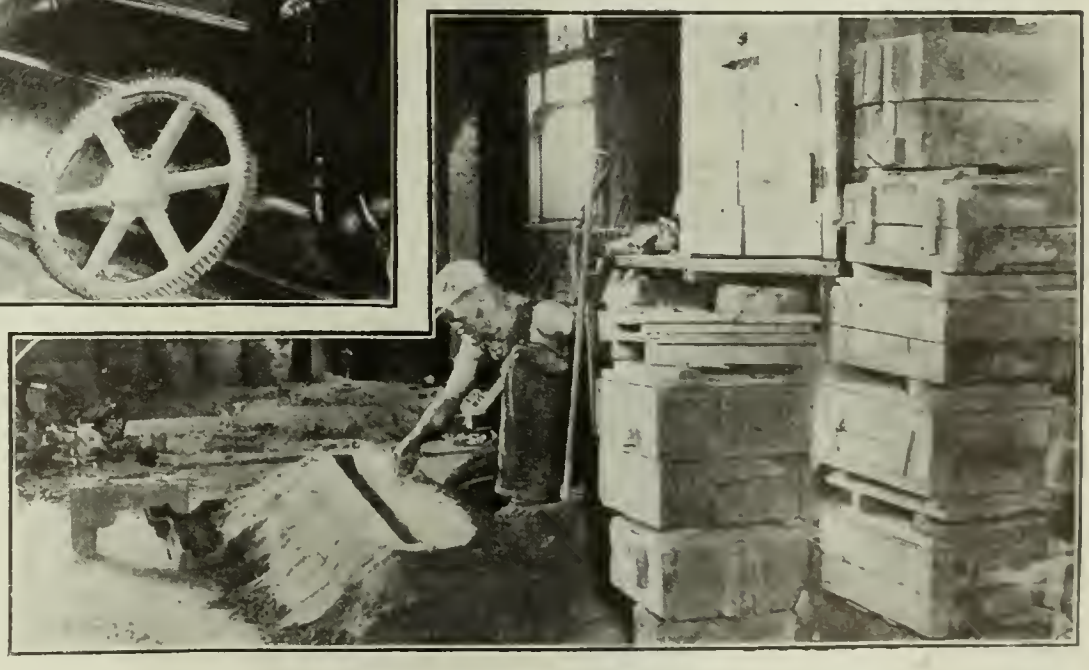
With the aid of a small furnace small pinions and gears may be cast, the latter of considerable size, in case of an emergency. Here the journal boxes of locomotives frequently are made and occasionally bushings are cast. But the foundry is most useful in the casting of metals having comparatively low melting points. Where mines are situated handy to a commercial foundry a job of an unusual characted may be completed under the personal supervision of the customer, who can see that just what he wants is constructed, but mines at a great distance from such a foundry are handicapped in this respect, and in such cases a foundry at the mine is more than justified.

No one can gainsay that where possible it is a wise policy to order all replacement parts from the manufacturer, as thereby a better product is assured. It would be foolish indeed to assert that workers at the mine can compete with a commercial house as to the quality and cost of one of its standard products. A small foundry is justified, therefore, only when installed for the purpose of insuring continuous operation of the surface



Foundry Room

Preparing to cast an ingot of scrap copper. This method of casting the metal into a tangible unit seems to give it a value it would not otherwise have and causes the redemption of many pieces of broken wire and like material.



Jobs Completed in Foundry

This mine is located at some distance from custom repair shops and from supply houses, and consequently a foundry at the mine prevents delays that would otherwise be inevitable. Certainty of operation is one of the methods by which running costs are reduced.



HOUSE SET ON POSTS FOR EASE IN LOADING SAND
It is nearly as easy to unload railroad cars of sand into the bins of this sandhouse as to shovel it into a shed that is set on a level with the ground. The dry sand from the central bin, located between the two stoves, is allowed to drop through a trap into the cars spotted below.

plant. Because this is so the cost of the emergency job is a secondary consideration, so long as a normal coal tonnage is forthcoming as a result.

The furnace in use at Stotesbury utilizes coal as fuel, aided by a natural draft of a 24-ft. air column. The furnace proper is sunk below the floor line and is therefore of the pit type. For the benefit of those who might have need for it, a sketch of the furnace is shown on page 201. The retaining walls and the ash pit are constructed of concrete, the dividing wall and the grate being supported by old rail. The heating chamber is lined with firebrick and the fuel grate was supplied from a sand drier. It rests upon the rails embedded in the concrete. The mouth of the furnace is corniced by a cast-iron channeled collar covered by a cap of like metal. The lower inlet of the chimney is at least one foot below the floor line; consequently it should be protected by firebrick or plastic cement. The use of the latter to line both the furnace and the lower region of the chimney is desirable because of the ease with which it may be applied. The molding, heating of the bronze, pouring and the care of the furnace are placed in the hands of one experienced foundryman, who, when occasion demands, enlists the aid of one or more of the blacksmiths.



DETIRING A LOCOMOTIVE WHEEL
A curved pipe which in shape resembles a closed-in question mark is shown encircling the lower wheel and resting on the ground. In practice it is coupled to a straight pipe through which a blower forces a current of air. Coal is heaped about the circular pipe and a high temperature is readily maintained.

The coal at the Stotesbury mine lies several hundred feet above the railroad track, so that all supplies must be raised up an inclined plane. At the foot of this plane and close by the railroad track stands the sand house, the construction of which has at least one feature of merit. It is elevated upon a foundation of wood posts so as to allow cars to pass under it, thus facilitating the loading of the dried sands. As the building is constructed of wood the two chambers in which the sand driers stand are fireproofed by a cement lining and steel sliding doors. There are five compartments in the house; on the two extreme ends are located the storage bins for the green sand, and the two drying compartments adjoin these on the inside; between the two driers is a storage bin for dry sand. The latter is provided with a trap in the floor through which the sand is discharged into a sand car spotted beneath. The layout is such as to eliminate all needless handling of the product.

At almost any mine the problem of removing flat and otherwise worn tires from locomotive wheels must be solved. This is accomplished in many ways, among which is the circular burner which circumscribes the wheel to be heated and consumes a mixture of gasoline and air under pressure. This method, while effective and quick, is dangerous and complicated as compared with the method employed at the Stotesbury mine.

The heating device in use at this mine is an adaptation of the gasoline air burner. A piece of 2-in. steel pipe is rounded to form a circle the inside diameter of



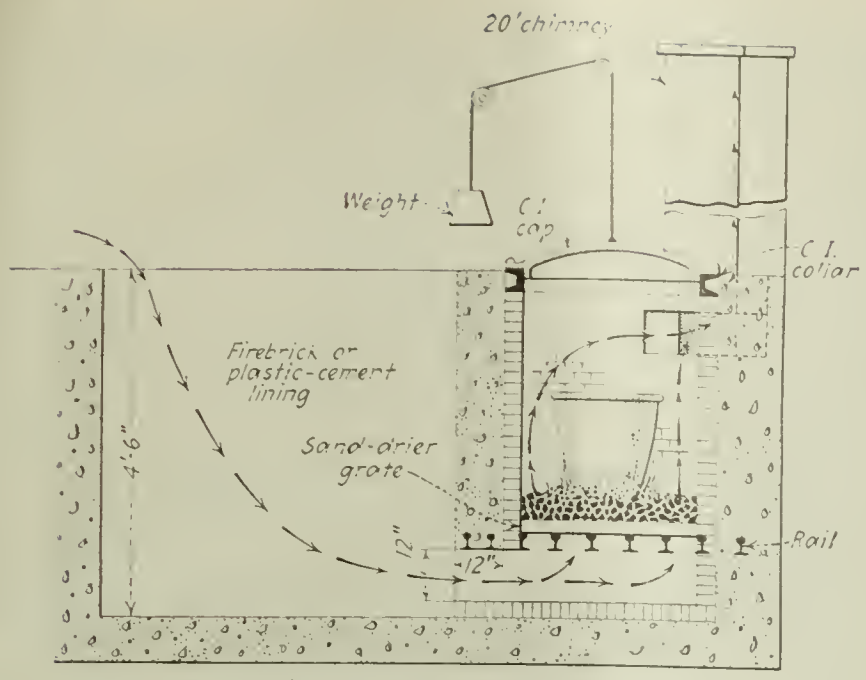
LARRY AND STEEP HILLSIDE SOLVE SLATE PROBLEM
Where the track has but a toenail hold on the steep side hill a rock once started goes sliding to the very foot of the slope. Here the track rarely if ever needs shifting outward toward the valley.

which is slightly greater than that of the locomotive wheel. To complete the burner pilot holes are drilled at intervals.

A socket coupling connects the burner to a 2-in. line which connects up with a small motor-driven air blower. The burner is placed outside the machine shop directly under the hanging point of the boom of a swivel windlass derrick. The connecting air line supplies air from the blower inside the shop to the burner on the outside. Slack coal is used as fuel, heaped up about the burner and the wheel.

The second cut on page 201 shows a multi-groove split collar to take up play between an axle-suspended motor and the gear it drives. As shown in the figure, six $\frac{1}{4}$-in. square-sectioned grooves are cut in the axle on $\frac{1}{2}$-in. centers. Four square tongues of similar dimensions are cut upon the split collar to engage into four of the six female grooves on the axle furthermost away from the suspended motor.

With this provision any side play of $\frac{1}{4}$ in. plus necessary clearance may be taken up simply by stepping the collar over one groove toward the motor. If the side play is great enough to be taken up but still less than $\frac{1}{4}$ in. plus the necessary clearance, then the collar may be faced down to meet the correct dimensions. Every locomotive that comes into the shops at the Stotesbury

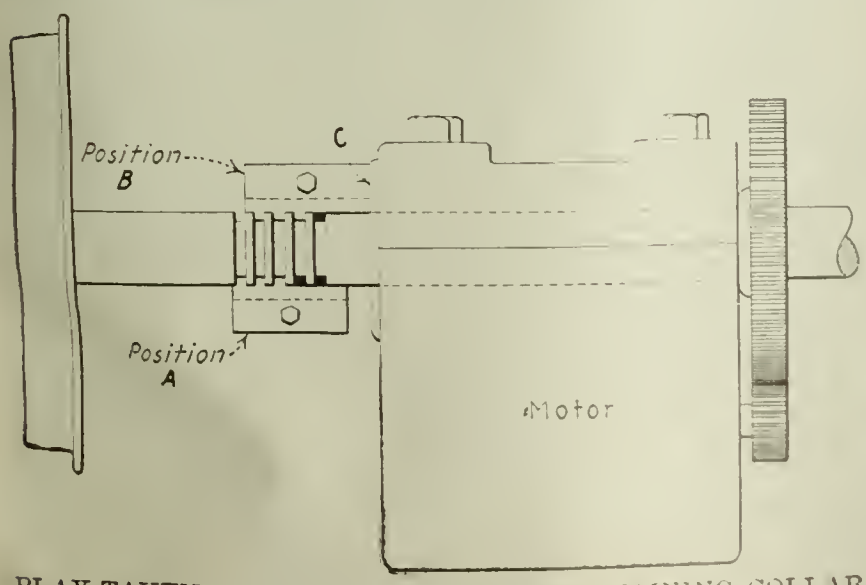


PLAN AND ELEVATION OF FURNACE FOR MELTING METAL

With this simple furnace bronze metal can be melted for small castings, thus saving delays when any part for which repairs are not kept in stock happens to break. The height of the air column is 24 ft.

mine for the first time has its axles equipped with the collar. At few mines in West Virginia has an efficient system of slate disposal been installed. At several mines slate is actually hand shoveled from solid cars; at one mine at least horses and wagons are used; horn dumps and gallows dumps are resorted to extensively. One of the illustrations shows a refuse larry in use at the Stotesbury mine, having been built in its shops. It is nothing more nor less than a tilting container equipped with a lever-controlled end gate.

This box is mounted on a turntable on the upper half of which is mounted a 15-hp. motor which is used for revolving the slate holder and also for raising and lowering it by means of a worm and gear drive attached to a windlass-and-sheave hoist. The body of the larry is mounted on an I-section frame generously reinforced. The larry is driven through the usual pinion and gear attachment to the rear axle by a 15-hp. motor.



PLAY TAKEN UP BY GROOVED SPLIT RETAINING COLLAR

Takes up any play that may tend to develop between an axle-suspended motor and the axle it drives. It will be clear that a shift of the collar from position *A* to position *B* will reduce the play the width between groove centers.

At many mines in this state the coal lies far above the railroad and the tramroads and slate roads are veritable shelves cut in the precipitous hillsides. Consequently a slate larry need only be self-propelling and self-dumping. It is not necessary to have it carry the slate away from the larry, for by merely sliding from the tilted bin large quantities of slate may be stowed without any necessity of barring the track over.

Will Neutralize Mine Water with Marl Before Pumping It to Surface

By Wilmer C. Mason*
Columbus, Ohio

A TANK has been installed by the Triangle Clay Co., of Ulrichsville, Ohio, which apparently treats water from the coal mines so successfully that "sulphur" or copperas is removed and the effluent from the plant is made relatively harmless to pumps and pipes.

The installation consists of a wooden tank, 15 ft. long, 8 ft. wide and 2 ft. deep, divided by baffles alternately joining at the top and the bottom of the tank. The water flowing through the tank is thus forced upward and downward through the marl, a natural calcium clay, with which the tank is filled. This neutralizes the copperas, and the product, being insoluble, is caught on the cinders with which the last compartment of the tank is filled and which will be cleaned out from time to time.

The cost of the installation was $40. It is estimated that one charge of marl in the tank, which holds three tons, will last six months. Marl, at this rate, will cost another $40 a year.

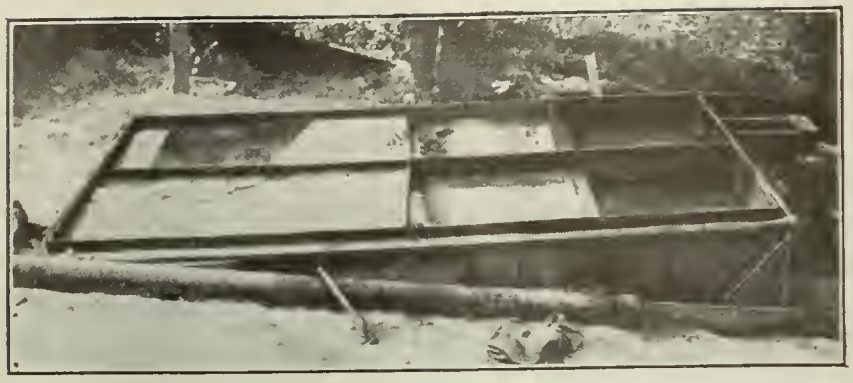
An analysis of the untreated copperas water from the mine showed that it contained 17,800 parts per million of solids, of which 840 were in suspension. The solids in the treated effluent from the tank contained only 2,520 parts per million of solids, of which 60 were in suspension.

The solids in the water were largely sulphates of iron, calcium and magnesium, the iron sulphate giving a strong acid reaction in the untreated water, which, expressed in terms of sulphuric acid, amounted to 446 parts per million. Although the other solids in the treated water, similarly expressed in terms of sulphuric acid, amounted to 87 parts per million, they were largely non-acid-forming calcium and magnesium sulphates, and indicators gave no acid reaction, either immediately after treatment or after the treated water had been allowed to stand a week with the purpose of determining whether the treated water would revert to acid.

Mine water has in the past so polluted streams that cattle and horses which drank it have died as a result. It has destroyed thousands of fish, rendering the streams unfit for use as a source of water supply for domestic or industrial purposes. Many companies have gone to considerable expense in unsuccessful experiments to treat the water before pumping.

The Ulrichsville treatment tank, where the copperas

*Assistant Supervisor of Streams, Department of Stream Pollution, State of Ohio.



MARL SULPHUR-WATER CLARIFIER FOR COAL MINES
This is set outside the mine, but the best place to put it is underground, where, as at this mine, the water has to be pumped. The water then is clarified before pumping and thus the life of the pump that handles it is lengthened.

is neutralized, was built outside the mine for experimental purposes only, but it will be moved to the sump, so that the treatment may accomplish its purpose of eliminating the cost of the present frequent renewals of pumps and pipes. The system was developed by the Stream Pollution Department of the Ohio Fish and Game Division. Several other mines in Ohio which have been watching the progress made with the preliminary experiments have intimated that they will install the system.

It should be added that the mine is not of large capacity, being worked only for the fuel supply of the clay company. The quantity of water now being pumped is about 500,000 gallons a day. When the strike commenced the mine was allowed to fill with water, which is now being pumped out. Under normal conditions about 100,000 gallons would have to be discharged daily.

Illinois Mine Inspector Makes Suggestions For Greater Safety in Mining*

TOO many accidents, fatal and non-fatal, occurred last year in the mines of Illinois. Falling coal alone, mostly coal that had been already undercut and shot, was the direct cause of thirty-two fatal and 412 non-fatal accidents. That is too great a number for one state, a single cause and a single year. When I come across an accident from falling coal I am always convinced that it was not really accidental, for it could have been avoided. Mine managers and superintendents contend that some men really die not from accident but from deliberate suicide, but the contention seems difficult to support.

All coal should be undercut or sheared and when undercut it should be snubbed for half the depth of the cut and at least one-third of the thickness of the seam. An accident by which four shotfirers in the Springfield district lost their lives on Feb. 22 of this year would not have occurred had the coal been undercut or sheared before the shots were fired.

We shall make more improvements in the next ten years in the mining and transportation of coal from the face to the surface than we have accomplished in the last thirty years. In the past we have greatly improved our mining machinery both below and above ground, but at the face improvements in mining methods have not kept pace with other developments. The faces of all cross and main entries should have two ways of ingress and egress to the surface, but when driving a single room entry it is not necessary to drive two headings—an intake airway and a return—provided that the mine is operated by the panel system of mining.

When the panels are 2,000 ft. apart a small booster fan can be placed at the mouth of each stub entry, and this will give the miner better ventilation at the face of the entry than he would receive if two headings were driven. The pipe from the fan can be kept within 10 or 15 ft. from the face of the entry until the headings hole through. Then when rooms are started air sent in at either end will go through without loss. In this manner one heading and several crosscuts will be eliminated, and a saving made in labor and yardage. And yet the mine will be better ventilated.

Someone has asked me: "With only one entry in operation, what if you should have a squeeze?" My reply is that I have never heard of a squeeze that did not close both entries and that in all my experience I have never known of anyone being closed in a mine by a squeeze.* Furthermore, if coal were mined out in the proper way, no squeeze would take place in the advance workings, but only during the retreat or pulling of pillars. In my opinion a large part of our accidents, both fatal and non-fatal, are caused by taking out too much coal when driving our rooms up. The more tons of coal mined per keg of powder, the less accidents we have. The Lovington Coal Co. has been in operation for over ten years, mining 150,000 tons per year, or 1,500,000 tons in ten years, without a fatal accident at the face. In this mine an average of 150 tons of coal is produced per keg of powder.

Fifty or sixty per cent of the coal can be mined without the use of explosive. If we would drive up our rooms no more than 21 ft. wide, laying the road along one rib and leaving pillars sufficient to support the surface until the room is driven up to the boundary, and if when we start drawing back the pillars we would undercut the coal from crosscut to crosscut, the coal would fall down without the use of powder. This would increase the percentage of lump coal and reduce the percentage of screenings, causing the coal to bring a better price.

One mine in my inspection district, operating under the method just mentioned, produced from 80 to 90 per cent lump over 1¼-in. screens. While driving up the rooms the coal was shot with four drillholes instead of three, as in common practice. The first holes were drilled and fired about 3½ to 4 ft. above the bottom of the seam, and the coal below this was shot down and loaded out before the other holes were fired.

The coal was nearly all of lump size. No overhanging coal was left, nor did the ribs of rooms have to be squared up. Under this plan the number of accidents has been reduced, as the undermined coal all fell down on the floor of the room. With this plan also the miner had less work, for the coal was in fine shape for loading. Less powder was used in shooting and a better grade of coal was obtained.

Laws should be enacted regulating the use of electricity in mines, and no gasoline engines of any kind should be allowed below ground. Many mining accidents are due to mine cars, locomotives and hoisting machinery. I believe the time is not far off when belts will be the means by which coal will be transported from the inside parting to the surface. This also will add to safety.

*Abstract from paper by J. H. Haskins, state mine inspector for Illinois District No. 5, read at the annual meeting of the Illinois Mining Institute at its session June 9.

*Of course there have been such unfortunate occurrences, but the fact that Mr. Haskins has not come in immediate touch with such fatalities shows that, at least in his district, they are likely to be infrequent.—EDITOR.

Steel Props Furnish Recoverable, Quickly Set and Self-Adjusting Supports for Mine Roof*

Designers Endeavor by Use of Sand, Dirt and Shot Beds in Telescoping Props to Provide for Taking Up of Initial Flexure of Roof Without Breakage and for Shortening of Props Prior to Removal

By John Roberts

IN RECENT years, owing to the scarcity and consequent high price of timber, the use of iron and steel has greatly increased. This trend was particularly significant during the progress of the war. Many causes have contributed to enhance the cost of timber, the chief being labor and transportation charges and the gradual exhaustion of forests. There are indications that prices will remain at a fairly high level for some years to come, if not permanently, and that in the future mines will consequently use iron and steel more extensively than ever for the support of the roof.

Steel posts may be classified as follows: (1) Temporary supports, or those used at the coal face; (2) "semi"-permanent supports, or those used on branch roadways, and (3) permanent supports, or those designed to be used on main roadways.

One of the earliest metal props, if not actually the first, to be invented was that patented by W. O. Johnston in 1861. This consisted of a tubular prop made in two parts for easy handling, these being held together when in position by means of a retaining ring. The two parts were preferably inclined at the joints so as to facilitate their removal when the ring was released. Provision also was made to hold the parts together by a catch, if desired.

One form of this prop is illustrated in Fig. 1, the chain shown being used when withdrawing the prop. The objections to this type of support are: The retaining ring is apt to split if it is subjected to excessive pressure, and this tendency is increased when the joints are inclined; no provision was made for the gradual yielding of the prop to the pressure of the roof and although the prop could be withdrawn, the withdrawal was sudden, when it should be gradual. If instead of the ring the alternative catch was used falling stone or coal would be likely to displace it.

Collison Devises First Adjustable Props

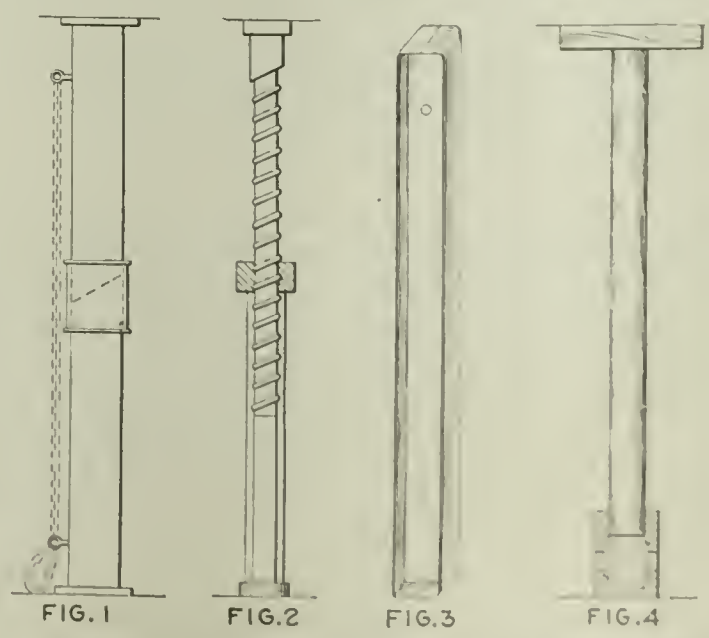
Little appears to have been done in the way of introducing new metal props during the succeeding thirty-five years, but in 1896 Collison designed adjustable screwed struts (Fig. 2) for use in a horizontal position in trenches and like excavations. The struts were expanded and contracted by a nut which worked on a screw and bore against a washer. This design, however, never may have been applied to mining purposes.

In 1897 Cadman and Marshall patented a stop block for holding in position crossbars and side posts. The stop block was cast in one or two pieces and secured by a wedge-shaped bolt. It served to prevent the prop supporting a metal crossbar from being displaced. Later in that year Firth and Thompson brought out a metal prop constructed of H-iron, part of the web being cut away and the flanges being bent over to form a flat bearing surface, as shown in Fig. 3.

Several inventors seem to have directed their attention to pit props in the year 1899, about the time when W. H. Hepplewhite patented his system of tapered props, and the principles then first applied were followed by other designers in subsequent years. Green proposed the use of a metal box (Fig. 4) at the foot of the prop. The box was filled with sand, on which the prop rested, and this sand served as a cushion to take up the pressure. Doors at the sides of the box, which could be opened from a distance, allowed the sand to escape when the removal of the support was desired. Green's invention was followed in a few weeks by Baron Masham's adjustable prop (Fig. 5). The prop is made to rest in a hole in the floor, and was designed to carry a channel-iron girder that served to support crossbars. Adjustment was effected by means of a screw turned by a wheel. Security appeared to be a strong feature in this prop, as it could be fixed into both the roof and the floor.

Balmer aimed in his prop to cushion the weight by the use of a flanged and ribbed lower tubular member partly filled with dirt, which served to support the upper member. The adjustment or withdrawal of the prop (Fig. 6) could be effected by means of holes in the lower tube, which holes could be opened or closed at will, thus allowing the required amount of dirt to escape.

Gascoyne used a combination of wood and metal in



FOUR PROPS DEVISED IN LAST CENTURY

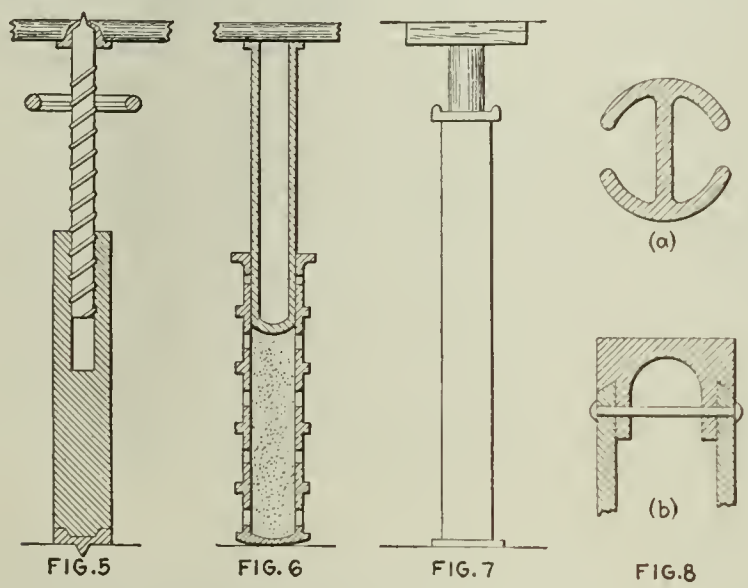
Fig. 1—W. O. Johnston's prop, unadjustable. The slanting cut across the prop facilitates recovery. Fig. 2—Collison's prop with a nut and screw. This strut, the chief notion of which is adjustability, may not have been designed for mine work. Fig. 3—Firth and Thompson's prop of H-iron. The web at either end is cut out and the flanges are bent over. Fig. 4—Green's metal sand box.

*First part of article entitled "The Development of Metal Supports for Mines," read before the North of England Institute of Mining and Mechanical Engineers, Newcastle-on-Tyne, June 9, 1922. The second installment will be published next week.

his supports. A vertical metal tube or a piece of iron of H-section (Fig. 7) was fitted with a movable crown, which in turn supported a short auxiliary wooden block, on which rested a wooden cap. Wooden blocks also were used with tubular props. The auxiliary block, however, makes the prop less rigid, so that it would be easily displaced by falling coal.

Spencer and Chambers followed soon afterward with props of H-section in which the flanges were bent, as shown in Fig. 8 (*a* and *b*), which also illustrates the special form of cap used with this type of prop.

In the year 1900 Garforth, Sutcliffe and Buxton patented an extensible prop which had two extension screws and was specially designed to be used in conjunction with coal-cutting machines. This appears to have been the only important invention of its kind during that year, but in the year following Fowler set out to improve the Firth prop by cutting away parts of the webs of the H-section and placing recessed saddles on them. The flanges were bent down over the saddles, and the latter tended to prevent distortion of the bent flanges. In 1902 Sommer, returning to the Johnston



PROPS DESIGNED IN THE CLOSE OF THE LAST CENTURY AND IN THE FIRST DECADE OF THIS

Fig. 5—Baron Masham's prop, which bit into both the roof and the floor and was adjusted by a wheel. Fig. 6—Balmer's prop, which had a long sand cushion and holes by which sand content could be reduced. Fig. 7—Gascoyne's prop. A metal tube or piece of H-iron acted as a base for a wooden prop. Fig. 8—(a) Cross-section of Spencer and Chambers' prop with H-section having flanges bent inward. Fig. 8—(b) Cap for aforesaid prop.

type of prop, used two tubular members, in which the lower tube was slotted at its upper end so as to facilitate clamping by means of a screw-collar.

Mounier in 1905 proposed the use of shot or other material in one part of the inner tube and devised means for allowing some of this to pass into a lower chamber either when setting up the prop or as the roof pressure came on. Mommertz (1906) employed a collar into which wedges were driven to secure both tubes together. Two forms of this collar are shown in Fig. 9. In a modification the wedges were replaced by a cam. In the same year Lowe used three tubes with a block of wood between the upper and middle tubes and wedges at the foot of the inner tube (Fig. 10). The first of many patents by Nellen was taken out in 1907 in collaboration with Voigt. These inventors suggested the use of cylinders of compressed stone in conjunction with metal.

Nellen subsequently designed a form of arch in which half tubes were held together by clips and filled with alternate layers of compressible material such as cork, straw and wood shavings, and this system was afterward applied in a modified form to props. Mounier developed further improvements in his prop, and used a rack and lever for adjustment. A cock was placed near the bottom of the tube to allow the shot to escape when necessary. The rack and lever would appear to be easily put out of action if handled roughly.

Nootbaar, who introduced in 1907 a prop which possessed no very striking improvement, patented several binding devices for tubes in March, 1908. Later in the same month he brought out a tapered inner tube with wedges, similar to those proposed by Mommertz. He also devised a springhead to be used in conjunction with the wedges, but apparently made no provision for the withdrawal of the prop. Nellen again came forward, this time with two semi-tubes screwed together to form a hollow cylinder, which was filled with fine material. A rectangular opening in the lower tube is normally closed by a brace (Fig. 11), but on opening this the fine material escapes, allowing the head of the prop to sink and be withdrawn.

In the Eickershoff pattern (Fig. 12) the upper member rests on a shoulder of a cone-shaped body and is supported on sand, which is forced up through the cone when pressure is exerted. A hole near the foot of the prop allows the dirt to escape when it is desired to lower the inner tub. Normally this hole is closed by a rotary shutter. Caps and feet are placed on the props by means of bayonet joints, and these are fitted with lugs to engage with the levers used to turn them.

Designed Prop Operated by Separate Tools

In a subsequent design by Sommer the upper member was raised by a mechanism which was independent of, and detachable from, the prop. This raising mechanism consisted of screw jacks, wedges and levers. In one form he adopted a rack and pinion, but in all his patterns the upper part of the lower member was slit so that the collar clamped the parts firmly together.

The year 1909 did not bring forth many ideas of importance, but it witnessed the entry into the arena of W. Reinhard, whose work will be referred to later. Binder devised shoes for holding props and bars in position. Schaefer proposed a form in which the upper member was secured in position (frictionally) by a divided ring placed upon the tapered upper end of the lower member. In this year Pittroff suggested the use of accordion-pleated tubes. The only development of note in 1910 was that of Sommer and the Mannesmannroehrenwerke, in which the sliding members were clamped together and provided with adjustable stop rings or pins. Possibily the Mannesmann weldless-steel prop shown in Fig. 13 is the outcome of the combined efforts of the inventor and factory just named.

In the few years immediately preceding the outbreak of the Great War several new principles were applied. Gruenewald and Gorich, for example, in 1911 introduced the system of holding the upper member by means of a series of balls and of adjusting the prop with the aid of an eccentric and lever at the bottom. Wild adopted the principle of right- and left-handed screw-threaded struts, which were held in contact by means of collars and end sockets, as shown in Fig. 14.

It was during this period that Reinhard developed his roof supports. In his earlier designs the feet of the props were made to receive tapered wooden plugs for yielding to the pressure, but these were replaced later by springs.

A prop of comparatively simple construction was in-

troduced by Humbles (1912). This is shown in Fig. 15. The prop was in one piece, with open tubular ends, in which internal diaphragms formed abutments for the floor or for wooden blocks. Flanged lids or beads were used to strengthen the ends, and the enlargements in the tube made it easy to attach chains and thereby to remove the prop.

Messrs. Mavor, Coulson and Mackay in 1913 encased wooden props in metal tubes, allowing parts of the props at the top and bottom to protrude so that they would yield on compression. In the same year Treinies used telescopic tubes filled with sand (Fig. 16). The upper tube was filled, plugged at the bottom, and held in position by a flange and collar. Means were provided for allowing the sand to escape, a device that is very popular with inventors.

Some of the foregoing supports were exceedingly simple in construction, but others were more complicated and necessarily expensive. The hallmark of refinement, however, was reached by Hodges and Smith, who, in order to indicate the movement of the mine roof, applied to props an electrical arrangement!

The war accentuated the demand for a substitute for timber and inventors continued their endeavors to obtain a suitable substitute. With the object of saving timber, Gainsford suggested using two metal tubes joined in the middle with a wooden plug and having a plug at the top and another at the bottom of the prop. Foggo also set out to save timber, and joined two short lengths of wooden prop by means of double-conical metal sockets provided with exterior strengthening rings (Fig. 17).

Other Developments During the War Period

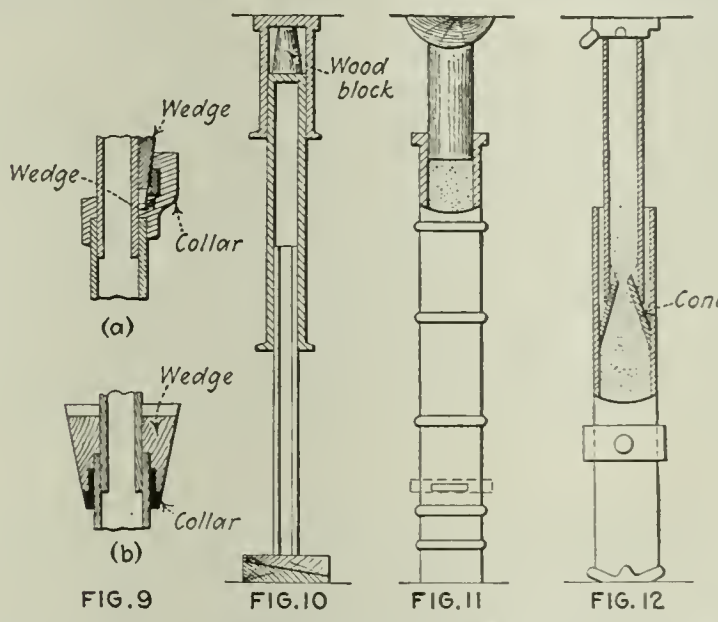
Mills (1915) was responsible for a prop which in some respects resembled that of Reinhard, but he used a spring arrangement fitted within a special casing for holding the two parts of the prop together. The prop was adjusted by turning the casing. Verner supported the lower end of his tubular prop by means of a conical wooden block surrounded by a metal sleeve. The narrow end of the block was pointed upward, and yielded to pressure. Edwards and Beard and Slack and Williams also adopted the principle of employing wooden plugs at the foot of the prop for taking up the roof pressure, and the Butterley Co. and Bircumshaw have patented a means of readily removing these plugs.

Ericsson, who had previously devoted his attention to corrugated caps or lids, in 1915 devised the corrugated tube shown in Fig. 18. A suggested improvement on this type will be referred to later. The principle of the Wrightson and Ringquist prop will be readily understood on reference to Fig. 19. This prop consists of an inner and outer tube so arranged that the upper member rests on sand within the lower member. An aperture at the foot allows the sand to escape when necessary. When this aperture is closed, the sand passes up through a perforated plate at the lower end of the inner member as the pressure is applied. A perforated cap provides for the insertion of sand as required.

The form of prop shown in Fig. 20 was devised by J. S. Jones (1917), the chief feature of which appears to be the valve, which has two side apertures at right angles to a central one. In setting up the prop the side apertures allow the sand to fall around the lower receptacle until the prop is adjusted. These apertures are then closed and the central one opened, and this allows the sand to descend into the lower receptacle to a distance corresponding to the load on the prop. Robertson, in the same year, reinforced concrete cigar-shaped props with a spiral strip of metal. They were provided with end caps having serrated edges forming teeth, some of which were turned inward so as to penetrate the concrete.

Kearsley (1918) adjusted the inner member of the prop by means of pins inserted in holes in this bar. The whole appliance could be tightened by a screwed sleeve at the top of the outer tube. In the Sutcliffe and Sheppard type the lower member is hollow and is provided with teeth that engage in other teeth on the inner member and are kept in engagement by means of a gib-headed wedge so arranged that it may be loosened when desired without being completely disengaged.

A prop for mining purposes should possess the following characteristics: Strength, rigidity, resiliency, lightness, durability, adjustability, reliability, and simplicity of construction consistent with the foregoing qualities; it also should be easily withdrawable and



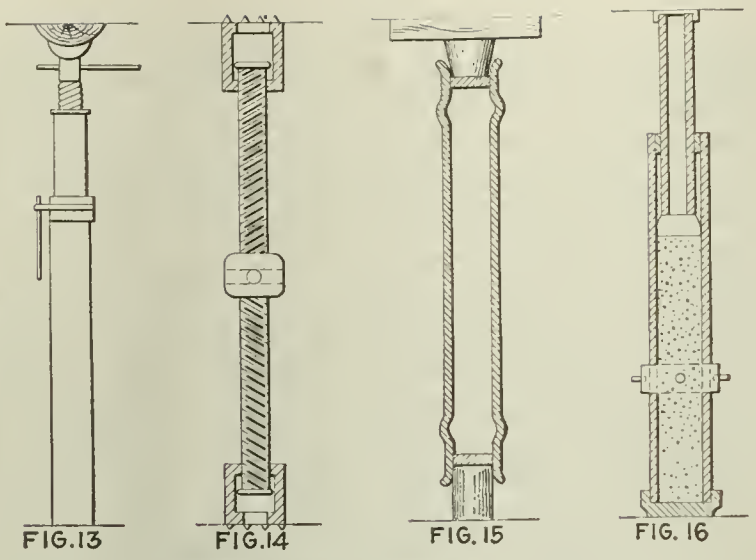
FOUR OTHER FORMS OF MINE PROP

Fig. 9—Two types of wedge collar (*a*) and (*b*) invented by Mommertz. Fig. 10—Lowe's three-tube prop with block of wood. Fig. 11—Nellen's two semi-cylinders, joined by screwed bands and filled with sand, support a wood prop. Sand can be allowed to leave the steel part of the prop through a rectangular orifice that is opened or closed at will. Fig. 12—Eickershoff prop with cone.

comparatively inexpensive. With regard to construction and expense, where a prop possesses every other requirement, the cost, within reasonable limits, is not so important, because the props can be used repeatedly and recovered in safety, and although the original cost may be high, economies eventually can be effected by their use.

In order that a steel prop may commend itself to a miner it should be capable of being set up easily and quickly, and when fixed it should be safe. When the preparation and setting up of supports entail much trouble there is often a strong temptation to the miner to delay the operation, and accidents have frequently occurred from this cause. To measure and cut a post and to prepare a cap, or "lid," takes much more time relatively than the actual setting up of the prop, and miners do not like to interrupt the process of filling a car of coal in order to put up timber.

When a workman sees that by removing, say, half a ton of coal he will have room to erect a necessary support he should in his own interest prepare the prop and cap beforehand. Many miners do this, but others omit the precaution and take risks. The temptation to do this is reduced where adjustable props that do not



PRE-WAR PROPS OF MANY TYPES

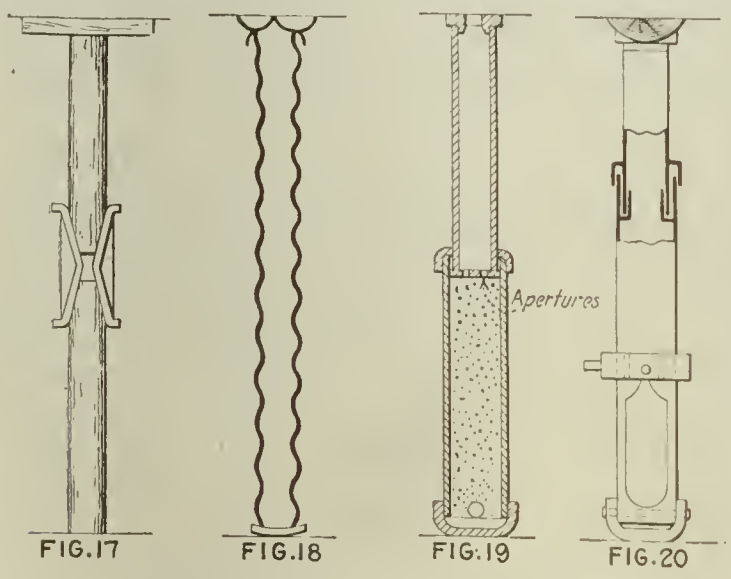
Fig. 13—Mannesmann weldless-steel prop, the sliding members of which are clamped together. Fig. 14—Wild's prop with two oppositely turning screws, a central nut and two sand boxes. Fig. 15—Humbles' prop. A simple prop made out of a single tube with two diaphragms which form bearing pieces for two extremely short wood props. Fig. 16—Treinies' prop. Two telescoping tubes, the lower being filled with sand and having a hole by which that cushioning material may be allowed to escape.

require to be cut are in use. A prop which is considered to fulfill many, if not all, of the requirements of a handy and reliable support will now be described.

The underlying principle of the types illustrated in Figs. 21 to 23 is the employment of oval or partly oval and partly cylindrical tubes which can be adjusted longitudinally and be interlocked by partial rotation. The lower member, *a* (Fig. 21), is partly cylindrical and partly oval, the oval section being provided with horizontal ribs, *b*, which extend over part of the inner surface. The upper member, *c*, also is partly oval and partly cylindrical, but the major axis of the oval portion is slightly shorter than the minor axis of the lower member.

When the major axes of both members are parallel the upper member is free to move vertically within the lower member. The inner tube is provided with external flanges, *d*, which are adapted to engage in corresponding slots in the outer tube. On rotating the inner tube through 90 deg. it becomes tightened by friction as the flanges become engaged in the slots.

A clamp collar, *e*, is free to slide, within limits, on the upper member and is used to lock the two members in position, as shown in Fig. 21 (*d*). This collar is provided with wedge-shaped or tapering slots that engage corresponding ribs, *f*, on the inner tube, this



WAR TYPES OF MINE PROPS

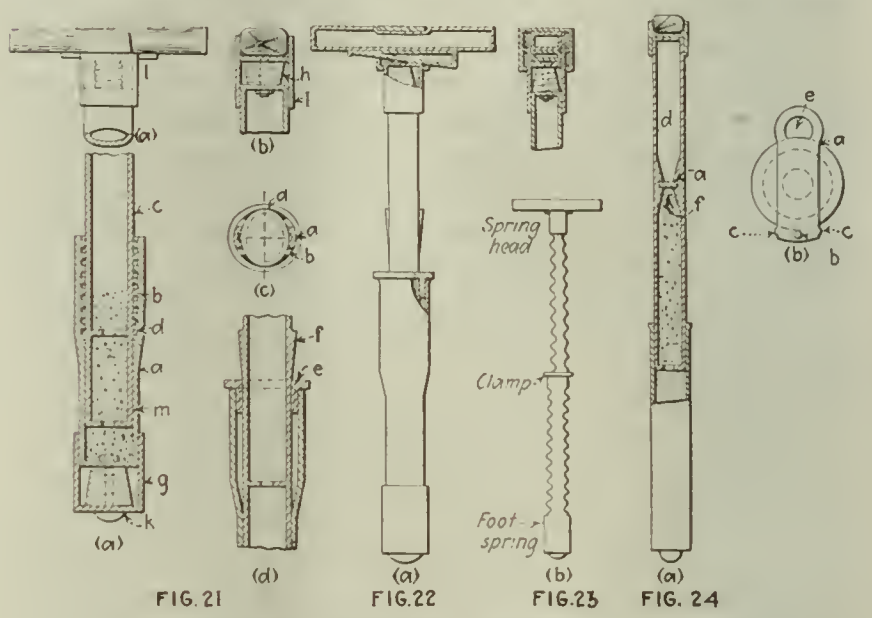
Fig. 17—Foggo metal socket for joining two short props. Timber already broken can be cut into short lengths and these lengths coupled by the Foggo socket. Fig. 18—Ericsson's corrugated tube prop with a cap of unusual design. Fig. 19—Wrightson and Ringquist's prop. The upper and inner telescopic tube has apertures allowing sand to escape upward under heavy pressure. Fig. 20—Jones prop, which also uses sand as a cushion and regulator.

facilitating the turning of the inner tube as required.

The foot of the prop rests in a metal box, *g*, in which a spring is fitted to take up the pressure when the load is applied, and a similar spring *h*, is fixed at the head of the prop. It will be observed that the bolt *k*, which passes through the lower spring, is provided with a large head, which may be either round or square. This head serves to prevent the prop from being readily displaced after being properly set in a hole in the floor. The cup *l* (Fig. 21, *d*), carrying the head spring, is especially made to form a support for the cap.

The lower end of the inner tube also is provided with a cylindrical extension, *m* (Fig. 21, *a*), which constitutes a false bottom, and is provided with apertures for the passage of sand. In this type the sand is not used for supporting the upper member but simply to produce a cushioning effect during withdrawal and to prevent the sudden drop of the inner tube when disengagement takes place, as will be described later.

To set up a prop, a small hole is made in the floor to receive the bolt *k*; the inner tube is raised until the



FOUR PROPPING DEVICES DESIGNED BY AUTHOR

These props have oval or partly oval and partly cylindrical tubes which can be adjusted longitudinally and locked by partial rotation. On turning the inner tube (see Fig. 21), the flanges which form a part of it enter slots in the outer tube and so lock. Until one of the tubes is turned they are free to move relative to one another except as opposed by the resistance of the sand cushion.

cup *l* touches the roof; it is then turned through 90 deg. and locked, being lowered if necessary an inch or so to enable the flanges to engage in the slots; the clamp collar is lowered into position, and the wooden lid is then driven in and tightened.

In order to withdraw the prop the clamp must be raised and fixed to the ribs; a chain should then be attached to the clamp, and the clamp given a partial turn from a safe distance. The upper member will then sink gradually on the sand, forcing it up through the apertures, and the prop will be loosened.

Fig. 22 shows a modified form in which a metal cap is used. It is so arranged that it can be secured by means of a wedge which cannot be withdrawn, whereas the cap may be removed on loosening the wedge. The final adjustment and securing of the prop is obtained by means of the wedge and cap, the box in which they are fixed being free to move vertically.

The principle of the oval interlocking prop may be applied to the corrugated type made by Ericsson (Fig. 18), for it will be seen that by using oval corrugated tubes (Fig. 23) advantage can be taken of the corrugations to facilitate adjustment and interlocking.

Another type for which I am responsible is shown

in Fig. 24. In this case sand is used for supporting the upper member, and the chief feature is the flat slidable plate valve, *a*, a plan of which also is shown. This valve is normally closed and prevents the passage of sand into the upper chamber. It is provided with a hole, *b*, for the insertion of a pin to keep it from being accidently opened, and lugs, *c*, prevent its being completely withdrawn from the tube. Before setting up, the valve is opened and sand allowed to pass into the chamber *d*. The prop is then adjusted, the required amount of sand being run into the lower chamber for this purpose, and the valve is closed. As the load comes on, the sand in the middle and lower chambers is compressed, and a gradual yielding takes place.

In order to withdraw the support the valve is opened from a safe distance by means of a chain fastened at *e* and the upper member then sinks as the sand passes upward through the aperture *f*. The advantages claimed for this form of prop over somewhat similar types are the ease and comparative safety with which it may be removed and the fact that the sand is retained within the prop.

When Headframe Burns Colorado Shaft Mine Resumes After Thirty-seven Days

THIRTY-SEVEN days is a short time within which to see a disastrous fire destroy the top works of a mine, the construction of a new plant and the resumption of coal production, but thirty-seven days was enough time for that rapid series of events at the Monarch No. 2 mine of the National Fuel Co. near Louisville, Boulder County, Colorado. Today that mine is far better equipped than it ever was before and can produce 1,200 tons of sub-bituminous coal in eight hours when the whole operation is going full blast.

On the night of Nov. 15, 1921, the consuming flame did its work at Monarch No. 2. The structures over the shaft were all of wood and burned readily. The whole surface plant except the power house was reduced to ashes, and the wooden shaft lining was ruined to a point 65 ft. below the collar. Headframe, tipple, car loader, track scales, cages, trestles, chutes and practically all the top equipment of the mine went up in smoke.

It was a discouraging appearance the mine presented the next day. But the market for that particular coal was strong enough just then so that the National Fuel Co. could not afford to sit down and grieve. Rush plans for new top works were made, and the job of shipping material and equipment started at once.

A permanent headframe and scales were thrown up in a hurry, and a temporary tipple was ready for service as soon as the hoisting equipment was operative. On Dec. 22, exactly thirty-seven days after the fire, the mine began loading coal once more.

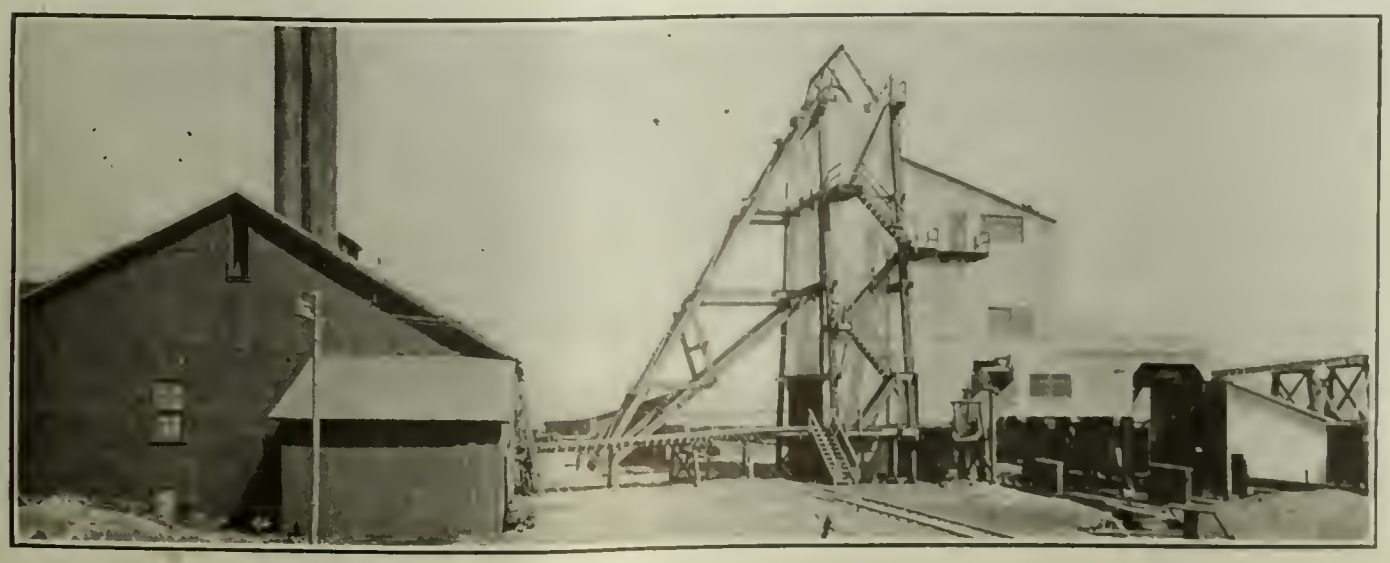


PREPARATION PLANT AT MONARCH NO. 2

This view shows the nut conveyor from the balanced picking-table screen. This tipple was built to handle an output of 1,200 tons of sub-bituminous coal every working day.

With more leisure the company chose equipment for the permanent steel tipple. Roberts & Schaefer, of Chicago, constructed the plant, which contains balanced picking-table screens, self-dumping cages, a belt-type box-car loader, scales and other modern equipment. Whereas the destroyed plant had but two tracks, the new one, which was finished April 1, 1922, has three, so that the mine can load every size of coal that may be required. The Monarch mine now uses electric power.

MATERIAL FOR GEOPHONE DIAPHRAGMS.—An investigation conducted by the U. S. Bureau of Mines to determine the most suitable material for geophone diaphragms showed that in mica diaphragms the thickness was not an important factor. Metal diaphragms were not only more satisfactory than the mica but their sensitiveness increased with thickness until a point was reached when a ringing tone was produced and the diaphragms therefore became useless. With the exception of Non Gran bearing metal, a material 0.025 in. thick was the maximum thickness that could be used. With Non Gran bearing metal, however, a diaphragm 0.035 in. thick was satisfactory. To determine the sensitiveness of the diaphragms, observations with the geophones were made on blows struck with a 5¾-lb. hammer swung as a pendulum against the coal at a distance of 400 ft. away from the observer. The swing of the pendulum was measured, and the shortest swing that could be detected with the geophones was recorded. The results obtained at the experimental mine with the different materials are given in Technical Paper 277, just issued.



Monarch No. 2

The headframe, scales and temporary tipple were constructed and in service the thirty-seventh day after a fire destroyed the old plant. This permanent, fireproof tipple has been operating since April 1.

Britain Leads Germany in Coal Resources; Foreign Production Figures for 1921

BEFORE the war Germany had larger coal resources than any European country, with Great Britain second. All this has changed. Germany has a little more than one-quarter of the coal in Europe and Great Britain almost one-third. This, of course, has not arisen from any enlargement of the British resources but by the handing over of some of Germany's coal areas to other nations. These facts are derivable from the third report of the Imperial Mineral Resources Bureau of Great Britain, which contains a general review of the principal mineral industries of the British Empire and other countries for and as of the year 1921.

Other countries have gained territory from Germany, Austria and Russia, and their quotas have been increased accordingly. Taking into consideration only the actual and possible reserves of true coal and lignite or brown coal in seams 12 in. thick and over within a depth of 4,000 ft., in accordance with the estimates obtained by the executive committee of the International Geological Congress held in Canada in 1913, the position before and after the war may be summarized roughly as follows:

PERCENTAGE OF TOTAL RESERVES OF EUROPE BY COUNTRIES

	Pre-War	Post-War		Pre-War	Post-War
Germany	40.2	28.7	Norway (including Spitzbergen)	1.7	1.7
United Kingdom of Great Britain and Ireland	32.0	32.0	Spain	1.1	1.1
Russia	11.6	0.4	Other countries	1.3	1.4
Austria-Hungary	8.3	*0.2	Czechoslovakia	....	4.7
Belgium	2.1	2.1	Poland	....	13.3
France	1.7	3.6	Ukraine	....	10.8
				100.0	100.0

* Austria, 0.1; Hungary, 0.1.

Austria's reserve was 41,377,000,000 tons. It is now only 388,000,000. Hungary had 1,718,000,000 and now has 610-000,000. Russia had 60,170,000,000 and now has 1,988,-000,000. Germany had 207,930,000,000 and now only 148,248,000,000. The United Kingdom had, and now has 165,387,000,000. The whole of Europe has a reserve of 517,-221,000,000 tons.

Whereas 31 per cent of Germany's fuel production in 1913 was of lignite, in 1921 it was over 47 per cent. Taking into consideration the relative potentiality of coal, lignite as produced and lignite as marketed and converting the quantities of the several forms of fuel into their equivalent coal value, the following results are obtained:

GERMANY'S DISTRIBUTION OF EARTH FUELS IN EQUIVALENT COAL VALUE IN MILLIONS OF TONS

	Production	Imports	Exports	Consumption
1913	207.5	15.1	42.5	180.1
1920	156.2	0.3	23.2	133.3
1921	158.4	1.9	25.5	134.8

The United Kingdom in 1921 produced 168,000,000 tons, in 1920, 229,500,000, and in 1913, 287,000,000. Of this, 24,660,552 tons was exported in 1921, 24,931,853 in 1920 and 73,400,118 in 1913.

The average realized value of the coal mined at British mines in January, 1921, was 30s. 7d. ($7.44) and in December of the same year was 19s. 6½d. ($4.75), the corresponding figure in 1913 being 10s. 1½d. ($2.46). Wages were at their highest level in January, 1921, the average wage per person employed being £22 1s. 9d. ($107.49). For the quarter ending Sept. 30 the corresponding figure was £47 12s. 7d. (or $77.26 a month). Since that time wage rates have been much reduced.

The average f.o.b. value of exported coal in January, 1921, was 67s. 1.3d. per ton ($16.33), compared with 70s. 5.7d. per ton ($17.15) in January, 1920. The average value in December, 1921, was 25s. 2.2d. ($6.13), compared with 84s. 7.4d. ($20.59) in December, 1920. All the converted values given are at normal rate of exchange—namely, $4.8665 per pound sterling.

France's available production for 1921 is nearly equal to that before the war. True, the production of the areas in pre-war France is only 29,000,000 tons, but the Saar area added last year about 9,500,000 tons to the total, bringing the production roughly up to that in the pre-war period. Belgium's coal fields are producing more than before the war, last year's production being 21,800,000 tons.

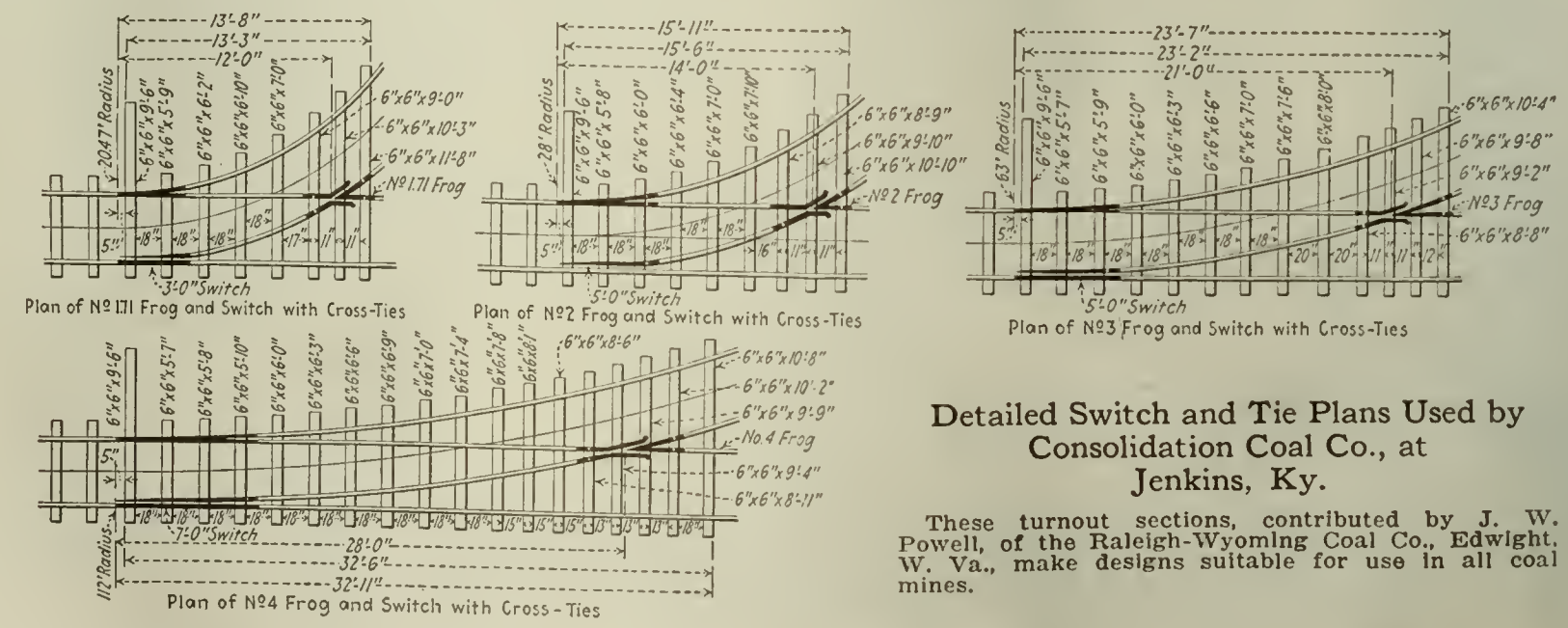
India's production is not definitely known at present. It may have fallen to 15,000,000 tons owing to the fact that with increased wages the men did not find it necessary to work steadily and a labor shortage consequently resulted. Furthermore the railroads were unable to supply enough cars.

South Wales and the Union of South Africa by export to India provided for this shortage in production. The output of the South African colony rose from 9,600,000 tons in 1913 to 10,160,000 in 1921 and exports from 800,000 to nearly 1,200,000 tons. The provinces contributed as follows:

OUTPUT OF UNION OF SOUTH AFRICA

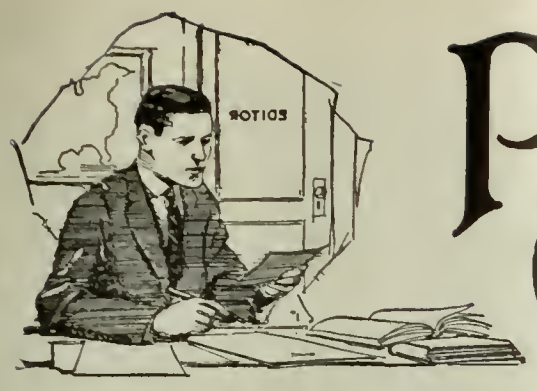
	Output Long Tons	Value Per Ton s	d	N.E.	Percentage of Whole Output 1921	1920
Transvaal	6,203,001	7	4	$1.78	61.00	62.58
Cape	5,159	17	7	4.28	0.05	0.05
Orange Free State	819,443	6	9	1.64	8.06	8.42
Natal	3,141,161	15	7	3.79	30.89	28.95
	10,168,764				100.00	100.00

The coal production of Australia, including brown coal, totaled 12,867,325 tons, compared with 12,968,285 tons in 1920. The Canadian production was about 90 per cent that of the previous year—namely, about 13,250,000 tons as against about 15,000,000—the important decreases being in Nova Scotia and Alberta. The United States exported 12,-250,000 tons of bituminous coal to Canada in 1921 as against 14,500,000 in 1920. The fall in the aggregate of production and import in 1921 as compared with 1920 was 4,000,000 tons and resulted from the depression of industry, particularly in the steel trade of Nova Scotia.



Detailed Switch and Tie Plans Used by Consolidation Coal Co., at Jenkins, Ky.

These turnout sections, contributed by J. W. Powell, of the Raleigh-Wyoming Coal Co., Edwight, W. Va., make designs suitable for use in all coal mines.



Problems of Operating Men

Edited by James T. Beard



Timber Frames in Headings

Use of Full-Length Posts to Support the Collars—Disadvantage in Liability to Being Knocked Out by Derailed Car—Another Plan Uses Short Legs Set in Hitches—Plan for Pitching Seams

IN THE issue of *Coal Age,* May 25, p. 886, appeared an inquiry regarding the manner of timbering a heading driven in coal 5½ ft. in thickness and overlaid with 12 in. of drawslate, above which was mixed coal and slate. The object sought was to reduce, as much as possible, the expense of cutting hitches, 8 in. wide and the same depth, in the coal and drawslate above, required for the short legs used to support the crossbars or collars.

One plan that I would suggest is to use full-length legs under the collars, as indicated in Fig. 1, widening the entry, if necessary, so as to give the desired clearance between the legs. As shown in the figure, I have made the entry 12 ft. wide, instead of 10 ft.,

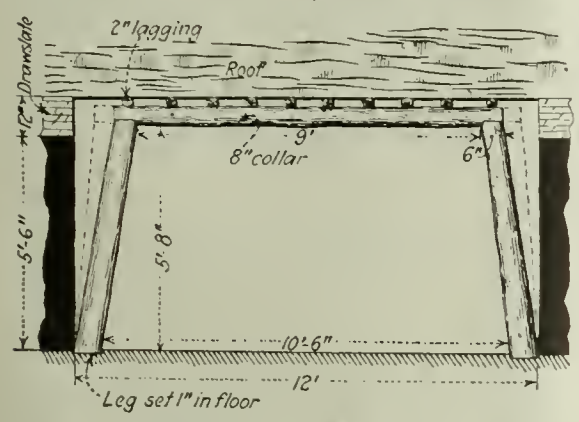


FIG. 1. TIMBER FRAME, LONG LEGS

and set the posts 10 ft. 6 in. spread at the bottom, with a width of 9 ft. between notches under the collar. An 8-in. collar should be used and 2 or 3 in. lagging laid over the collars to support the roof, which is described as a mixture of coal and slate and will probably need this support.

The collar shown in Fig. 1 is 10 ft. in length; but, if desired, a longer collar can be used and the posts given less inclination, as indicated by the dotted lines. The disadvantage of this plan, of course, is that the long legs are liable to be knocked out by a derailed car when hauling a trip.

Another and, perhaps, a better way is that shown, in plan and elevation, in Fig. 2, which eliminates the use of legs, the collar beams being supported by a special type of hitches cut in the drawslate. It is true the drawslate may prove hard cutting. If the slate is soft and crumbles on exposure to the air the hitches must be cut down to the coal, which appears to be firm, as the posts are shown resting in the coal, in the original inquiry.

As shown in Fig. 2, a simple box hole is cut in one rib of the entry, say 6 in. deep and large enough to receive one end of the crossbar. In the opposite rib, has been cut what should be styled a "slip hitch," which needs no further explanation than the illustration shown. When the crossbar is in place it is wedged with pine wedges.

Steel Timbering More Economical Than Wood in the End

Regarding the comparative cost of wood and steel for crossbars, if steel I-beams or old rails are available and the life of that portion of the mine is to extend over a long period, the steel will be more economical in the end than wood. The frequent renewals of timber will more than equal the higher first-cost of the steel. This is particularly true in the West where so much native pine is used in the mines.

Before closing, allow me to refer to a method of timbering entries in the

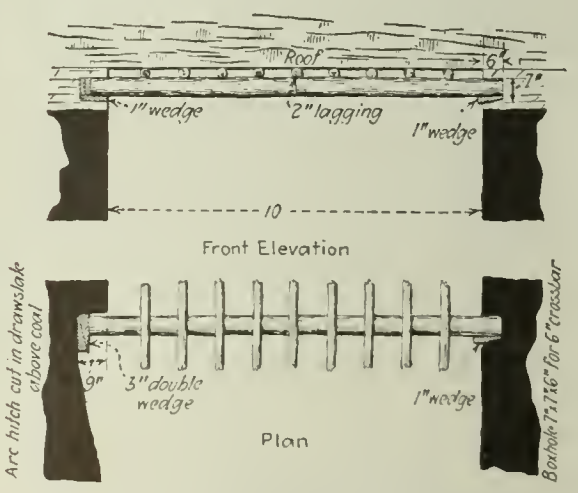


FIG. 2. SUPPORTING COLLARS IN HITCHES

moderately pitching seams, in Routt County, in this state, where the coal is too soft to support short legs set in hitches. Naturally, under the conditions shown in Fig. 3, what water collects on the levels drains to the lower side of the road and caused the bottoms of those posts to rot more quickly than on the high side, when those posts were set down on the bottom.

Moreover, because of the fill covering the foot of each post, the condition of the posts on the low side of the level would not be detected till too late and the posts gave way suddenly. The upper part of the post, to all appearances, would still be sound and good. Again, replacing these posts was difficult as they must be dug out and the new post set down in the fill.

In order to overcome these difficulties, resort was had to the use of an

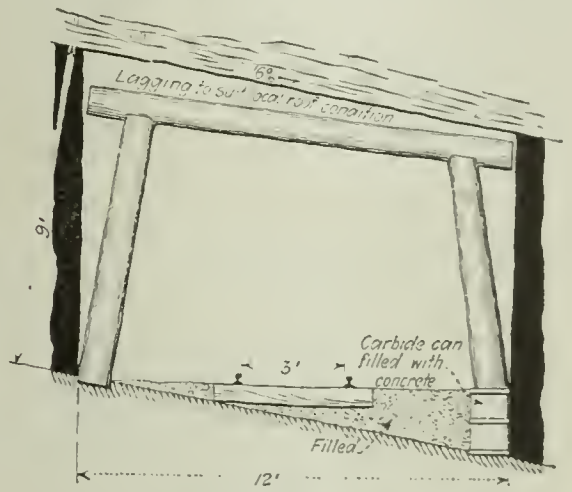


FIG. 3. TIMBERING GANGWAY OR LEVEL, INCLINED SEAM

empty carbide or powder can, which was first filled with concrete and set down firm on the bottom. As shown in the figure, each post on the low side of the entry was stood on such a concrete-filled can, which raised the foot of the post above water drainage and prevented its decay.

Mt. Harris, Col. Thomas Allen.

Solid Shooting

Actual dangers more important than possible dangers arising from the practice—Conditions in pick mining contrasted with those in solid shooting—Shearing vs. center- top- or bottom-mining—Reasons for condemning unregulated solid shooting.

THE subject of solid shooting has been so well and thoroughly discussed, in the columns of *Coal Age*, it would seem that little of material interest can be added either in advocacy or condemnation of the practice, proceeding in the manner in which it has generally been considered and treated. It is my object in the present letter to discuss more particularly the dangers that actually result from the practice, rather than the one, on which so much emphasis is laid, as being possible through the practice.

For the last several months, I have read with care and much interest the various letters on this subject. Almost invariably those writers who have condemned the practice have assumed

that the greatest danger to be feared in solid shooting, or the shooting of coal that has not been properly mined, is the possibility of a blownout shot causing a coal-dust explosion. Again a few writers express their disapproval of the practice, without assigning any particular reason for their opinion.

Pick Mining vs. Solid Shooting

While not an advocate of solid shooting, I would not presume to condemn it solely for the reason just mentioned, as it has been clearly demonstrated, by good practical mining men, that such a possibility is as liable to occur in machine- or pick-operated mines, as in mines where solid shooting is practiced. Indeed, it is my opinion, based on observation and experience, that there is a greater possibility of a blownout shot occurring in a pick-mining operation than in a mine where shooting off the solid is practiced and even though the practice is not regulated either by statute or official supervision.

In pick mines, the miner is accustomed to mine the coal to a certain depth, drill a specified depth of hole and use a specific charge. This becomes routine work. If, for any reason, a hole is drilled on the solid the amount of explosive necessary to perform the work effectively becomes a matter of guesswork and the possibility, if not probability, is that it will be inefficiently handled.

On the other hand, a man when shooting off the solid has variable conditions of blasting to contend with, and this variability has cultivated his judgment to that degree that he seldom undercharges a hole. As a rule, where such shooting is practiced, the general tendency is to overcharge the hole. That such is the case may be readily perceived by any one who has worked in or inspected a mine of this kind. As a result, the coal is found scattered all over the working places and in a more or less finely divided condition. In such mines it is the more finely divided coal that is not utilized by the miner and, consequently, in every working place is found much of this fine coal.

Coal That Is Properly Mined

One of the conditions of "properly mined" coal, as defined by the Pennsylvania Bituminous Mining Laws is that the coal shall be sheared by pick or machine. In a former article on this subject, I endeavored to point out that the blasting of sheared coal differed in no respect from the shooting of coal from a loose end; also, that the mining of coal, in any part of the seam, created only a loose end by which the removal of the coal is more easily accomplished.

In center- top- or bottom-mining, the cutting, if properly done, should extend all across the working face before any shooting is undertaken. In shearing, on the other hand, the cutting is confined to one, or not more than two, localities, the coal being cut through the thickness of the seam. Consequently, after a shot mined by shearing is fired, the remainder of the coal is shot off the loose end.

Such a process evidently requires a maximum of explosives, to produce the same amount of coal by either of the other methods of mining. It is well known to coal miners, and should be to operators, that undermined coal is the more easily and economically removed, physical conditions being favorable, since gravity assists in its fall, and a minimum of explosives is then required and a superior quality of coal is generally produced.

The State Bureau of Compensation Insurance of Pennsylvania has taken a practical view of the shooting of sheared coal by recognizing the condition as being analogous to an unmined loose end, and has classed such shooting as being, for all practical and rating purposes, solid, a view which is entirely consistent if the shooting of unmined coal on a loose end be regarded as such solid shooting.

Why Solid Shooting Is Unsafe

My personal reasons for condemning the practice of solid shooting where it is not legalized and effectively supervised are the following:

1. It requires a greater amount of explosives to produce the same amount of coal than by either top- center- or bottom-mining.
2. The excessive use of explosives is deleterious to health by reason of devitalizing the mine atmosphere.
3. A greater volume of fine coal is produced, particularly in the seams of the lower geological measures and in all seams where the texture of the coal is of a friable nature.
4. A large proportion of such fine coal is of the impalpable variety, or that which is most susceptible to a high temperature in initiating a coal-dust explosion.
5. Excessive charges and the tendency to overcharge a hole causes a more widespread dissemination of dangerous dust and renders difficult its complete removal.
6. As a natural deduction from the foregoing, an explosion of gas or dust, in such a mine, would be greater in extent and more devastating in effects than in a pick- or machine-worked mine.

The prohibition of such practice, in addition to being productive of greater safety in operation, is also productive of greater economy to an operator whose market lies at a transportable distance from his mines. The excessive production of fine coal and the friable character of the larger sizes produced by this method, will cause the product to greatly deteriorate, in the more highly combustible qualities and, consequently, in its market value, by the time it reaches its destination. For an operator who consumes his own production where it is mined, or whose market is a local manufacturing one, the subject may not be of such vital consideration.

I. C. Parfitt.

Washington, D. C.

Law and Justice

Supremacy of the law—Authority of Courts—Confusion caused by misstatements of leaders and the Press—Bad example and faulty education poisons the mind—Solution of the problem.

With pleasure and much satisfaction, I read the editorial entitled "The State, It is I," *Coal Age*, Apr. 20, p. 643. The writer of the article refers to the time when a French king made the bold declaration "The State, It is I," and there was some truth in the words he spoke.

Today, in this enlightened country and generation, the conditions are far different from what existed under an absolute monarchy. There, the people were subject to the will of the ruler, whose word was law.

How many of us realize that the Law, here, is supreme. It is with regret that we observe how intelligent men, at times, sidestep the judicial branch of our government and attempt to set aside the law and replace it by suggestions of one kind and another that, in their opinion, would meet the present situation.

Upholding Law Brings Condemnation to Judge Anderson

Federal Judge Anderson is, today, the most despised man, in the opinion of a certain class of miners, because of his interpretation of the law bearing on the 60 per cent increase and 6-hr. day demanded by the leaders of the miners' organization, who claimed that it would give the men more steady work.

In this decision, the Court only upheld the supremacy of the law, and refused to permit the suggestion of one class of citizens to supplant the enactment of the lawmakers. It is not strange that, almost without exception, the attempts of propagandists of both parties to reconcile employers and employees result in driving them farther apart.

Confusion in the minds of the public, has been caused by the statements of leaders of both parties to the present controversy, through the daily press. Articles have been written, based on the suggestions of cabinet members and congressional committeemen, that have no standing in the face of the law.

On the one hand, we read how certain individual miners drew exceptionally large pay, at the end of the month, amounting to two or three times the average earning capacity of a miner. On the other hand, we read of extraordinary profits, amounting to millions, that have enabled certain companies to pay fat dividends.

Viewed from an unprejudiced standpoint, the present situation has grown out of the bad example often set by the luxurious living and faulty education of many who have accumulated wealth and are spending it wholly on themselves, while they manifest little regard for that class of workers on

which their activities depend. It is this condition that poisons the mind and makes it impossible for the two classes to work harmoniously together.

Time and necessity will bring the miner back to his work; but the problem will still be unsolved. Reduced wages cannot provide for him steady work, as has been argued. In this locality, out of a possible 300 working days in the year, one of our mines worked 88 days, at intervals of one or two days a week. Another mine did a little better and worked 124 days during the year. The same conditions have prevailed practically throughout the entire competitive field.

Assuming the wages of miners are cut in half, can it be expected that they will work twice the number of days they worked previously? But, it must be remembered that double the working days will double the production of coal and, unless another system of mining and marketing is established, what would be the result?

It is a shame to think of the chaotic condition existing in this country at the present time when there is complete harmony between nature and mankind, and discord only between men and men. In my opinion, the only solution to the problem is expressed in the words "Co-operative mining and collective marketing" of coal. This alone, I believe, can bring about a practical solution.

HENRY BOCK.

Staunton, Ill.

Testing a Safety Lamp

Every lamp tested by lampmen when given to miners—Tested again by fireboss—Habitual practice of an experienced fireboss—Two conditions that insure safety.

I HAVE been employed in many gassy mines worked exclusively with safety lamps. Naturally, the reference made by Joseph Cain, in his letter, *Coal Age*, July 13, p. 60, to statements of his firebosses regarding their practice in the use of safety lamps, interested me greatly.

It is hard for me to understand how any responsible fireboss could offer such an excuse as Mr. Cain says his men gave for failing to properly test their safeties, by blowing into their lamps after assembling them and before carrying them into the mine to make an examination.

The excuse these men gave was that they were afraid to tighten the lamp against the glass more, lest the heat of the lamp should expand the parts and break the glass. Of course, it was possible to blow out the light in a lamp so carelessly assembled.

In mines where I have been employed, when a miner got his lamp from the lampcabin the man in charge tested it by blowing into it, at both the top and the bottom of the glass, before giving it to the man. Each miner then had to take his lamp to the fireboss who made the same test and returned it to the man. Many of the miners would test their own lamps in the same way.

As mine examiner (fireboss) I always used my own lamp. Each shift, before going into the mine, it was my invariable custom to test my lamp, by blowing, to make sure the glass was tight. Every fireboss knows the lamps have asbestos washers and many have expansion rings besides to prevent the breaking of the glass by heat.

The answer given to a recent examination question asking what made a lamp safe, named two essential conditions: 1, The right construction and assembling of the lamp. 2, Proper handling in its use.

PETE BOLAND.

Herrin, Ill.

Inquiries Of General Interest

Self-Acting Gravity Plane

Choice of Single- or Double-Acting Gravity Plane—Essential Features on Which Successful Working Depends—Double Tandem Headsheaves Required to Prevent Slipping of the Rope

HAVING seen much valuable information obtained by inquiries through the columns of *Coal Age*, I desire to submit a proposition we have in contemplation in the near future.

At the present time, we are working a seam of coal that outcrops at the tipple. Overlying this coal is another, four-foot seam, outcropping about 900 ft. higher on the hillside. There are some six acres of this upper seam that we want to start to work out at an early date.

The plan that we are considering is to lower the coal from the seam above to the tipple where it will be loaded on the same tracks we are using in working the lower seam. We have in mind a single-track gravity plane extending from the opening in the upper seam down the hill to the tipple.

The grade is sufficiently steep to afford good haulage by the gravity system. What we desire to know, however, is whether it is practicable to use a single-track incline and provide a passing track at the middle of the plane. Or, is it necessary to build a double-track tramway. We wish to avoid that expense if possible.

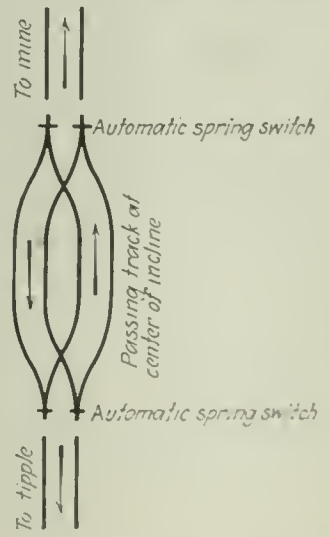
Dora, Pa. C. M. SHAFFNER, Supt.

Without more exact data it is only possible to reply to this inquiry in a general way. In the first place, regarding the choice between a single- and a double-track incline, the latter should always be adopted, unless the conditions are such as to entail a large additional expense. Two tracks are safer and more economical in the end than a single-track, where such construction is practicable.

The operation of a single-track gravity plane requires that a passing track be provided at the middle point of the grade so that the descending loaded trip can pass the ascending empties. In the accompanying figure is shown the portion of a single-track, self-acting incline, including the passing tracks at the half-way point. An automatic spring-pole switch at each end of this parting causes the descending loads to take the left-hand track, while the ascending empties pass to the right, as indicated by the arrows.

Much will depend on the inclination it is possible to establish. The grade over the main portion of the plane must be sufficient to provide a gravity pull that will move the trips. It is evident that there must always be an equal number of loaded and empty cars, and these will balance each other. Also, the unbalanced load is the weight of material (coal) being lowered and the net weight of the rope.

When a loaded trip is starting at the head of the plane an equal number



of empty cars, forming the empty trip, is starting from the bottom. At this juncture, the entire length of rope is lying on the plane. As previously stated, the cars are in balance and it is clear that the gravity pull due to the weight of the coal must be sufficient to overcome the gravity pull of the rope and the frictional resistance of both trips and the rope.

To enable a gravity plane to operate successfully, the grade for a short distance at the top of the incline should be somewhat steeper, and that at the foot of the incline similarly lighter.

than the average grade of the plane. This will not only assist in starting but, likewise, help to slow down the speed of the moving cars and bring them to rest at the end of each trip. In other words this feature takes care of the inertia of the system when starting and when stopping trips.

Again, it must be observed that the rope balances itself when the two trips reach the passing tracks. From the time of starting till then, the net weight of rope is on the ascending side of the plane and acts to retard motion; but, after that, to the end of the trip the net weight is on the descending side and acts to assist motion.

Observe that during the first half-cycle the net weight, retarding motion, decreases from a maximum at the start to zero at the midtrip; and during the second half-cycle the net weight, assisting motion, increases from zero to a maximum at the end. The effect of this transfer of the weight of the rope, from the ascending side of the plane to the descending side, is to uniformly accelerate the movement of the system.

In a perfectly designed self-acting plane, therefore, beginning at the head of the plane, for a short distance, there should be provided a slightly steeper starting grade, corresponding to an equal distance at the foot of the plane where the track is almost level. Between these two starting and stopping grades intended to overcome inertia, the grade of the main portion of the track should gradually and uniformly decrease from top to bottom, so as to offset the effect of the transfer of the rope from the ascending to the descending side of the plane.

The movement of the entire system is controlled by a strong brake applied to a brake-wheel mounted on the same shaft as the headsheave or attached to the latter. To allow for the fleeting of the rope on the drum and give the necessary arc of contact there are provided two headsheaves set tandem to each other. The rope is made to take as many half-turns about each sheave as is required to prevent the slipping of the rope on the sheaves when the brake is applied.

Examination Questions Answered

Kentucky Mine Foremen's Examination, Lexington, May 30, 1922

(Selected, First-Class Questions)

QUESTION—*Are there any conditions under which it would not be safe to use a safety lamp? If so, name them.*

ANSWER—A mine safety lamp is never safe when in the hands of an inexperienced person who does not understand the danger of its misuse. The lamp is not safe if defective from any cause, such as injury to the gauze chimney or the gauze protecting the openings for the entry of air; a dirty gauze owing to the accumulation of soot; or the improper assembling of the parts of the lamp. The lamp is not safe when the gauze becomes heated or the lamp is exposed for too long a time to a body of gas, or when exposed directly to the force of a blower of gas or a sudden rush of air, or carried unprotected against a strong air current. The lamp is never safe when held in an inclined position, or swung backward and forward when being carried from place to place, or permitted to fall.

QUESTION—*State under what conditions you would consider a mine gaseous.*

ANSWER—A mine should be classed as a gaseous mine when any portion of it is generating gas in sufficient quantity to be detected on an ordinary safety lamp of approved type. Such classification, however, does not imply that the mine must be worked with locked safety lamps. It would simply mean that necessary precautions must be adopted to prevent accidents occurring by reason of accumulations of gas. The tendency has largely prevailed, in the past, in coal-mining states, to designate a mine as "non gaseous," until sufficient gas is generated to require the mine to be worked with safety lamps; but the practice is a menace to safe mining.

QUESTION—*If you have a ditch 2 ft. wide and 2 ft. deep, running full of water, with a velocity of 15 ft. per sec., how many gallons is passing per minute?*

ANSWER—The sectional area of the ditch is $2 \times 2 = 4$ sq.ft. Then, assuming an average velocity of 15 ft. per sec., the volume of the flow is $(4 \times 15 \times 60 \times 1{,}728) \div 231 = 26{,}930$ gal. per min.

QUESTION—*A pump discharges 340 gal. of water per minute and has a capacity of 3.4 gal. per stroke. How many revolutions would a single-acting pump have to make in order to discharge the same amount?*

ANSWER—Assuming the two pumps are of the same size, the capacity of a single-acting pump, per revolution, will be the same as that of a double-acting pump, per stroke. Therefore, since the given pump makes $340 \div 3.4 = 100$ strokes per minute, the single-acting pump must be run at a speed of 100 r.p.m., in order to discharge the same number of gallons per minute as the given pump.

QUESTION—*If the volume of air proves insufficient when the fan is running at its full capacity what would you do, under such conditions, to improve the ventilation?*

ANSWER—Clean up the airways; shorten the distance of air travel in every way practicable; straighten the air-courses, avoiding sharp angles and bends wherever this can be done to advantage; and, finally, split the air current, at points where the velocity in the several splits will permit, remembering that the velocity of the air sweeping the working faces must be sufficient to carry away the gases that would otherwise accumulate. It is a matter of first importance to see that all stoppings are made air-tight so as to prevent the leakage of air through them. Again, wherever it is necessary to conduct the air to the faces of rooms or headings, or to cause the current to pass over falls or circulate through abandoned workings, the necessary brattices must be erected for that purpose.

QUESTION—*Name at least one dangerous practice that is frequently indulged in by the following persons: Miners, motormen, brakemen, brattice-men, trackmen, timbermen and wiremen. Would you allow these practices?*

ANSWER — Miners are frequently prone to neglect to examine the roof in their working places and set the timbers needed to make it secure, before proceeding to work. They often omit to sprag their coal when mining a shot, and will frequently cut too short a fuse or break off the match of a squib, in order to hasten the explosion.

Motormen are prone to take chances by running at too great a speed; they will often jump off the locomotive while it is going and run ahead to throw a switch or block open a door, without first stopping the trip for such purpose.

Brakemen are prone to take chances in coupling cars or neglect to properly sprag a trip on a down grade.

Bratticemen may fail to give the necessary attention to the proper construction of a brattice; or to extend it near enough to the working face to keep the place clear of gas; or to repair a brattice destroyed by a shot.

Rockmen are prone to overcharge a hole with dynamite or other quick explosive, or fail to retreat to safety when firing a shot in a heading.

Timbermen often fail to sufficiently protect themselves, by setting temporary timbers, when taking down loose top or replacing broken sets of timber.

Wiremen are prone to take chances of being fatally shocked by failing to shut off the current before proceeding to make certain changes or repairs to the wiring system.

Federal Fuel Distributor Establishes Procedure for Getting Emergency Coal—Committees Named

FEDERAL Fuel Distributor Spencer has completed the organization of his administration by designating the following:

Samuel Porcher, in charge of railroad fuel; J. N. Snider, for New England and the East; George F. MacGregor, for the West; Le Barron S. Willard, for tidewater coal; C. E. Tuttle for Lake coal. E. M. Durham, Jr., for the Southeast; E. W. Thornley, manager of orders; F. G. Tryon, of the Geological Survey; Lieut. Commander E. A. Cobey, of the Navy; M. J. Gormley, of the American Railway Association; J. C. Roth of the Interstate Commerce Commission; D. R. MacLeod, secretary of the Administrative committee; C. P. White for the Northwest.

Railway Coal Committee. B. P. Phillippe, chairman, representing Eastern railroads: E. A. Clifford, representing Western roads: F. H. Fechtig, representing Southern roads: W. G. O'Fallon, representing southwestern roads.

District committees to be named in the principal coal producing districts east of the Mississippi River for the purpose of distributing orders from the Federal Fuel Distributor among mines will consist of representatives of the Federal Fuel Distributor, the Interstate Commerce Commission, coal operators and the railroads.

The Federal Fuel Distributor has designated district headquarters as follows:

Norton, Va.: All coal districts of Virginia except the Pocahontas.

Thurmond, W. Va., covering New River and joint mines on the Virginian Railroad.

Bluefield, W. Va.: Pocahontas, Winding Gulf, New River, Tug River and Virginian coal districts.

Huntington, W. Va.: Kanawha, Logan, Williamson, and Big Sandy coal districts.

Knoxville: Coal districts in southeastern Kentucky outside of Harlan and Hazard, and all Tennessee mines.

Louisville: Harlan, Hazard and Western Kentucky on the Louisville and Nashville and the Illinois Central railroads.

Birmingham: Alabama.

The Federal Fuel Distributor announces that coal operators will continue their normal ordinary business, but that this will be gradually encroached upon by priority orders of the Interstate Commerce Commission and finally coal orders placed through the Federal Fuel Distributor for railway purposes and state committees will gradually absorb the total output of mines.

Under plans of the Federal Fuel Distributor, the governors of states will appoint fuel committees and orders from the committees will be sent to the Fuel Distributor at Washington, passed on, and then sent to district committees.

Duties of state organizations appointed by the governors are defined in regulations issued by the Fuel Distributor as follows:

Report at once the consumption of coal in the state, as to utilities, household, industrial and other uses.

Furnish statement showing a list of those who receive priority coal for current use, but not for storage, in the order of emergency of their need; character of coal required, including source from which consumer previously obtained supplies; name of coal operator with whom he does business if in the present producing field; weekly supply needed by such consumer; number of weeks stocks he has on hand.

To set up a single consignee in each state on behalf of all coal shipped into the state on orders from the governor's committee, through the Federal Fuel Distributor. The governor's committee will be responsible for the payment of all coal shipped into the state and will advance to a bank a deposit to cover it, which depositary will honor sight drafts with weight certificate, car number, etc., this being practically an f.o.b. sale.

The Governor's committee will distribute the coal made available to it according to the respective needs in the State, and is at liberty to reconsign or move coal after it reaches points in the state.

The governor will distribute the coal according to necessity as follows:

Public utilities and public institutions, households, industries manufacturing public necessities, and industries in general.

The governors' committee will be expected to secure the co-operation of wholesale and retail dealers in their states, and will be responsible for prevention of profiteering and extortion in the sale and distribution of coal in the states. They will furnish written orders to the Federal Fuel Distributor on forms to be prepared.

Government fuel orders will be given by the co-ordination committee and will pass through the Federal Fuel Distributor to the District Committees.

Shipments of coal by the Lakes to Minnesota, North and South Dakota, northern Wisconsin, northern Michigan and Canada will be through the Ore and Coal Exchange of Cleveland. Cars for such coal on contracts in existence will go through or be approved by the Federal Fuel Distributor to the District Committee. It is planned to establish a regular weekly movement of coal to this trade. The division of this coal between the states or receiving points must be approved by the Federal Fuel Distributor.

The Federal Fuel Distributor further announces that coal operators will continue to function individually with respect to filling their ordinary business or priority orders that may come under the Interstate Commerce Commission order of priority until orders are received by the district committee from the Federal Fuel Distributor supplanting their capacity.

On receiving orders for coal from the Federal Fuel Distributor the service agent of the Interstate Commerce Commission on the district committee will issue an order upon recommendation of the representative of the Fuel Distributor to the railroads to place cars for coal shipment. The order will be sent to the representative of the railroad on the district committee for transmission to the proper official of the railroad for execution. The district committee will specify the mines from which the coal is to be shipped. Representatives of the Federal Fuel Distributor will, subject to a guarantee of payment, which shall be satisfactory to the mine operator, but in keeping with the Hoover fair price, allocate cars to the mines in the district. Representatives of the railroads on the district committee will report to the service agent of the Interstate Commerce Commission the number of cars shipped daily under the orders. The district committees will report to the Fuel Distributor at Washington the shipments made.

The distribution of fuel for railroads will be concentrated in the hands of a railroad coal committee composed of coal buyers from the different railway groups as given above. This committee will meet in Washington, check the needs of the railroads for coal, pass upon applications for emergency coal for railroad use and in other ways co-operate in the execution of the general plan.

District Committees Named

The personnel of the district coal committees has been announced by the Federal Coal Distributor, as follows:

HUNTINGTON, W. VA.

Lt. F. B. Conger, representing Federal Fuel Distributor

Coal Operators' Representatives:

Williamson Committee:

L. E. Woods, Crystal Block Coal and Coke Co., Welch, W. Va.
G. S. Patterson, Sycamore Coal Co., Vivian, W. Va.
T. H. Huddy, Bally-Sudduth Fuel Co., Williamson, W. Va.
L. E. Armentrout, Borderland Coal Co., Cincinnati, O.
Geo. Bauswine, Jr., Secretary, Operators' Association of Williamson Field, Williamson, W. Va.

Northeast Kentucky Committee:

Cadwallader Jones, Marrowbone Mining Co., Ashland, Ky.
C. W. Moorman, Wells-Elkhorn Coal Co., Ashland, Ky.
W. T. S. Hand Consolidation Coal Co., Jenkins, Ky.
Geo. B. Archer, Prestonburg, Ky.

E. L. Bailey, Edgewater Coal Co., Hellier, Ky.
C. J. Neekamp, Ashland, Ky., Secretary, Northeast Kentucky Coal Association.
Logan Committee:
C. W. Henry, Amherst Fuel Co., Huntington, W. Va.
C. W. Jones, Daisy Coal Co., Henlamson, W. Va.
W. P. Neekamp, Elkhorn & Shelby Creek Coal Co., Huntington, W. Va.
J. S. Riley.
Jas. D. Francis, Island Creek Coal Co., Huntington, W. Va.
Kanawha Committee:
Thos. J. Robson, Wyatt Coal Co., Charleston, W. Va.
Lake Bobbitt, Fort Dearborne Coal Co., Charleston, W. Va.
Max Price, Dickinson Fuel Co., Charleston, W. Va.

LOUISVILLE, KY.

Lt. H. G. Patrick, representing Federal Fuel Distributor
Coal Operators' Representatives:
Western Kentucky Committee:
James E. Palmer, Providence, Ky., Diamond Coal Co.
Brent Hart, Madisonville, Ky., Hart Coal Corp., Morton Gap, Ky.
Don M. Evans, Earlington, Ky.
J. P. Cox, Brevier, Ky.
C. F. Richardson, Sturgis, Ky., West Ky. Coal Co.
Clarence Martin, Greenville, Ky.
A. B. Barnard, C. W. Taylor.
Virgil Y. Moore.
Harlan County, Kentucky, Committee:
C. B. Wilburn, Crown By-Product Coal Co., Chevrolet, Ky.
F. D. Perkins, Perkins-Harlan Coal Co., Harlan, Ky.
John Marland, King-Harlan Co., Cincinnati, O.
W. B. Whitfield, Harlan Collieries Co., Ages, Ky.
W. L. Hammond, White Star Coal Co., White Star, Ky.
E. R. Clayton, Harlan, Ky., Harlan County Coal Operators Association.
Hazard Coal Operators, Lexington, Ky.:
J. T. Hatfield, Reliance Coal & Coke Co., Cincinnati, O.
George Kearns, Reliance Coal & Coke Co., Cincinnati, O.
R. A. Hord, Hazard Coal Operators' Association, Lexington, Ky.
A. L. Allais, Columbus Mining Co., Chicago, Ill.
H. K. English, Kenmont Coal Co., Lexington, Ky.
Caryl Robinson, Rockhouse, Ky.

KNOXVILLE, TENN.

Lt. Comdr. Lewis Hancock, representing Federal Fuel Distributor
Coal Operators' Representatives:
Southern Appalachian Field:
George Camp, Knoxville, Tenn.
J. F. Pratt, Knoxville, Tenn.
E. L. Hampton, Tennessee Consolidated Coal Co., Nashville, Tenn.
K. W. Dyas, Stearns, Ky.
E. S. Helburn, Middlesboro, Ky., Yellow Creek Coal Co.
L. Clark, Nashville, Tenn., Highland Coal & Coke Co.
R. E. Howe, Southern Appalachian Coal Operators' Association, Knoxville, Tenn.

BLUEFIELD, W. VA.

Lt. Comdr. D. B. Downer, representing Federal Fuel Distributor
Coal Operators' Representatives:
W. E. E. Koepler, Pocahontas Operators' Association, Bluefield, W. Va.
C. C. Morfitt, Welch, W. Va., Tug River Coal Operators' Association.
A. B. Rawn, Solvay Collieries Co., Huntington, W. Va.

THURMOND, W. VA.

Lt. Comdr. H. H. Bouson, representing Federal Fuel Distributor
Coal Operators' Representatives:
W. G. Caperton, New River Coal Co., Charleston, W. Va.

NORTON, VA.

Lt. Comdr. E. R. McClung, representing Federal Fuel Distributor
Coal Operators' Representatives:
Southwestern Virginia Committee:
Webb J. Willetts, Norton Coal Co., Norton, Va.
Lee Long, Clinchfield Coal Corpn., Dante, Va.
D. D. Hull, Jr., Roanoke, Va.
W. J. Elgin, Richlands, Va.
Otis Mouser, Stonega Coke & Coal Co., Big Stone Gap, Va.,
A. W. Wagner, Virginia Lee Co., St. Charles, Va.
Geo. J. Walker, Banner Raven Coal Corp., Drill, Va.
M. D. Collier, Appalachia, Va.
J. W. Richardson, Splashdam Coal Corp., Splashdam, Va.
G. D. Kilgore, Virginia Coal Operators' Association, Norton, Va.

BIRMINGHAM, ALA.

Lt. P. P. Powell, representing Federal Fuel Distributor
Coal Operators' Representatives:
S. L. Yerkes, Birmingham, Ala., Grider Coal Sales Agency.
Erskine Ramsay, Pratt Consolidated Coal Co., Birmingham, Ala.
A. B. Aldridge, Birmingham, Ala.
G. F. Peter, Southern Coal & Coke Co., Boothton, Ala.
Hugh Morrow, Birmingham, Ala.

Fuel matters in various states will be under the immediate control of the following:

Alabama—Roy R. Cox, Montgomery.
Delaware—Leon Walker, 1020 Church St., Wilmington.
District of Columbia—Public Utilities Commission, Washington.
Florida—Florida Railroad Commission, Tallahassee.
Illinois—Robert M. Medill, Springfield.
Indiana—Public Service Commission, Indianapolis.
Iowa—Charles Webster, Des Moines.
Kansas—Court of Industrial Relations, Topeka.
Kentucky—J. Sherman Cooper, Frankfort.
Louisiana—John G. O'Kelley, Baton Rouge.
Maine—Andrew P. Lane, Augusta.
Maryland—Wm. Milnes Maloy, Baltimore.
Massachusetts—James J. Storrow, Boston.
Michigan—Wm. W. Potter, Lansing.
Nebraska—State Railway Commission, Lincoln.
New York—E. H. Outerbridge, New York.
North Carolina—State Corporation Commission, Raleigh.
North Dakota—State Railroad Commission, Bismarck.
Ohio—Geo. T. Poor, Columbus.
Pennsylvania—Public Service Commission, Harrisburg.
Rhode Island—George H. Webb, Providence.
South Carolina—State Railroad Commission, Columbia.
Tennessee—Wilbur A. Nelson, Nashville.
Vermont—Hugh J. M. Jones, Montpelier.
Virginia—Major Alexander Forward, Richmond.
West Virginia—J. Walter Barnes, Charleston.
Wisconsin—Edward Norman, Madison.

Priority Plan in Middle West Makes Halting Start; Car Supply Continues Bad

THE Middle West's hope for a flying start of the new federal system of coal distribution was bruised during the past week. The plan did not produce results. Priority orders did not absorb the whole flow of fuel, car supply was not much improved, and prices were not generally drawn down to the government level of $3.50. When the week opened cars made an improved showing. Many a Kentucky mine got more than 75 per cent of what they requested, and everybody felt fairly good. By the middle of the week, however, more than half the mines of the state were down and the same old condition of affairs prevailed. The L. & N. supplied 30 per cent of the demand for cars at the mines along its lines.

Practically all the coal that went to railroads sold at $3.50 but in many cases a jobbers' commission of 8 per cent was added. The remaining coal, which was of larger volume than the market had expected, sold all through the Midwest region at widely varying prices. In the fields it brought $6.50@$10 and in the markets a shade more than that. Chicago, maintaining its reputation for top prices, saw coal from Western Kentucky selling above $11.

Illinois suffered a considerable flurry on Friday when Robert M. Medill, state fuel administrator, announced that he interpreted the federal plan to mean that the state was absolutely cut off from all fuel from outside fields. At once the market got excited and Western Kentucky coal hopped from $9 to $12. There were all sorts of wild quotations made by greedy brokers running up to $14, but no sales were made above $12. The market quieted down to $10 the next day, however.

Mr. Medill, in a message to *Coal Age* Saturday morning set forth his understanding of the matter thus: "Illinois' supply of coal from outside producing points has not yet been cut off although we have been advised that we must not expect even a large part of our requirements so that states which have no coal resources and which require longer periods of transportation must be afforded a larger ration of the national supply."

It is felt in some quarters that a few Kentucky operators, especially in the western end of the state, are doing what they can to avoid taking priority orders so as to extend the period of $8 and $10 coal as long as possible. The first definite complaint of this sort in Kentucky was registered with the state railroad commission by Muscoe Burnett, general manager of the Paducah Water Co., who complained that he had tried to get coal from four or five western operators only to be told all their output was under contract and they could not send him a ton. The case is being investigated.

The new plan has not been in effect long enough yet for a thorough try-out. In Illinois, Mr. Medill is getting his county distribution boards appointed and will aid Governor Small or Acting Governor Sterling this week in the formation of a complete state committee.

In the meantime the coal trade not only of Illinois but of all the surrounding states is anxious for the whole machinery of coal distribution to get into gear. The general uncertainty of things wears hard on nerves already harrassed.

A SURVEY OF PRICE SITUATION made last week at the instance of Secretary Hoover developed the fact that 95 per cent of the coal now being produced is being sold within the maximum fixed.

Illinois Offers Last Year's Wages If Miners Will Agree To Abide By Impartial Arbitration

By E. W. Davidson

ILLINOIS operators made a positive move last Friday to open their mines. They proposed to Frank Farrington, state president of the miners, that the 92,000 strikers of Illinois go back to work at the old scale until March 31, 1923, agreeing to abide by the findings, in the meantime, of an impartial arbitration board made up of men other than operators.

This is practically the Harding plan rejected by the miners at Washington. Farrington, who was in Chicago when the proposal was drafted, left the city saying he didn't think his men would agree to such arbitration and that anyway he would make no answer to the operators until after International President John L. Lewis' four state conference at Cleveland starting Monday, August 7, is finished.

The Illinois offer, on the eve of President Lewis' Cleveland conference, was generally credited, around Chicago, with being a weapon for Frank Farrington to carry into the Lewis meeting at Cleveland. Just how he might use it was uncertain, but everything about Farrington's procedure has been uncertain for months. The offer, drafted after an all-day meeting of the operators on Friday, August 4, maintains the position the state mine owners have taken all along, but it is the first definite proposal they have given to Farrington.

There was considerable anxiety in the Midwest region over the Cleveland conference, lest Lewis manage to draw to that meeting one or two strip mine owners of Illinois along with a scattering few from Indiana and Pennsylvania together with the majority of the northeastern Ohio operators, and make a deal to open the mines of those eager gentlemen, calling it a four-state basic agreement. Many an operator was free to admit he felt Lewis would be scoring a bullseye if he opened even one or two mines in each state. It would be hard to prevent a rapid disintegration of the operators' ranks after that. However, the organized operators of Illinois declared they doubted if any independent operators of that state would sign up with Lewis. It was known, however, that at least one or two Illinois operators, including an association member from Danville, would attend.

An important question was: Will Farrington break with the international and finally try to make a separate deal for Illinois if Lewis' conference fails? John Watt, secretary-treasurer of the miners' organization for Illinois, and an avowed Lewis man against Farrington, declared in Springfield, Ill., Saturday, that Farrington wouldn't dare try it. "It would mean Farrington's ruin," said he. Watt is the man charged by Farrington with "suffering from an attack of running off at the mouth."

In case Lewis' conference fizzled, western operators said they couldn't expect much of Farrington, for his position in the union, they think, has weakened lately. Instead, they believe there would be nothing left but a forceful move by the government to end the strike. In the meantime, very little coal mining is going on through the strike zone. Michigan has made no success of her plan to dig coal for state institutions, and Indiana, with sterner efforts under arms in a few strip mines, has produced few tons:

The letter of the Illinois operators to Frank Farrington follows:

"We are attaching hereto our reply to the invitation of President John L. Lewis to attend a meeting which he has called at Cleveland, next Monday, August 7, 1922. We believe this letter will be found entirely self-explanatory.

"The proposition referred to in our letter to Mr. Lewis is herewith submitted to you and your associates for your prompt and careful consideration:

"Acceding to and being governed by the request of the President of the United States, we are prepared to at once open our mines for work, paying the wage scale in effect at the expiration of the last contract. And, to avoid possible further disruption of coal production this Fall and Winter when the coal supply will be dangerously short even under the best conditions, we will agree that the old wage scale shall remain effective until March 31st, 1923.

"Immediately upon resumption of operations, the whole matter of Illinois wages and working conditions shall be submitted to a Board of Arbitration composed of citizens of high public standing agreed to mutually or appointed by the President of the United States, no member of which Board shall be either a coal operator or a coal miner,—the findings of such Board to be binding upon both parties and to constitute the wage basis for a period of two years from April 1st, 1923.

"As we have stated in our letter to President Lewis, we cannot believe that the Illinois miners will reject such an exceedingly fair proposal.

"Very truly yours,

"ILLINOIS COAL OPERATORS' ASSOCIATION,
Rice Miller, President.

"COAL OPERATORS' ASSOCIATION,
5TH AND 9TH DISTS.,
W. K. Kavanaugh, President.

"CENTRAL ILLINOIS COAL OPERATORS' ASS'N.,
H. C. Adams, President."

The Illinois refusal to attend the Lewis conference in Cleveland and the reasons therefor were set forth by the operators in this letter to Lewis:

"We have your invitation to meet you in conference at Cleveland, August 7th, to negotiate a basic wage scale for the country.

"The Operators of the State of Illinois as early as January, 1922, urged an immediate conference to discuss a new scale of wages to be effective April 1st, 1922. You continually refused to permit such conferences. You have heretofore issued two calls for joint interstate meetings, both of which calls we accepted; but prior to the date of the conference you cancelled the calls.

"Subsequently, at the request of the President of the United States we met you and your representatives in Washington and received from him a definite proposition. The operators of the state of Illinois unanimously and without reservation accepted the President's proposition. You refused.

"In public statements you seek to put the burden of the present critical position of the United States upon the operators, stating that they were responsible for the continued failure to produce coal. We believe that the international officials of the miners' union are entirely responsible for the present situation, especially in the state of Illinois, where the operators have a definite contract in which the miners agreed that there shall be a state negotiation of new wage contract prior to the expiration of the contract expiring March 31st, 1922. Through your refusal to allow this conference the present condition in the state of Illinois has been brought about.

"The public, as well as yourself, are fully aware of the fact that so far as Illinois is concerned, your national and state organizations are in flagrant violation of your contract with the operators of this state.

"By reason of the published refusals from practically all other unionized districts to attend your suggested meeting, it is clear that the conference cannot be in any sense representative or a proper basis for determination of wage scales to apply throughout the country. It will be approximately only the equivalent of your dealing with a portion of the state of Ohio and possibly a few scattered operators of small tonnage from other states.

"It is universally recognized that the old Central Competitive Field method of negotiation has been permanently outgrown and discarded as a practical method of determining wage scales; your own action in sending invitations to this meeting to a number of individuals not parties to the old Central Competitive Field organization violates former Central Competitive Field procedure and acknowledges that you yourself recognize and are following a new course. For these reasons no representative of the Illinois Operators' associations will be present in Cleveland on Monday, August 7.

"Recognizing the great seriousness of the present situation and the threat to public health and welfare that will be caused by further stoppage of coal production, and because of the futility of our former repeated acceptance of invitations to national or interstate meetings which have failed of results, Illinois operators are to-day offering to the miners of Illinois their thought of a proper solution of the totally unwarranted deadlock that exists in this state.

"We cannot believe that the Illinois mine workers will reject such an exceedingly fair proposal as we have suggested and by their refusal continue to inflict great and needless suffering on themselves and on all other citizens."

"Illinois operators do not now and have not at any time favored even the temporary payment of the enormous wage rates now offered to their workmen," W. K. Kavanaugh of St. Louis, president of the 5th and 9th districts of Illinois, stated, "but because of the offer of the President of the United States we have accepted such basis of payment, contingent, however, only upon the acceptance by the miners of a fair, impartial arbitration and determination of a wage rate subsequently to be paid."

Illinois operators, Mr. Kavanaugh said, are perfectly willing to accept responsibility for not attending the Cleveland meeting "rather than be parties to a betrayal both of the public and its agents, the government, through a surrender at this time of the principles which they have admittedly at great loss contended for."

Mine Fatalities in June Higher in Number And Ratio to Output Than in May

ACCIDENTS at coal mines in the United States during June, the third month of the strike, resulted in the loss of 92 lives, according to reports received by the Bureau of Mines from state inspectors. Fatalities not resulting from the normal hazards of mining are not included in this number. Revised figures covering the present strike period show 78 fatalities in April and 79 in May. The increased number of accidents in June as compared with May was confined largely to the bituminous mines of Pennsylvania and West Virginia. Based upon a production of 22,393,000 tons of coal in June, as reported by the U. S. Geological Survey, the fatality rate for the month was 4.11, as compared with 3.89 for May and 4.94 for April of the present year and 4.03 for June, 1921.

During the past nine years (1913-1921) an average of 203 men have lost their lives by accidents at coal mines during June. The output of coal has averaged 47,280,000 tons, thus indicating a fatality rate of 4.29 per million tons as representative of the month of June over the 9-year period. It will be noted that the rate for June, 1922, while somewhat higher than that for May, was lower than the rate for April, the first month of the strike, and also lower than the average rate for June for the nine-year period between 1913 and 1921.

During the first half of 1922 829 men were killed by accidents at coal mines as compared with 1,001 during the first six months last year, a decrease of 172 fatalities, or 17 per cent. The output of coal has declined 14 per cent, the fatality rates for the two six-months periods being 4.13 for 1921 and 3.97 for 1922 per million tons.

Gas and dust explosions continue to be the only conspicuous class of accidents showing a higher fatality rate for 1922 than for the first six months last year.

No single accident in June killed as many as five men. The record for 1922 to date shows 7 major disasters in which 82 lives have been lost, as compared with 3 disasters and a loss of 17 lives during the first half of 1921.

Two Miners, Both Americans, Each Shoot And Load About Fifty Tons a Day

THE Standard Island Creek Coal Co. has operations at Cora and Taplin in West Virginia, the two places being about fifteen miles apart. During the last half of June it conducted a loading contest between its Loma mine No. 3, at Taplin, and Cora mine No. 2, at Cora, offering a cash prize to the loader who produced the largest quantity of coal.

Jerry Dunn, an American miner, working at Loma No. 3 during the last half of June, 13 working days, loaded a total of 469 mine cars of a capacity of 1.4 tons per car—that is 656½ tons, or a trifle over 50.5 tons per shift. He worked in a double-track room 36 ft. wide with coal 48 in. thick. The mine cars stand 27 in. above the top of the rail. The only assistance he had of any kind was the use of an electric coal auger to drill about 25 per cent of the coal loaded; otherwise he did all of his drilling by hand, shooting and loading the coal without assistance. Mr. Dunn is 6 ft. 2 in. tall, being thus decidedly above the normal height of men generally.

William Smith, an American miner, working at Cora mine No. 2, during the same period loaded 459 mine cars of capacity of 1.3 tons per car—that is 596.7 tons or 45.9 tons per shift. This coal was loaded from two entries each 18 ft. wide the coal being 46 in. thick. Here also the mine car stands 27 in. above the top of the rail. The only assistance Mr. Smith had was the use of an electric coal auger for drilling approximately 25 per cent of the coal loaded; otherwise he drilled the coal by hand, shot it and loaded it into the cars. Mr. Smith also is above medium height, being 5 ft. 11 in. tall.

It will be seen that each of these men approximated a 50-ton railroad car per working day. F. J. Bailey is superintendent in charge of Loma Mines 1, 2 and 3, at Taplin, and E. C. Pirrung is superintendent in charge of Cora Mines 1 and 2, at Cora. Our informant is A. W. Fay, the manager of the coal company. It will be noted that these miners received about 36 cars per day—some service.

COAL-MINE FATALITIES DURING JUNE, 1922, BY CAUSES AND STATES

(Compiled by Bureau of Mines and Published by *Coal Age*)

State	Underground													Shaft					Surface							Total by States	
	Falls of roof (coal, rock, etc.).	Falls of face or pillar coal.	Mine cars and locomotives.	Gas explosions and burning gas.	Coal-dust explosions (including gas and dust combined).	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.).	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip, or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Electricity.	Machinery.	Boiler explosions or bursting steam pipes.	Railway cars and locomotives.	Other causes.	Total	1922	1921
Alabama	1	....	1	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	1	....	....	....	....	....	1	3	5
Alaska	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Arkansas	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Colorado	2	....	....	1	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	3	5
Illinois	....	....	....	1	....	1	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	2	19
Indiana	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	6
Iowa	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	1
Kansas	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	1
Kentucky	2	....	....	....	....	....	....	1	....	....	....	....	3	....	....	1	....	1	....	....	....	....	....	....	....	4	14
Maryland	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	1
Michigan	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Missouri	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	3
Montana	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	1
New Mexico	1	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	1
North Dakota	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Ohio	....	....	....	....	....	....	....	....	1	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1	2	3	4	7
Oklahoma	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	1
Pennsylvania (bituminous)	10	5	3	....	....	....	....	....	....	....	....	1	19	....	....	....	....	....	....	1	1	....	1	....	3	22	23
South Dakota	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Tennessee	2	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	2	1
Texas	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0
Utah	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	1	1	0
Virginia	3	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	3	2
Washington	....	1	....	2	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	3	2
West Virginia	19	1	10	....	....	1	....	6	....	....	....	1	38	....	....	....	....	....	1	....	....	1	....	....	1	3	41	31
Wyoming	....	....	....	....	....	....	1	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1
Total (bituminous)	40	7	14	4	....	2	1	7	1	....	....	2	78	....	....	1	....	1	2	2	2	....	2	3	11	90	125
Pennsylvania (anthracite)	....	....	....	1	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	1	....	....	....	1	2	45
Total, June, 1922	40	7	14	5	....	2	1	7	1	....	....	2	79	....	....	1	....	1	2	2	3	....	2	3	12	92	....
Total, June, 1921	78	10	25	5	....	13	....	15	....	1	....	7	154	2	2	3	....	7	3	2	1	....	....	3	9	....	170

Washington Puts Burden of Coal Distribution on States—Hopeful That Cleveland Conference Will Start Mines

By Paul Wooton
Washington Correspondent of *Coal Age*

Washington, Aug. 8.—The pinch of coal shortage is becoming severe in several portions of the country. Spokesmen for the fuel distributor stated today that great pressure is being brought from the New England states and by states in the Northwest and in the Middle West. Senator Lenroot of Wisconsin saw the fuel distributor this morning and in no uncertain way said that something must be done to start shipments to northern Lake Michigan points, being out of reach of all-rail movement from Kentucky. One of the most active protests considered by the fuel distributor today came from the Middle Western states to look after their canning industry.

Large numbers of locomotives are being moved from the North to Southern coal fields, it was stated. Some railroad shortage of fuel is reported in the Middle Atlantic region.

Secretary Hoover stated today that failure to observe the price maximum applied only to an insignificant portion of the tonnage being produced. No increases have been allowed in the maximum price, he stated, in those districts where the 1920 wage scale has been put into effect. He emphasized that the price agreement is for the period of the strike only, but he said the settlement of the strike will not necessarily take the lid off of prices.

SOME further move by the President in the coal strike is expected. Events since he sent the operators home to produce coal are thought by many to have demonstrated that they will be unable to produce any appreciable amount of coal in the highly organized districts. On the other hand the mine workers have failed to accomplish anything constructive. In view of that situation many believe the President very shortly will take steps intended to force arbitration.

The failure on the part of the operators in the union districts to secure production has been a great disappointment to their sympathizers. It is true that there has been some increase in production in the Pittsburgh district and in the old non-union part of Pennsylvania, but the aggregate of that output is such as to have a very feeble influence on the situation. The small production coming from stripping operations in Illinois and Indiana has decreased. There is no production in Iowa and there has been no increase in the output of Missouri, Kansas, Oklahoma and Arkansas. Little is expected to result from state operation of mines and very little is being claimed as to the possibilities of production by such methods. As a result it is fully expected that the President will call in again the representatives of each party to this controversy and tell them that they have failed to make good and that the settlement must be placed in other hands.

A possible outcome of the Cleveland conference called by John L. Lewis, according to speculation here over the week end, is that an agreement can be reached whereby eastern Ohio can resume operations on the 1920 scale and with all the other demands of the miners put into effect. Such an arrangement might also be made at isolated operations in other districts in the central competitive field. If that should be done there soon would be a general resumption on that basis, some predict.

As the control over distribution progresses, it is very evident that the individual states under this plan have to shoulder most of the work and most of the responsibility. The task assigned to the Federal Government of apportioning current production among the states and among the railroads is easy in comparison. The thing worrying Washington is whether or not the states can measure up to the task assigned to them. To distribute coal in an intelligent manner in any state is a technical task of great complexity. Large organizations will have to be set up and heavy expenses incurred. The fear is expressed that the states will not be equal to the task and the whole plan may have to be revised.

Despite the experience the railroads have had with service orders in the past, each road has put service order 23 in effect in its own way and as a result much confusion has been caused. This became so bad that the Interstate Commerce Commission on Aug. 4 was forced to issue an amendment to the order.

The matter of re-establishing restrictions on coal prices in Pennsylvania was the subject of a conference held at Washington on Aug. 7, between representatives of the operating mines of Pennsylvania and Secretary Hoover of the Department of Commerce and Federal Fuel Distributor H. B. Spencer. The purely voluntary price arrangement of June 1, of from $3.25 to $3.50 per ton, broke down two weeks ago, partially due to the fact that some coal producing districts refused to co-operate in the voluntary agreement at that time, and partially due to conditions brought about by the railways offering $1.50 per ton above the fair price for coal in the districts which did agree. Many coal operators in the districts where voluntary agreement was made have held to the fair price, but other districts are asking as high as $7 to $8 a ton.

The operators proposed that a new fair price should be fixed at a somewhat higher level than that of June 1, in order to allow for increased working expenses due to car shortages and partial operation of mines. It was considered by the administration officials that, inasmuch as the bulk of present production from Pennsylvania is consumed in that state and is, therefore, not a consequential export factor in interstate commerce, the Pennsylvania state authorities should participate in any arrangements. Moreover, while enforcement of price restrictions under the new plan approved by the attorney general has been made fairly effective in states whose coal predominantly enters into interstate commerce, any enforcement beyond purely voluntary action in coal locally produced and sold must rest upon the state authorities. A meeting between the Pennsylvania state coal committee appointed by Governor W. C. Sproul and the administration officials has been arranged for Wednesday, to consider the matter.

While there has been an improvement during the last week in transportation service, there is a feeling that the bond of sympathy between the striking shopmen and the other railroad orders is sufficiently strong to make it certain that transportation efficiency is kept at a low ebb. Just at this time a shortage of power is beginning to be felt. Engine employees are in a position, without involving themselves, to contribute easily to further failures of locomotives. There is also the serious matter of boiler inspection. Strike sympathizers in high places are seeing to it that there is no laxity in the Government's inspection. There is now talk among men in the train service of refusing to take out trains on the ground that the state of the equipment makes it unsafe. The trouble with the workers on lake boats is said to have its real basis in the desire to contribute something to the success of the strike. Among the various labor organizations which have to contribute to the transportation of coal, it is very clear that they are in a position to keep transportation badly tied up for an indefinite period.

Amendment No. 1 to Service Order No. 23

At a session of the Interstate Commerce Commission, division 5, held at its office in Washington, D. C., on the fourth day of August, A. D. 1922.

It is ordered, That paragraph numbered 7 of the said Service Order No. 23 adopted July 25, 1922, be, and it is hereby, amended

and supplemented to read as follows effective on and after Aug. 5, 1922:

7. That in the supply of cars to mines upon the lines of any coal-loading carrier, such carrier is hereby authorized and directed, to place, furnish, and assign such coal mines with cars suitable for the loading and transportation of coal in succession as may be required for the following classes of purposes, and in following order of classes, namely:

Class 1—For such special purposes as may from time to time be specially designated by the commission or its agent therefor. In designating special purposes under this reservation, the commission or its agent will designate the class of relative priority, as Class 1, Class 2, Class 3, Class 4, or Class 5, which such special purpose or particular shipment or shipments shall receive.

And subject thereto in order of priority:

Class 2—(a) For fuel for railroads and other common carriers, and for bunkering ships and vessels; (b) for public utilities which directly serve the general public under a franchise therefor, with street and interurban railways, electric power and light, gas, water and sewer works; ice plants which directly serve the public generally with ice, or supply refrigeration for human food stuffs; hospitals; (c) for the United States, state, county, or municipal governments, and for their hospitals, schools, and for their other public institutions—all to the end that such common carriers, public utilities, quasi-public utilities, and governments may be kept supplied with coal for current use for such purposes, but not for storage, exchange, or sale; (d) bituminous coal which has passed over screens of four inches or larger opening, coke, and anthracite coal, to be shipped to retail dealers for household use.

NOTE: It is not intended by this paragraph to give any priority as between clauses a, b, c, and d hereof.

And subject thereto in order of priority:

Class 3—(As to each coal-loading carrier which reaches mines in Pennsylvania, Ohio, West Virginia, Kentucky, Tennessee, and Alabama.) For bituminous coal consigned to any Lake Erie port for transshipment by water to ports upon Lake Superior.

And subject thereto in order of priority:

Class 4—(As to all such common carriers by railroad.) Coal for the production and manufacture of foodstuffs and medicines and for the manufacture of containers therefor, for daily use but not for storage, exchange, or sale.

And subject thereto in order of priority:

Class 5—Other purposes.

No coal embraced in Classes 1, 2, 3, or 4, shall be subject to reconsignment or diversion except for some purpose in the same class or a superior class in the order of priority herein prescribed.

For the more prompt and effectual administration during the present emergency of the authorization, directions, and requirements of this paragraph No. 7, the following persons are designated and appointed as agents of the commission, with authority to give directions as to car service and to the matters referred to in paragraphs (15) and (16) of section 1 of the interstate commerce act, and referred to in this paragraph No. 7, viz: John C. Roth, Director, and E. H. DeGroot, Assistant Director, Frank C. Smith, Chief Inspector of the Bureau of Service of the Commission, and S. J. Mayhood, B. S. Robertson, C. C. Semple, W. L. Barry, O. S. Reynolds, H. M. Priest, J. B. Ford, and the directions so given by them shall be regarded as directions of the commission.

Detailed instructions have been sent to the state governors by the federal fuel distributor so as to provide a uniform method of handling the work. Fuel Distributor Spencer has prescribed a form which is to be followed by the governors in making application for coal. The form calls for the name of the applicant; the point at which the shipment is to be delivered; the name of the delivering railroad; the purpose for which the coal is to be used; the quantity, grade and size of coal; the consignee's average daily consumption; the consignee's present stock; the name of the firm with which the applicant has a contract; the district from which coal ordinarily is supplied and the name of the bank which will guarantee payment when the coal is shipped.

Another form has been devised on which the district committees will report on orders placed. The governors' committees are requested to apply for coal produced in other states through the federal fuel distributor only, and not to order coal from district committees or from producers outside their own state.

Mr. Spencer emphasizes in his letter to the governors that there is no anthracite available for distribution; that emergency coal may be had only for current use and not for storage; that emergency coal may be had only for the essential purposes outlined by the Interstate Commerce Commission and that all coal will be placed f. o. b. railway cars at the mines at the fair prices for that district approved by Secretary Hoover.

CONFERENCE WAS HELD DURING THE WEEK with the President, Secretary of Commerce Hoover and the Federal Fuel Distributor by Governor Miller of New York and E. H. Outerbridge and D. L. Cooke of the Governor's advisory coal committee, to acquaint themselves with the plans of the administration to distribute coal. The New York authorities expressed a willingness to co-operate with the government in the coal situation.

RAILROAD LABOR IS FINDING OUT that its goal is not within striking distance—*Washington Post.*

Davis Wishes Cleveland Conference Success

SECRETARY of Labor Davis was the only government official in Washington to discuss publicly the call of the miners' union of bituminous coal operators for a conference at Cleveland Aug. 7. Mr. Davis urged the operators to confer and settle the strike. This is in line with the policy of the Secretary of Labor who all along has favored a national wage conference.

"Methods which have settled other coal strikes have so far failed to settle this one," said Secretary Davis. "So the return to the method of the joint conference meets with my hearty approval. I hope that the conference will be so representative of the mining industry that an early resumption of mining will be assured. A speedy resumption, even now, will make it difficult to avoid hardship and suffering this winter. I am quite sure that the participants at Cleveland will fully realize the serious economic situation confronting the country and that they will lend every effort to reach a quick settlement. The Department of Labor will lend any assistance in its power to hasten the desired adjustment. Get together, dig coal, relieve suffering and hasten the prosperity that is awaiting us."

Will Somebody Pay the Bill for Enforcing Justice on the Murder Mob of Herrin?

THE attorney general of Illinois cannot see that justice is meted out in Williamson County to the men who slaughtered 19 non-union workmen near Herrin, June 22, because he has no funds with which to do it. In a message to *Coal Age* Saturday morning he said: "My office is without funds because of the vetoing of my appropriations by Gov. Small. The Illinois Association of Commerce and a number of civic bodies have talked about raising funds but thus far it is all talk. No money has been turned over to me."

In an interview printed in the Chicago Journal of Commerce, Mr. Brundage declared his office is doing all it can on the Herrin matter with the limited finances at its command, but this small accomplishment amounts to little or nothing because the state cannot get co-operation from the officials of Williamson County. Mr. Brundage doubted whether a jury to try anybody charged with the murders could be impanelled in that county, but he suggested that the state constitutional convention, which reconvenes in a couple of months, might change the bill of rights to permit such a case as this to be tried outside the county in which the crimes were committed. The attorney general charges Gov. Small with part of the responsibility for the Herrin massacre because the governor and other state officials did not take any steps to prevent it even though they had advance information that trouble was brewing.

Frank Farrington, president of the Illinois miners, has publicly declared that in case any union miners are charged with having any part in the Herrin affair, the full strength and resources of the union will be used in their defense. He prophesies that if prosecutions start, many an innocent man will be drawn in simply because he is a member of the union and that unless every union man has adequate defense, he may be railroaded merely to satisfy the desire for vengeance.

Connellsville Mines Increase Output

IN the Connellsville coke region the past week has seen considerable increase in output at most all mines that are working; otherwise there has been no change. The strikers are still attacking the workers whenever they have a chance. During the past week one man was attacked in Brownsville and one between Brownsville and Linn. In both cases some of the attackers were arrested by the state police.

In the Pittsburgh union field three Washington County mines are operating non-union. The Lincoln Gas Coal Co., at Lincoln Hill, near Washington, and the Acme Coal Co., at Wilson, near Cokeburg, are producing about ten cars a day; and the Montour No. 4 mine of the Pittsburg Coal Co. is producing one to two cars a day.

Illinois Refuses to Meet Lewis at Cleveland Under Any Pretext—Some Favor Crews' Plan

Chicago, August 8—Operators in session all day Tuesday, Aug. 8, in Chicago reaffirmed their position favoring return to work of all striking miners at the old wage scale pending arbitration, which they were ready to accept either nationally or by states. This was set forth in a message sent to President Lewis of the miners at his Cleveland conference which at the moment was marking time under a pretense of waiting for Illinois and Indiana to come in.

The operators did not alter their firm stand to any degree but they did frankly ask Mr. Lewis whether he wanted them to talk with him on the basis of their proposal. Then they adjourned until Wednesday at 2 p.m. giving him a chance to answer. As an organization they have not been formally invited to Cleveland.

The main effort of Illinois was to secure arbitration of an unbiased effective sort and they were willing to agree even to the high wages of last year in order to get it.

The operators' only statement at the end of the session was this:

"The conference which Mr. Lewis so desperately seeks at Cleveland is not to negotiate a new wage scale or to accept President Harding's recent offer of arbitration. It is only an offered opportunity provided by Mr. Lewis for the formal surrender of all those operators from any and every part of the country who desire to sign any kind of a contract that may be offered.

"With only 49,000,000 tons or less out of an annual output of 500,000,000 willing to co-operate with Mr. Lewis in this further eleventh-hour effort to establish a national wage conference or to revive the discarded Four-State method of bargaining, Mr. Lewis is fully aware that he may not safely tempt public sentiment and welfare by attempting to arbitrarily take any official action with such a small portion of the whole tonnage, hence his anxiety to secure voluntary additional participation.

"This is clearly indicated by the fact that a substantial portion of the very limited tonnage represented at yesterday's Cleveland meeting was recruited from fields not heretofore participating in the so-called Central Competitive conference.

COMPLETELY supplanting interest in the original meeting, called by John Lewis for Cleveland on Aug. 7, to negotiate a Four-State contract, the so-called Crews-Glasgow plan for settlement of the soft coal strike entered the arena on Tuesday morning. This plan, according to unofficial reports, the text not having been released when this issue of *Coal Age* went to press, provides for immediate resumption of mining at the wages and under the terms of the contracts in effect on March 31, just prior to the strike. This arrangement would continue in effect until the end of next March, and would reinstate the check-off and preserve the *status quo* of last year.

The second step in the plan provides for an advisory committee or commission, one-half operators and one-half mine workers, to be appointed in the last half of September to which is to be delegated the task of making a study of the soft coal industry and setting up recommendations as to the best way of negotiating future wage agreements. This committee, it is understood, would take the place of the commission that President Harding has been proposing to accomplish the same ends. The difference would be that in the one case the entire matter is retained within the industry and in the other the government would be a party. A further difference is found in the fact that the plan now proposed has no representative of the public, whereas the operators had made strenuous representations to the President that his commission should have nothing but public men on it.

This committee would be entirely advisory and its finding would in on way bind either party. This, it is pointed out, is desirable because the only finding that the miners ever accept are those of joint conferences, they having rejected at least in part the arbitration awards of the last two governmental commissions. The memorandum of the plan, it is understood, specifically provides that in making its recommendations the committee shall take into consideration the competitive conditions surrounding each producing district as well as the necessities of the mine workers.

Wage rates would be recommended by the committee, it is reported, and the body would have authority from the signatories to make a complete and searching inquiry into all phases of the industry, looking to increasing the efficiency of operation and the betterment of working conditions. Particular emphasis is to be placed on the necessity of developing within the industry a proper spirit of responsibility to the public. Should the operators or miners not be able to agree on their respective members of the committee, the President will be requested to fill the vacancies.

The plan is reported to have the unqualified support of John Lewis and to be acceptable to Mr. Ogle, the president of the National Coal Association. The original draft is stated to have been prepared by Colonel Ralph Crews, a New York lawyer who has been prominent in coal matters for many years. He represented the operators of the Central Competitive Field in the hearing before the Robinson Coal Commission in 1920. He enlisted the help of Mr. Glasgow, a Philadelphia lawyer who has been the general counsel for the United Mine Workers in recent months, and together they got Mr. Ogle and Mr. Lewis together for a consideration of the plan. It was the knowledge that he had this plan to spring on the meeting on Wednesday of this week that is reported to have caused the sudden adjournment of the original meeting in Cleveland on Monday. The two meetings, those who are in touch with the situation are careful to point out, have no connection.

Commenting on the plan on Monday night, Mr. Ogle stated to the press that it was of such character that all who were concerned would be obliged to give it careful consideration. As this issue of *Coal Age* goes to press there have been no official announcements from the operators as to whether they would accept it. Illinois and Indiana producers met on Tuesday to give it consideration. The representatives of the Pittsburgh producers advised *Coal Age* on Tuesday afternoon that they would not participate and most certainly would not meet the miners in Cleveland. Others have informally expressed approval, while some are holding off.

Southern Ohio Operators Decline to Meet At Cleveland for Four-State Agreement

OPERATORS in the southern Ohio field affiliated with the Southern Ohio Coal Exchange have refused to join the proposed conference of miners and operators at Cleveland Aug. 7. This was made known definitely Aug. 3 when W. D. McKinney, secretary of the Southern Ohio Coal Exchange, sent a telegram to John L. Lewis, national president of the miners' union. Among other things in the telegram were: "The method of negotiating a basic wage agreement in a four-state meeting has been challenged in the courts. Almost the entire coal industry has taken the position that it has proven entirely inadequate in meeting the changed economic conditions of the country. The coal industry is controlled by the states and every law relating to the production of coal has been enacted by the states. The federal authorities, recognizing this, have placed the responsibility of producing coal on the several states where coal is mined. Operators and miners in states and districts should meet and solve their own problems."

Lewis' Four-State Meeting Draws Small Attendance Outside Ohio—No Action Taken Monday

THE original Cleveland conference, called by John L. Lewis, of the United Mine Workers, adjourned shortly after meeting Monday, Aug. 7, until Wednesday of this week. Operators not present were thus to be given time to reach the conference, it was stated. The real reason for the adjournment, however, it is generally understood, was to take under consideration the Crews-Glasgow plan for settlement of the strike. The original meeting—the attempted Four-State conference—was held in abeyance to see what would happen to the proposed Crews-Glasgow scheme.

Operators present on Monday, according to various estimates of the union leaders, represented about 30 per cent of the bituminous coal tonnage of the old Central Competitive Field. Among those also present were mine owners from northern West Virginia and a sprinkling from outlying districts. A joint body was organized, of which Michael Gallagher of the Pittsburgh Vein Operators' Association was made chairman, William Greene, secretary of the miners' organization was elected secretary, with W. L. Robison of the Y. & O. Coal Co., assistant secretary.

Mr. Gallagher and Mr. Lewis made this joint announcement following the meeting, which lasted but a few minutes:

"It was agreed that the conference, after being organized, recess until 3 o'clock Wednesday afternoon. This action was taken in the belief that other substantial interests would announce their participation in the conference at that time."

Because of the various matters involved in the situation, Mr. Lewis refused to make further comment.

The plan and purpose of the meeting called on Monday, according to all reports, was to sign up enough operators from the western Pennsylvania, Illinois and Indiana fields, which, together with the solid block of eastern Ohio tonnage, would make sufficient showing to warrant the United Mine Workers in saying that they had a Four-State contract. The strategy of the union is to get mines started in every district even though the operator's associations refuse to participate. By this system, which is an old one, the ranks of the operators would be broken first in a small way, and, later, as time passed, other operators, unable to withstand the temptation of producing coal on a high-priced market, would sign up with the union. It was argued in Chicago this week, for instance, that if Lewis could get three or four mines open in Illinois he could increase the tonnage and eventually win over the state.

On Friday, Aug. 4, Illinois operators made a proposal to the mine workers quite independent of the suggestions coming from Cleveland, (see p. 215 this issue). They held a meeting on Tuesday, Aug. 8, to consider the invitation of Mr. Ogle and John Lewis to meet in Cleveland on Wednesday to consider the so-called Crews-Glasgow plan for settlement of the strike in all the soft-coal fields. At the same time and for the same purpose the Indiana operators were meeting in Terre Haute.

"The operators of Illinois are perfectly willing to accept the responsibility for refusing to attend the Cleveland meeting rather than be parties to a betrayal both of the public and its agents, the government, through a surrender at this time of the principles which they have admittedly at great loss contended for. This strike has been the most unusual in history in one particular," according to prominent Illinois operators. "Mr. Lewis has stubbornly refused for seven months to discuss or allow to be discussed between the operators and miners the issues common to industrial activity, *i.e.*, wages and conditions of employment. To the contrary he has steered for chaos, from the beginning, demanding the one condition—that three and one-half states of the thirty coal producing states in the country should meet as one unit and determine wage rates that would be paid throughout the entire country.

"The situation of public distress so eloquently portrayed by Mr. Lewis is that which he forecasted early this year for calling this strike and at a time when coal throughout the United States was largely selling below cost of production.

"Nor is there any indication in his latest call of any willingness to recede from the original demands of his policy committee—a six-hour day five days per week, which reduces the physical capacity of the mines of the country 25 per cent. There is no acknowledgment that the arbitration offer of the President of the United States through an impartial commission is at all acceptable.

"As an evidence of the extreme extent of the offer made by the Illinois operators to induce miners to resume work, and for them to establish and give definite evidence of their fairness in submitting to arbitration, we present herewith a comparison of the average wage scale paid in ten Eastern non-union fields now producing coal, and the scale posted on July 20th at the mines in western Pennsylvania, and on the basis of which tonnage is being produced to meet 40 per cent or more of the requirements of the country.

"Illinois operators do not now and have not at any time favored even the temporary payment of the enormous wage rates now offered to their workmen, but because of the offer of the President of the United States, we have accepted such basis of payment contingent, however, only upon the acceptance by the miners of a fair, impartial arbitration and determination of a wage rate subsequently to be paid."

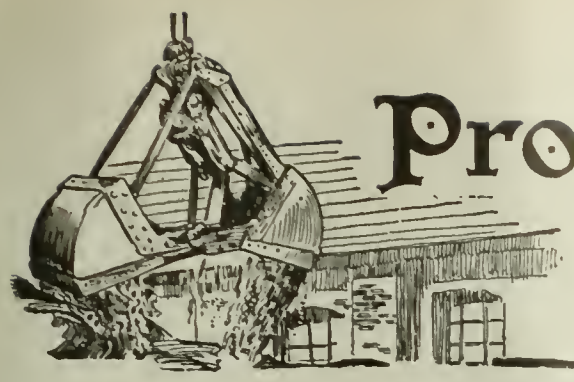
Below is given a direct comparison by classification of wages paid since July 20, 1922 and to continue until January 1, 1923, at the Pennsylvania mines now being operated under the protection of the Militia of that state, also average wages paid by ten non-union coal producing fields, with the wages demanded by Illinois miners.

No "checkoff" in behalf of the mine workers organization is being made by the Pennsylvania operations now operating under the scale here given:

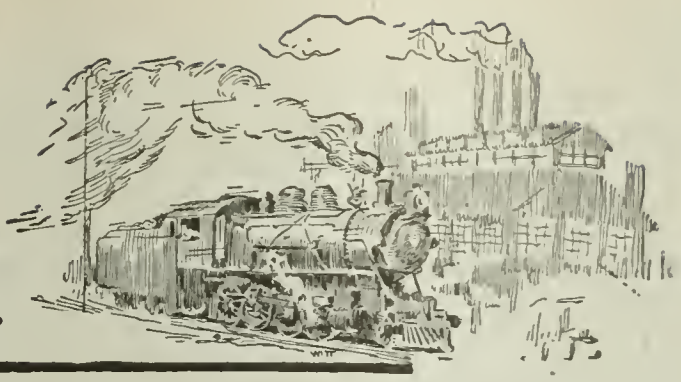
Tonnage Men	Pennsylvania	Non-union Average	Demanded by Illinois
	Per Ton of 2,000 Pounds		
Pick mining—thin vein	$8.8764	....	$1.17—$1.69
Pick mining—thick vein	.7911	....	1.08
Cutting—thin vein	.1260	....	No scale
Loading—thin vein	.5740	....	No scale
Cutting—thick vein	.1088	.1071	.15½
Loading—thick vein	.5343	.4732	.85½
Day Men		Per day of 8 hours	
Motormen	5.10	4.68	8.04
Motormen helpers	5.00	4.08	7.50
Skilled wiremen	5.00	4.68	8.04
Wiremen helpers	4.75	4.00	7.50
Track layers	5.00	4.56	7.50
Track layers, helpers	4.75	4.16	7.25
Bottom cagers	5.00	4.28	7.50
Drivers	5.00	4.28	7.50
Trip riders	5.00	4.28	7.50
Water and machine haulers	5.00	4.08	7.50
Timber men, where employed	5.00	4.08	7.50
Pipemen for compressed air plants	4.92	4.68	7.41
Trappers	2.65	2.64	4.59
All other inside labor	4.75	4.08	7.50
Dumpers	4.42	Outside labor	Outside labor
Ram operators	4.60	From $2.48	from $6.86
Pushers	4.18	minimum to	minimum to
Trimmers	4.36	$4.16	$7.25
Car cleaners	4.10	....	....

Fairmont Not Invited to Cleveland

THAT northern West Virginia associations were not to be a party to the Cleveland coal conference was the announcement made during the first week of August. It was stated that the Monongahela Association had received no invitation to attend the conference and that if any northern West Virginia operators attended the conference, they did so as individuals and not as representatives of the association. The conference at Cleveland was regarded by many operators as more of an effort to strengthen the morale of the striking miners than as a bona fide effort to reach an agreement and of course it had its effect on strikers who were disposed to cry quits and go back to work.



Production and the Market



Weekly Review

DEMAND has eased off a trifle in the past week. There is, of course, no dearth of orders for all the coal that is being mined, but there has come an abatement in the rush as buyers prefer to await developments of the Cleveland conference between union officials and operators representing parts of the old Central Competitive group. The cessation of feverish buying has been accompanied in some instances by curtailed industrial activity and further efforts toward fuel conservation by utilities and carriers. In some sections the shortage is now acute; this is responsible for many Lake vessels tying up because of no bunkers and shortened operating schedules at steel mills in the Youngstown district.

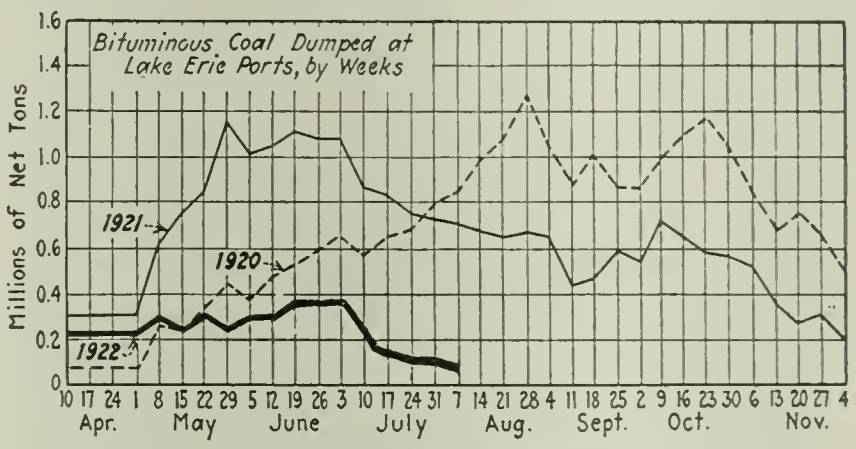
Railroads are functioning better, production has increased slightly, and while congestion of loads is still the main bar to heavier non-union production, the accumulated tonnage on wheels is slowly being untangled and sent to destination.

Spot Coal Moves at More Reasonable Prices

Coal Age Index of spot bituminous prices dropped 45 points to 511 on Aug. 7. This corresponds to an average mine price of $6.18, as compared with $6.73 on July 31. Buyers who must have coal are paying gilt-edged prices for it, unless they are fortunate enough to be lined up with connections who are using the Hoover price as a basis of sale. The list of operators in this category is growing rapidly, however, and in the Midwest the Hoover level may be considered the minimum price of today, with the range continually narrowing as less and less coal moves at the high prices of last week. No seller wants to have high-priced coal confiscated at the Hoover level and there is also a growing feeling among producers that the wisest policy is to accept a reasonable return, especially as the car supply is to be contingent upon the observance of fair prices.

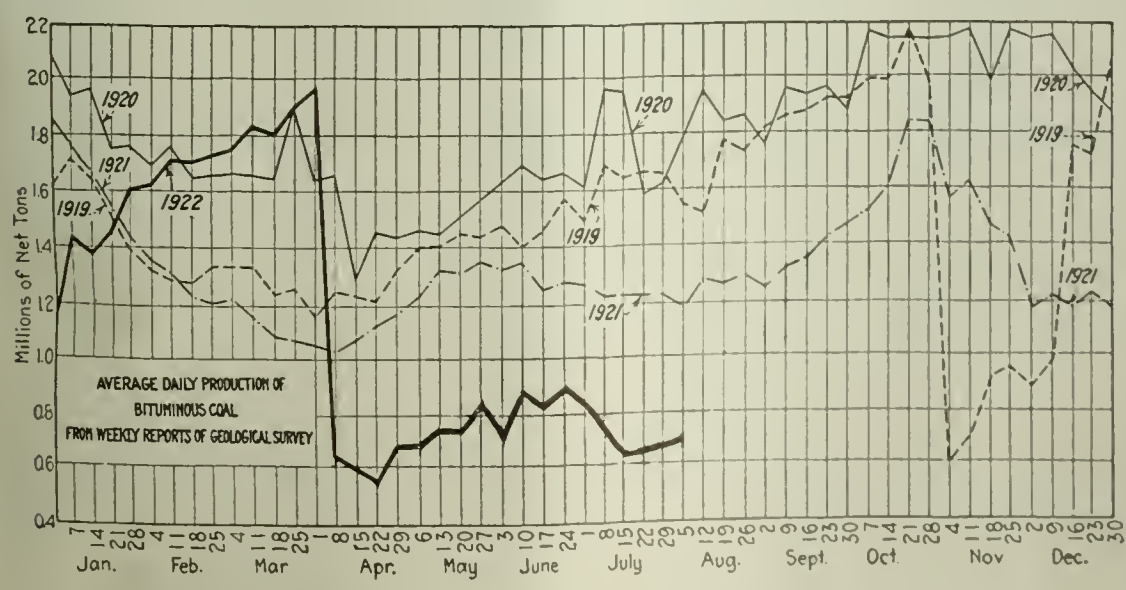
Contrary to expectations, priority orders have not swamped the mines now operating nor has the car supply improved materially, even for those producers who had accepted such preferential business.

Central Pennsylvania mines were the only ones to score advanced prices during the last few days. Somerset producers are now advocating $4.75 as a fair price for their coal during the present emergency. Smokeless agencies at Hampton Roads also kept their prices on the upgrade, mainly because the piers were unable to secure sufficient coal to accommodate the vessels awaiting cargo. On the other hand, smokeless firms in the Midwest were the foremost in observance of the Hoover fair-price list.



The feeling that a resumption of union mining is impending is reflected in this week's market for British coal in this country. Heavy orders had been placed in Great Britain for consumers in New England and the Atlantic seaboard but cancellation of some of these orders, amounting to many thousands of tons, followed the events of the week in the coal trade. As delivery of British fuel involves several weeks' time, no consumer wants to have much of this tonnage enroute or on unfilled orders when there is a prospect of home-mined coal being available in the near future.

Anthracite consumers are now fully realizing that a shortage of coal awaits them this winter. Retail deal-



Estimates of Production

(Net tons)

Week ended:	1921	1922
BITUMINOUS		
July 15 (*b*)	7,401,000	4,123,000
July 22 (*b*)	7,380,000	3,692,000
July 29 (*a*)	7,319,000	3,933,000
Daily average	1,220,000	656,000
Calendar year	224,729,000	203,279,000
Daily av. cal. yr.	1,272,000	1,145,000
ANTHRACITE		
July 15	1,876,000	31,000
July 22	1,837,000	27,000
July 29	1,750,000	27,000
COKE		
July 22 (*b*)	41,000	105,000
July 29 (*a*)	45,000	110,000

(*a*) Subject to revision. (*b*) Revised from last report.

ers are being bombarded with orders and requests for early delivery, but can do little else than file these away with the promise of the earliest possible attention.

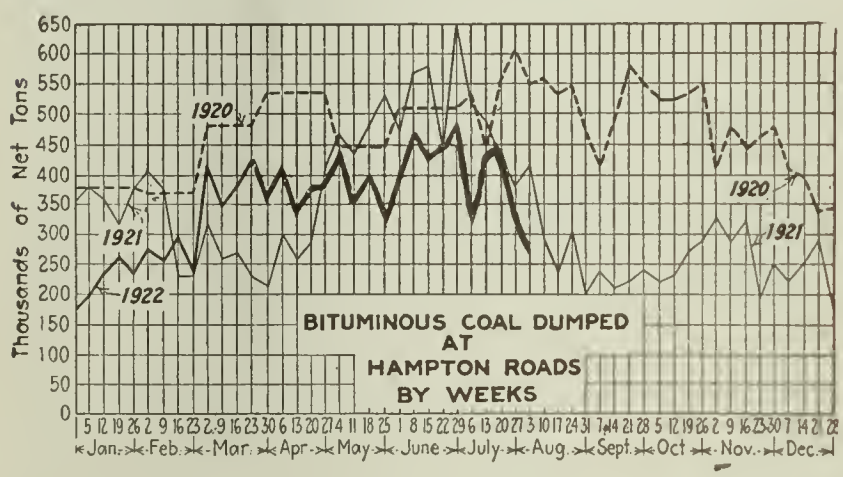
BITUMINOUS

"A slight increase in output marked the eighteenth week of the coal strike (July 31-Aug. 5)," says the Geological Survey. "Preliminary returns indicate a production of 4,250,000 tons against 3,933,000 tons in the week before. The increase is due to improved car supply in the middle Appalachian fields rather than to re-opening of mines hitherto closed by the strike.

"In spite of the increase in output, the eighteenth week finds production still about 1,100,000 tons short of the level reached before the shopmen's strike; in the week ended June 24, 5,337,000 tons were raised.

"Loadings on Monday, July 31, were 14,768 cars, an increase over the preceding Monday of 11 per cent. The following day they dropped to 11,783 cars, partly because of pay day. A partial recovery carried loadings on Wednesday up to 12,218 cars, and on Thursday 12,177 cars were loaded.

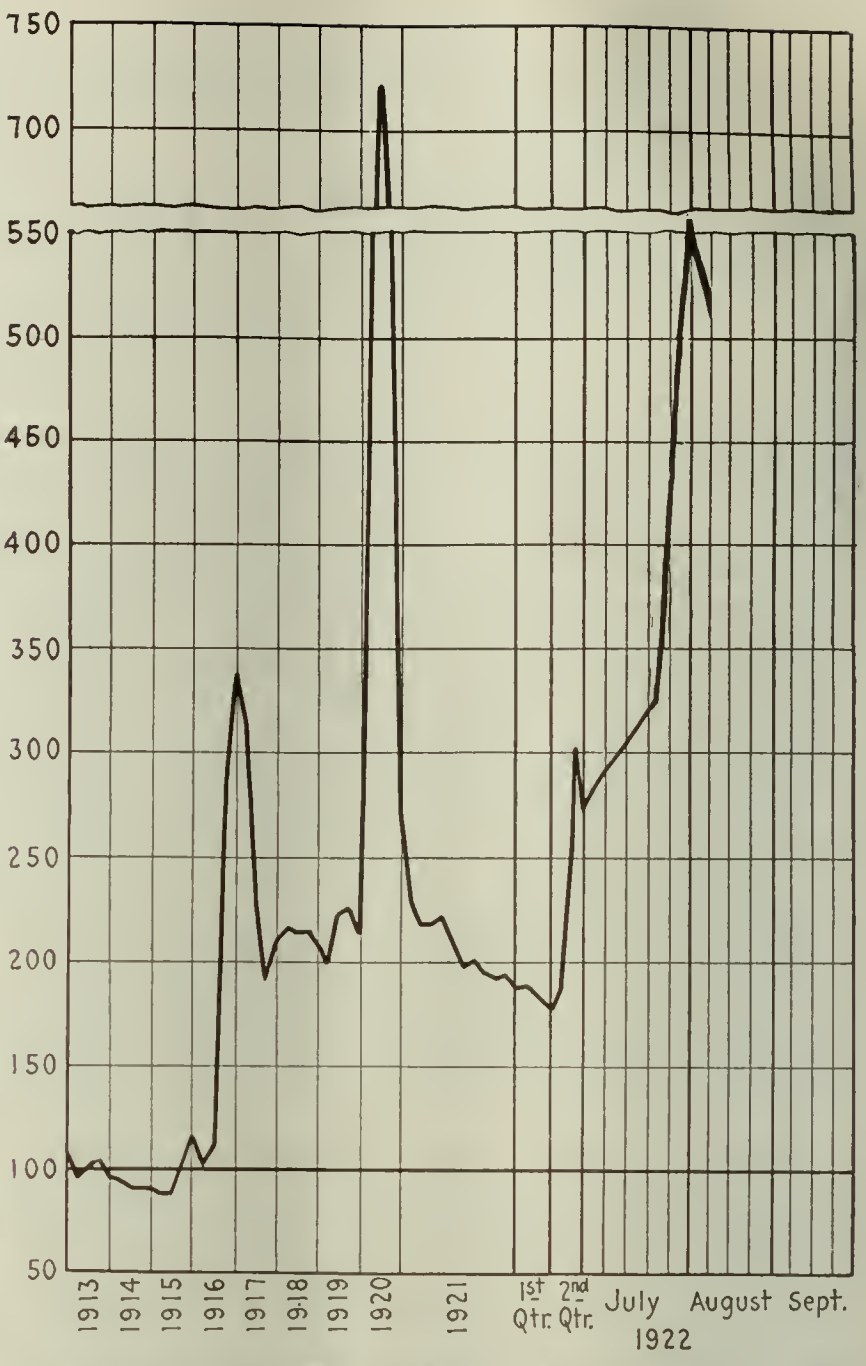
"Up to the present, mines responding to the invitation to resume operations have added little to the coal supply of the country. There has been practically no increase in output in any of the strongly organized districts, and the



increase in shipments from Pennsylvania, and from the Fairmont and Kanawha districts has not been large.

"In the middle and southern Appalachians, production has been curtailed by the traffic congestion resulting from the shopmen's strike, but through Pennsylvania, the Central Competitive Field, and most of the districts west of the Mississippi, car supply has been adequate.

"In the strongly organized districts, Ohio, Indiana, Illinois, Michigan, Iowa, Missouri, Kansas, Oklahoma, and Arkansas, production is no greater than in the latter part of June before the Washington conferences were called. In



Coal Age Index 511, Week of Aug. 7, 1922. Average spot price for same period $6.18. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the total output of the United States, weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. (Pittsburgh District, Illinois, Indiana and eastern Ohio prices not included in figures for last week.)

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	July 10 1922	July 24 1922	July 31 1922	Aug. 7 1922†
Smokeless lump	Columbus	$3.65	$6.00	$8.50	*$3.75@$7.50*
Smokeless mine run	Columbus	3.45	6.00	8.15	*3.50@7.00*
Smokeless screenings	Columbus	3.25	5.50	8.00	*3.25@7.00*
Smokeless lump	Chicago	3.65	8.25	8.10	*3.75@9.00*
Smokeless mine run	Chicago	3.45	8.25	8.10	*3.50@9.00*
Smokeless lump	Cincinnati	3.75	5.40	5.90	3.75@8.00
Smokeless mine run	Cincinnati	3.50	5.25	5.50	3.50@7.50
Smokeless screenings	Cincinnati	3.25	4.90	5.15	**3.25@7.50**
*Smokeless mine run	Boston	6.35	7.65	8.15	**8.25@9.50**
Clearfield mine run	Boston	3.50	3.65	6.00	**6.25@7.50**
Cambria mine run	Boston	4.00	4.00	6.65	**6.75@8.00**
Somerset mine run	Boston	3.65	3.75	6.00	**6.25@7.50**
Pool 9 (Super.Low Vol.)	New York	4.40	.....	.....	8.50@8.75
Pool 9 (Super.Low Vol.)	Philadelphia	4.70	.....	8.25	7.50@9.00
Pool 9 (Super.Low Vol.)	Baltimore	4.40	4.75	7.25	6.50@8.00
Pool 10 (H.Gr.Low Vol)	New York	4.25	8.75	.....	7.50@8.50
Pool 10 (H.Gr.Low Vol.)	Philadelphia	4.45	.....	8.00	7.50@8.50
Pool 10 (H.Gr.Low Vol.)	Baltimore	4.40	4.75	7.25	6.50@8.00
Pool 11 (Low Vol.)	New York	4.05	8.25	7.75	*7.00@7.50*
Pool 11 (Low Vol.)	Philadelphia	4.25	.....	8.00	*7.50@8.25*
Pool 11 (Low Vol.)	Baltimore	3.90	4.75	7.75	*6.50@8.00*
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	3.90	8.75	7.75	.....
Pool 54-64 (Gas and St.)	Philadelphia	3.65	.....	8.15	*7.50@8.25*
Pool 54-64 (Gas and St.)	Baltimore	3.90	4.75	7.90	*5.50@7.00*
Kanawha lump	Columbus	3.65	6.00	8.00	*3.75@7.50*
Kanawha mine run	Columbus	3.40	5.90	7.75	*3.50@7.50*
Kanawha screenings	Columbus	3.15	5.90	7.75	*3.25@7.00*
W. Va. Splint lump	Cincinnati	3.90	5.15	6.40	*3.75@8.00*
W. Va. Gas lump	Cincinnati	3.90	5.15	6.40	*3.75@8.00*
W. Va. mine run	Cincinnati	3.75	5.25	6.00	*3.50@7.50*
W. Va. screenings	Cincinnati	$3.35	$4.75	$5.90	*$3.25@$7.00*
Hocking lump	Columbus	3.65	5.75	8.15	*3.75@8.00*
Hocking mine run	Columbus	3.40	5.50	7.75	*3.50@7.50*
Hocking screenings	Columbus	3.20	5.50	7.75	*3.25@7.50*
Pitts. No. 8 lump	Cleveland	4.25	7.25	8.50	*7.75@8.00*
Pitts. No. 8 mine run	Cleveland	4.00	7.25	8.50	*7.75@8.00*
Pitts. No. 8 screenings	Cleveland	4.00	7.25	8.50	*7.75@8.00*
Midwest					
West Ky. lump	Louisville	4.75	10.25	7.25	*3.75@9.00*
West Ky. mine run	Louisville	4.90	10.25	7.25	*3.50@9.00*
West Ky. screenings	Louisville	4.90	10.25	7.25	*3.25@9.00*
West Ky. lump	Chicago	5.05	11.00	7.60	*3.75@10.00*
West Ky. mine run	Chicago	5.00	11.00	7.60	*3.50@10.00*
South and Southwest					
Big Seam lump	Birmingham	2.35	2.40	4.50	*2.50@4.50*
Big Seam mine run	Birmingham	2.15	2.35	4.50	*2.20@4.25*
Big Seam (washed)	Birmingham	2.40	2.50	4.50	*2.50@4.50*
S. E. Ky. lump	Chicago	3.75	9.40	8.00	*3.75@9.00*
S. E. Ky. mine run	Chicago	3.65	9.40	8.00	*3.50@9.00*
S. E. Ky. lump	Louisville	3.90	9.25	7.75	*3.75@8.00*
S. E. Ky. mine run	Louisville	3.70	9.25	7.75	*3.50@8.00*
S. E. Ky. screenings	Louisville	3.50	9.25	7.60	*3.25@8.00*
S. E. Ky. lump	Cincinnati	3.90	7.00	7.75	*3.75@8.00*
S. E. Ky. mine run	Cincinnati	3.75	5.00	6.00	*3.50@8.00*
S. E. Ky. screenings	Cincinnati	3.25	4.65	5.90	*3.25@8.00*
Kansas lump	Kansas City	5.00	5.00	5.00	**5.00@5.50**
Kansas mine run	Kansas City	4.25	4.75	4.75	**4.75@5.50**
Kansas screenings	Kansas City	2.80	4.25	4.25	**4.25@5.50**

*Gross tons, f. o. b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.
NOTE—Smokeless prices now include New River and Pocahontas.

the Rocky Mountain states, particularly Colorado and Utah, there has been an increase, partly through more active demand, partly through return of striking miners to work.

"Of all districts, Pennsylvania has been most closely watched to learn the response to the invitation to re-open mines. Preliminary returns indicate the shipments for last week (July 31-Aug. 5) will be 792,200 tons. In comparison with the week of June 24, before the Washington conferences, this is an increase of 24,000 tons or 3 per cent.

"In comparison with the preceding week (July 24-29), shipments from Pennsylvania show a decrease of 6.7 per cent. All districts except South Fork and central Pennsylvania have so far shipped less coal than two weeks ago. Up to the present time, therefore, mines that have responded to the invitation to resume operations have added but little to the coal supply of the country. The increased production has come instead from the middle Appalachians and is made possible by improvement in car supply."

All-rail shipments to New England were 436 cars during the week ended July 29, as compared with 445 cars in the preceding week. Most of this tonnage is on contract, as spot coal of the all-rail variety is more urgently needed elsewhere and New England is not yet feeling the pinch of the fuel shortage to the extent where it will pay the going price for this coal.

Hampton Roads dumpings during the week ended Aug. 3 were 277,072 net tons, nearly 50,000 tons short of the previous week's figure. New England took approximately 200,000 tons of this. There is only a small tonnage at the Roads, but conditions are improving, as the railroads supplying these terminals are now moving cars more easily.

Lake dumpings during the week ended Aug. 7 were 89,187 net tons—73,224 tons cargo and 15,963 vessel fuel—as compared with 153,890 tons in the preceding week. The season's movement to date is now 4,632,124 tons; last year it was 14,127,800 tons.

The Northwestern market is becoming skittish. Spot coal is so scarce that it is almost unobtainable and prices are strong. It is not yet too late to save the day if mining is resumed at an early date. Meanwhile, industries are swapping coal supplies around to keep the wheels turning, although the shortage is daily closing down more plants.

ANTHRACITE

A few cars of hard coal were loaded during the week ended July 29, chiefly steam sizes dredged from the rivers, the total output being estimated at 27,000 net tons. Domestic consumers are now anxiously interviewing their retailers in an effort to find out when they can expect coal deliveries. It is evident that when mining is resumed the distribution problem will be a difficult one to solve. Pea coal is still moving, but railroad demands for this, as a substitute for steam sizes, will soon render even this grade unobtainable.

COKE

Beehive coke output increased slightly during the week ended July 29, when 110,000 net tons were produced, as compared with 105,000 tons during the preceding week. The Connellsville output is at its highest mark since the strike began, having climbed slowly to a weekly figure of 72,700 tons. Coke offerings are still very light, however, as most of the increased production has been by furnace ovens.

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 inclusive	April 3 to July 22, 1922 inclusive	Week Ended July 22
U. S. total	45.6	55.7	....	....
Non-Union				
Alabama	63.5	64.6	No report	
Somerset County	55.5	74.9	44.6	36.8
Panhandle, W. Va.	55.3	51.3	44.6	44.6
Westmoreland	54.9	58.8	82.7	86.3
Virginia	54.8	59.9	77.8	51.3
Harlan	53.3	54.8	46.7	26.1
Hazard	51.7	58.4	54.0	14.6
Pocahontas	49.8	60.0	72.5	37.8
Tug River	48.1	63.7	78.2	29.9
Logan	47.6	61.1	70.4	20.2
Cumberland-Piedmont	46.6	50.6	16.4	22.4
Winding Gulf	45.7	64.3	68.6	37.3
Kenova-Thacker	38.2	54.3	No report	
N. E. Kentucky	32.9	47.7	53.5	17.2
New River‡	24.3	37.9	29.8	35.2
Union				
Oklahoma	63.9	59.6	14.6	13.5
Iowa	57.4	78.4	0.0	0.0
Ohio, Eastern	52.6	46.6	0.0	0.0
Missouri	50.7	66.8	2.2	4.4
Illinois	44.8	54.5	0.0	0.0
Kansas	42.0	54.9	16.4	27.7
Indiana	41.4	53.8	0.0	0.0
Pittsburgh†	41.2	39.8	0.0	0.0
Central Pennsylvania	39.1	50.2	11.9	13.6
Fairmont	35.3	44.0	39.8	4.0
Western Kentucky	32.5	37.7	62.6	60.1
Pittsburgh*	30.4	31.9	0.0	0.0
Kanawha	26.0	13.0	5.8	8.0
Ohio, southern	22.9	24.3	0.0	0.0

* Rail and river mines combined
† Rail mines
‡ Union in 1921, non-union in 1922.

Car Loadings and Surpluses

Cars loaded:	All cars	Coal cars
Week ended July 22, 1922	861,124	76,060
Previous week	860,907	77,334
Same week a year ago	788,034	149,805
Surplus cars:		
July 15, 1922	233,029	151,727
July 8, 1922	239,160	146,743
Same date a year ago	370,000	175,000

Kentucky January-June Coal Output Exceeds Same Period of 1921 by 5,000,000 Tons

KENTUCKY produced 17,267,132 tons of coal in the first six months of this year, in sixty-nine working days, according to the semi-annual report of the State Department of Mines, issued by L. Blenkensopp, chief inspector of mines. This was a daily output of 250,248 tons and is a net increase of 5,020,727 tons over the output for the first six months of 1921. The output during the first half of 1921 was 12,097,168 tons.

"Assuming the mines were operated full time, or twenty-four days each month, the State of Kentucky would produce 72,071,425 tons of coal a year at this rate of production," the chief mine inspector said, in commenting on the report.

Each of the eight districts in the state, except the fourth, composed of Knox and Whitley counties, showed an increase over the production for the first six months of last year. The increases ranged from 14 to 53 per cent. The net increase for the entire state over the tonnage for the first half of 1921 was 41½ per cent. The decrease in the fourth district was 49,237 tons, or 12 per cent under the tonnage for the same period last year. This decrease is accounted for by a decrease in the number of men employed in the district from 1,482 in 1921, to 767 in 1922, says the report.

The railroad strike is contributing to an increasing car shortage, which is cutting down the production about one day's output, or 250,248 tons, per week, according to production figures received recently, the report shows. The average number of days worked in the mines in the first half of 1921 was forty-five. This was raised to sixty-nine for the half year just closed, an increase of twenty-four working days.

Operators Restore 1920 Scale in Parts of Kentucky and Tennessee

A JOINT arbitration board of the Kentucky-Tennessee district, meeting in Cincinnati, Ohio, reached a decision Friday, July 28, which will restore the wage scale of 1920 to union miners in the section around Pineville, Ky., to a few mines in the vicinity of Nashville, Tenn., and along the line of the Tennessee Central Ry. The award grants an increase of wages amounting to 24c. a ton to pick and machine miners; 20 per cent increase on yardage and deadwork, and $2.50 a day to day and monthly men.

It is contended by the operators that the award is not a recognition of the union but simply is a resumption of the 1920 wage scale with the miners as individuals. The award practically is said to be the scale of wages which is embodied in President Harding's coal-settlement proposition.

Foreign Market And Export News

Orders for British Coals Canceled as Strike Settlement is Expected

CANCELLATION of some American coal contracts, amounting to many thousands of tons, placed on the British market recently, has followed the belief that an early settlement of the United States coal strike may be expected soon. In spite of this, however, the Canadian and German calls are increasing and prices are at least firmly held. Production is well taken and new business is limited by the general scarcity.

Production in Great Britain during the week ended July 22 was 4,391,000 gross tons as compared with 4,627,000 tons, according to a cable to *Coal Age*. The somewhat sudden American demand galvanized buyers in Europe and South America, who had been holding off with the idea of forcing down prices.

Coal Age's London correspondent, reading that the American miners had obtained the pledge of the British Miners' Federation not to supply coal for shipment to the United States, interviewed one of the British miners' readers, who says that no such pledge has been given. The British miners' view is that when they were on strike, America sent as much coal as it was able to mine and British labor is now returning the compliment.

Hampton Roads Pier Situation

	Week ended July 27	Aug. 3
N. & W. Piers, Lamberts Point:		
Cars on hand	600	766
Tons on hand	34,770	46,796
Tons dumped	111,026	105,752
Tonnage waiting	61,100	59,975
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	745	660
Tons on hand	41,450	35,850
Tons dumped	111,620	70,203
Tonnage waiting	79,749	78,938
C. & O. Piers, Newport News:		
Cars on hand	637	418
Tons on hand	32,000	22,000
Tons dumped	66,977	71,431
Tonnage waiting	17,970	11,455

Coal Paragraphs from Foreign Lands

ITALY—Cardiff steam first is quoted 40s. 9d., according to a cable to *Coal Age*, as compared with last week's price of 36s. 6d.

GERMANY—Production in the Ruhr district during the week ended July 22 was 1,800,000 metric tons, as cabled to *Coal Age*. In the preceding week the output was 1,760,000 tons.

British Exports, June 1920, 1921, 1922

Country	Gross Tons 1920	1921	1922
Russia	19,787	.....	78,676
Sweden	169,184	.....	186,970
Norway	89,834	.....	99,973
Denmark	68,873	2,593	203,030
Germany	.....	.....	889,644
Netherlands	2,010	.....	568,081
Belgium	65,926	.....	154,091
Faance	860,748	.....	982,071
Portugal	16,992	.....	80,863
Azores and Madeira	11,229	.....	13,034
Spain	3,079	.....	115,011
Canary Islands	27,699	8	35,604
Italy	262,021	.....	467,459
Austria-Hungary	12,379	.....	.....
Greece	268	.....	28,255
Algeria	38,328	.....	57,558
French West Africa	.....	.....	9,770
Portuguese West Africa	24,388	.....	13,609
Chile	403	315	13,541
Brazil	.....	.....	114,799
Uruguay	.....	.....	48,513
Argentine Republic	.....	.....	164,421
Channel Islands	8,241	.....	2,590
Gibraltar	79,604	.....	23,308
Malta	51,110	.....	13,292
Egypt	56,507	.....	119,485
Anglo-Egyptian Sudan	.....	.....	.....
Aden and Dependencies	.....	.....	2,817
British India	.....	.....	78,018
Ceylon	.....	.....	26,236
Other countries	61,998	4,586	202,929
Total June	1,930,608	7,502	4,793,648
Total May	2,139,261	14,066	5,057,237

QUANTITY AND VALUE OF EXPORTS, JUNE AND FIRST SIX MONTHS

	Gross Tons June	1st 6 mos.
1920	1,930,608	14,431,533
1921	7,502	6,025,448
1922	4,793,648	27,183,960
	Value	
1920	£7,932,817	£54,900,469
1921	12,677	15,433,560
1922	5,391,946	30,847,763

Hampton Roads Scarcity Is Acute

The situation was acute last week, with shipments about 50 per cent of normal, and prices soaring. Piers were dumping below standard, and movement of coal was only slightly better.

The N. & W. embargo to the North and West by rail from the Clinch Valley, Virginia, and Tug River and Pocahontas fields, appeared to be having only slight effect. This embargo applied to all grades except classes one and two, and as these are the only classes generally shipped to Tide, the embargo is expected to result in little stimulation.

The Hoover embargo on bunker coal was not being observed to any appreciable extent. Vessels are being served as rapidly and as completely as supplies will admit. Only one cargo cleared last week.

June Exports and Imports

(GROSS TONS)

	June 1921	June 1922
Exports, bituminous coal:		
By rail to:		
Canada	1,412,497	427,849
Mexico	17,830	5,937
Total	1,430,327	433,786
By vessel to:		
West Indies	21,946	8,942
Panama	8,522	19,101
Cuba	71,750	17,517
Total	102,218	45,560
France	147,333	.....
Italy	258,735	14,359
Netherlands	86,031	.....
Sweden	5,189	.....
Denmark	43,824	.....
Belgium	20,843	.....
Total	561,955	14,359
Argentine	92,727	12,893
Brazil	57,127	11,050
Chile	1,935	4,697
Uruguay	15,861	.....
Total South America	167,650	28,640
Egypt	42,619	10,995
Other countries	1,009,744	7,210
Total bituminous exports	3,314,513	540,550
Total anthracite exports	495,896	40,284
Total coke exports	.....	100
Imports, bituminous coal:		
Imported from:		
United Kingdom	.....	3,889
Canada	74,367	120,111
Japan	7,500	300
Australia	2,208	8,187
Other countries	25	2,856
Total bituminous imports	84,100	135,343
Total anthracite imports	868	64
Total coke imports	2,200	4,238

Pier and Bunker Prices, Gross Tons

PIERS

	July 29	Aug. 5†
Pool 11, New York	$10.50@$11.50	**$11.00@$11.25**
Pool 1, Hamp. Rds.	8.00@ 11.00	**9.25@ 10.00**
Pools 5-6-7 Hamp. Rds.	8.00@ 11.00	**9.25@ 10.00**
Pool 2, Hamp. Rds.	8.00@ 11.00	**9.25@ 10.00**

BUNKERS

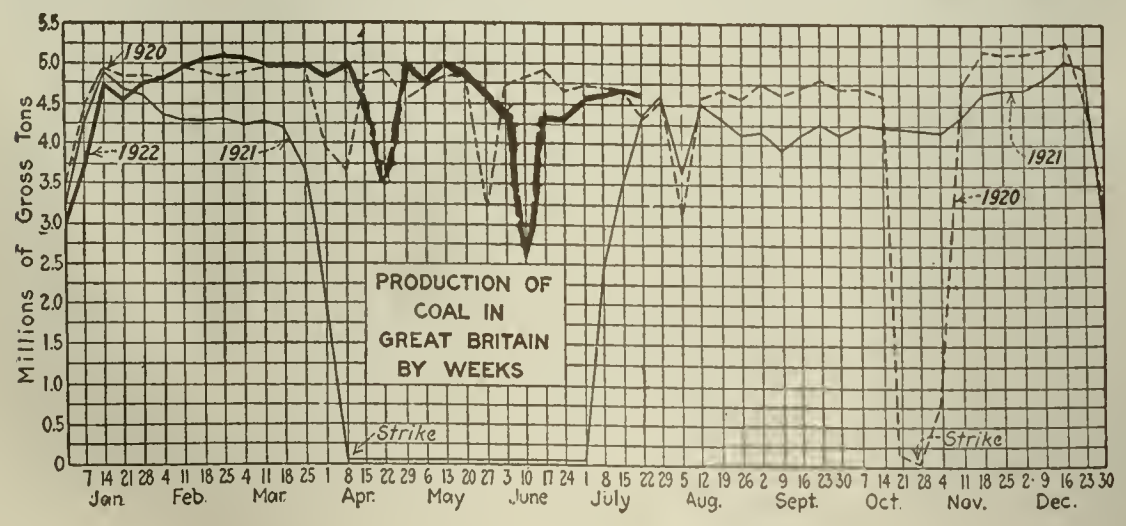
Pool 11, New York	10.50@ 11.50	**11.25@ 11.50**
Pool 1, Hamp. Rds.	8.00@ 11.00	**9.25@ 10.00**
Pool 2, Hamp. Rds.	8.00@ 11.00	**9.25@ 10.00**
Welsh, Gibraltar	43s. f.o.b.	*38s. 6d.*
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	43s. f.o.b.	*38s. 6d. f.o.b.*
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	*38s. t.i.b.*
Welsh, Algiers	38s. 6d. f.o.b.	38s. 6d. f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b.	65s. f.o.b.
Welsh, Maderia	42s. 6d. f.a.s.	42s. 6d. f.a.s.
Welsh, Teneriffe	40s. 6d. f.a.s.	40s. 6d. f.a.s.
Welsh, Malta	44s. 6d. f.o.b.	*42s. 6d. f.o.b.*
Welsh, Las Palmas	40s. 6d. f.a.s.	40s. 6d. f.a.s.
Welsh, Naples	38s. f.o.b.	38s. f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore	55s. f.o.b.	*53s. 9d. f.o.b.*
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Welsh, St. Michaels	50s. t.i.b.	50s. t.i.b.
Welsh, Alexandria	43s. f.o.b.	**44 s.f.o.b.**
Welsh, Port Said	46s. 6d.	46s. 6d.
Welsh, Buenos Aires	50s. f.o.b.	50s. f.o.b.
Durham, Antwerp	30s. 6d. t.i.b.	30s. 6d. t.i.b.
Durham, Hamburg	26a. f.o.b.	26a. f.o.b.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	July 29	Aug. 5†
Admiralty, Large	29s. @ 30s.	**29s. @ 31s.**
Steam, Smalls	17s. @ 21s.	**21s. 6d@22s. 6d.**
Newcastle:		
Best Steams	24s. @ 25s.	**25s.**
Best Gas	25s.	25s.
Best Bunkers	23s. @ 25s.	**25s.**

†Advances over previous week shown in **heavy type**; declines in *italics*.



North Atlantic

Government Plan of Control Checks Ascent of Prices

Requests for Priority Shipments Fail to Exhaust Current Output—Non-Essential Industries Hustle Before Market Is Closed to Them—Buyers Cautious in Short Market.

GOVERNMENT action to control car supply at the mines has definitely checked soaring prices. Many requests for priority shipments have been filed, but as yet these orders have not taken up the full currrent production. Non-essential industries have been active in purchasing whatever tonnage is offering before the priority door closes the spot market to them.

Buyers are proceeding cautiously, however, and refuse to pay the high figures quoted last week. Considerable bargaining has resulted, a strange feature in such an extremely short market. A feeling that the strike may be settled before much more British coal can be received here has caused several cable cancellations of orders this week.

NEW YORK

Anticipating the full functioning of the priority orders, buyers for non-essential industries invaded the market the last few days of the week and made heavy purchases. Some of these manufacturers were not actually in need of coal but did not choose to wait idly by and watch the railroads and other preferred classes pick up the available supply.

There is considerable uncertainty in the situation and the outcome of the conference held by union leaders and operators in Cleveland on Wednesday was closely watched. Some of the smaller operators are said to be willing to make contracts covering from four to six weeks or longer at prices much lower than the current market quotations.

Buying of British coal was quieter. The first cargoes are expected to arrive here about Aug. 10, although it was reported that three cargoes had already reached the harbor. It is not believed that any foreign coal will be shipped here unless it is already sold. Users of some British coal that has already been received on the Atlantic seaboard are said to be complaining of its burning qualities. Local quotations ranged $9.50@$10.50 c.i.f. Some orders for British coals have been canceled this week, apparently in the belief that the strike will be settled before the coal can be received.

Southern coals came here slowly and were quoted $9@$9.50, Hampton Roads, and $11.50@$12, New York. There were 304 cars at the local piers on Aug. 4, a slight increase over the previous week. Most of this was of Pool 11 quality. B. R. & P. coals were quoted locally $7.25@$8.25; Broadtop $8@$8.25, and Shawmut around $7.25.

CENTRAL PENNSYLVANIA

July production averaged 644 cars per day, a total of 14,075 for the month, a little below that of June. However, during the latter part of the month there was a big gain, the week ended July 30, showing loadings of 3,864 cars.

Shortage is beginning to be felt among the industrial plants of the district. Prices on the spot market are a little lower, ranging around $7.50 at the mines.

Reports from the leading operators in the district indicate that central Pennsylvania will not be represented at the conference in Cleveland. The district never was a part of the central competitive field and the operators have always made their agreements with their employees as a distinct unit.

The Pennsylvania Railroad has announced that in order to take care of the railroad's current needs, it will be necessary to obtain from the producers 20 per cent of their output. The price is to be agreed upon later.

BALTIMORE

While a state commission for Maryland has been named in order that coal movement be regulated, it has not started to truly function, as complete instructions from Washington as to procedure are lacking. Meanwhile the plan of rationing, while making some industries hold out for better prices, is by no means forcing a sharp depression in quotations. Individual prices are being paid, and willingly, to get coal at all in many cases.

The Public Service Commission sent out a questionnaire in connection with the state plan of control, asking larger industries of the state whether they had much fuel on hand, and, as another thought, whether they would share with less fortunate places in case of necessity. As a matter of fact few of the Maryland plants have large stocks ahead. The gas and electric light plant of Baltimore only has about twenty-five days' stock on hand. There is still some movement by barge from Norfolk to care for bunker needs and a small line distribution.

In July the total bunkers loading on foreign bound ships only amounted to 6,721 tons. The first ships bringing English coal to Baltimore are expected to dock about Aug. 15. Conditions in the local market at that time will have much to do with the distribution.

PHILADELPHIA

Heavier arrivals have been noted during the past week. Many a would-be purchaser, however, is deferring orders in the hopes of a quick settlement of the strike. Prices for spot coal are still high, still running from $7@$9, although little is believed to have been sold at the high figure recently.

If anything there is a slight decline in quotations, and a fair quantity of coal has been sold at $8. This may have been caused by the proposed priority orders of the I. C. C., which, while they have not as yet taken effect, have had a tendency to keep some purchasers in the background, believing that they will be able to get a more favorable price.

Good business with the large industries and utilities continues to go forward on foreign coals. Early in the week houses handling this coal reported some difficulty in arranging for boats. as the prices of charters have increased considerably. Orders placed now are mostly for September delivery, although it is quite possible some free cargoes are still afloat.

FAIRMONT

Although there was a rather marked increase in the number of mines in operation during the closing week of July, that was due more to an improvement in transportation than to any general response on the part of the miners to the President's appeal to return to work. Operators engaged in a general effort to put mines on an operating basis, secured injunctions, placing guards on duty and cleaning up mines in general.

UPPER POTOMAC

A production of about 25,000 tons ror the last week of July was being taken care of without any trouble by the Western Maryland, which was also furnishing all the cars needed. Approximately 40 mines in this district are now producing. Intimidation of men who want to return to work is the principal barrier to further operations.

West

KANSAS CITY

The coal shortage is being felt very acutely and prospects for increasing the production is not so bright as a week ago. Some of the miners that have been working right along have quit or at least failed to report for work and two large mines that have been producing are idle for the first time in several months. The rumor is that Howatt is responsible for this and his action is another slap at the industrial court law of Kansas.

The public is getting all "het up," and feels that the strike should be settled right even if it takes all year to do it and there should be no temporizing.

SALT LAKE CITY

Although more coal is being mined than in 1921, operators are not able to properly take care of the demand. One prominent retail house is asking its customers to accept less than half what they order, believing that coal will be more plentiful by Jan. 1.

Railroads that never bought in Utah before are now taking 30,000 tons a day. All railroad demand cannot be filled. Anxiety is felt lest the coal situation will hamper essential industries.

There is from 20,000 to 25,000 tons in the yards of the city, and about half of this is in the hands of one concern owned by a large operating company. It looks as if the independent dealer will have a hard time of it.

Anthracite

"When Can Anthracite Be Had?" Is Burning Question

Resumption Not in Sight, Dealers "Book" Orders or Substitute Pea Coal—Commercial Shortage of This Size Likely Soon—Distribution Problem Will Be Difficult on Resumption.

ALL in the trade now fully realize what a serious condition confronts the consumer of anthracite. The principal question addressed to retailers is when coal will be available. No tangible move is in sight to insure the resumption of mining and dealers can only take orders for future delivery or substitute at this time with shipments of pea coal. This size is moving fast and the request of the railroads that mine storage tonnage be held for their use will soon cause a commercial shortage. It is evident that when mining is resumed the question of distribution will be a difficult one.

River coals are very active and a large quantity of this fuel is being mixed with bituminous. Prices have risen, quotations ranging $2.75@$3 f.o.b. mines.

NEW YORK

The principal topic discussed by consumers nowadays is when they can expect shipments. There is practically no coal to be had.

With the situation becoming graver because of the trouble in the soft coal fields, the railroads began using pea and finally took in the available supply. The companies now have none to offer.

To most of the trade it is becoming more apparent every day that the movement of anthracite, after the mines resume operations, will be one of distribution and that well-laid plans will have to be formulated so that the coal will be evenly divided.

There are the usual orders on the books of local dealers covering the tonnage generally requested by regular customers. Dealers believe that owing to some "wise" buying in March and April house owners have a good supply on hand to start the winter.

There was some independent pea in the harbor that was quoted $12@$13, alongside. Stock buckwheat was $10.50 @$11, alongside; screenings, $2.25@ $2.75 at point of loading and river barley, $2.50@$2.75.

PHILADELPHIA

The present situation parallels the strike of 1902, at least in the matter of duration, although it will take a month yet before the present suspension equals that of the former year. However, at this time it seems altogether likely that the record will be reached, as no tangible move is in sight to insure the return of the men to work.

Each day shows a fast increasing concern on the part of the consumer. The dealers who ordered pea are in most instances delivering it as fast as it comes in, and the shippers are being pressed for shipment on the balance of the orders.

Some dealers have advised their customers that the time of resumption is still very uncertain and advising them to take a few tons of pea coal. In one instance this has resulted in the dealer's entire stock of pea being taken up and he has refused to sell any more to transient trade. The price of pea at retail strengthens and most sales are being made at $11, the old winter price.

The trade in river barley is active and a large quantity is being bought for mixing with bituminous coal. While no price higher than $3 is heard, the difference between minimum and maximum quotations has shortened considerably. Most of the coal is now being moved from $2.60@$3.

BALTIMORE

With only a small quantity of pea coal left, hard coal dealers are at their wits' ends to advise regular customers. Some are suggesting the purchase of some soft coal to tide over the first weeks of cold weather. Few dealers can see how everybody is to be supplied with even a little coal should the strike continue until Sept. 1. There is some new talk of using coal dredged from the bed of the Susquehanna River, but this fuel will not burn properly without a special grate and a special "blower" attachment.

The public is growing uneasy at last and the entire situation seems sure to grow tense in the next few weeks.

BOSTON

Retail dealers have now been reduced to minimum reserves of prepared coal for hotel, hospital and other current uses. Interviews with representative distributors disclose stocks only for a few weeks at the most. Another month of mine idleness will force an active interest in wood and oil for household fuel.

The last available shipments of pea size are going forward. What pea is left in storage is being saved for locomotive fuel and there is little chance of augmenting supplies of this size for domestic use.

BUFFALO

The trade is practically dead and oddly enough nobody seems to be disturbed by it. Some consumers would put in a supply if they could get it, but nobody is in a hurry.

One reason for expecting a decline in price is probably because soft coal is pretty sure to drop as soon as mining is resumed. It is even expected to go down just as soon as the time is set for resumption of mining. So the consumers of anthracite are on the watch for something of the sort in their own trade. The wise consumer has learned that substitutes, along with the steam sizes of hard coal, will be on the market at a reduction and they can be put in. In fact it seems likely that they would have to be put in to help out.

Coke

CONNELLSVILLE

Production is believed to be increasing constantly, but at a very slow rate. The strikers seem convinced that they are going to win. Many operators are making constant efforts to attract men back to work but can hardly be said to be pursuing anything like a strenuous policy in this respect.

In the open market, prices reached their top point Aug. 1, when the market was firm at $14.50 for furnace coke and $15.50 for foundry coke, with reports of some sales of good brands of foundry coke at $16.50, if not at $17. Coke offered as "furnace coke" does not go to blast furnaces, the price being prohibitive, and is probably taken by foundries simply as a second or third grade material. The market has softened a trifle from the top point, being now quotable $13.50@$14 for furnace and $15@$15.50 for foundry.

The *Courier* reports production during the week ended July 29 at 58,480 tons by the furnace ovens, an increase of 1,900 tons, and 14,220 tons by the merchant ovens, an increase of 2,130 tons, making a total of 72,700 tons, an increase of 4,030 tons.

UNIONTOWN

Much like the voluntary price agreement plan, the enforced coal price program through distribution of car supply has so far proven entirely feasible on paper but not of sufficient strength to combat an acute need for fuel. It may be said, however, that the first slump in coal prices was in anticipation of the Hoover price plan being enforced immediately and when day after day passed without any effort to divert the tonnage produced here from its original channel, the market commenced stiffening slowly.

Operators have definitely commenced to recruit their labor forces outside the region. With the local workers more determined than ever, after four months of idleness, to force recognition of their union hope of resumption with former employees apparently has passed. Many men are coming from the Southern fields but it is reported that quite a few are union miners coming from other districts for employment.

There is no troop protection in Fayette County, Sheriff I. I. Shaw having announced that the state police and mine guards were able to handle the situation. There is, however, a growing sentiment demanding that more positive action be taken to put a stop to outrages against men willing to work.

BUFFALO

The market is nearly a blank. The ovens are asking $15@$16 for any good grade and consumers are holding off as much as possible. Connellsville is taking out some banked coal and part of that goes for coke, but the supply is very limited.

Chicago and Midwest

Midwest Market Is Still Abnormal and Unsettled

Everybody from Operators to Dealers Holds Up Prices and Sits Back to See What Will Happen—Priority Scheme Starts Haltingly.

THE whole region has been upset all during the week by the way in which the new priority scheme of coal distribution started into effect. Everybody expected a sudden and effective drop in prices of all Kentucky coals, a flood of shipments on priority and a fairly certain car supply to all fields. The drop started but never finished. The flood of priority orders was only a small stream and car supply, while starting well enough at the beginning of the week petered down on the Louisville & Nashville to the same old 20 and 30 per cent. The general result on Saturday was that some coal was moving on priority orders at the government price of $3.50 from operators who were irate because there remained a good deal of free coal at prices ranging $6.50@$10 or more.

Illinois particularly was upset during the week by the report of a shut-off of all coal from outside the state and west Kentucky, in Chicago, which had dropped to about $9, bounded sharply up to $12 and then down to $10 when rather uncertain assurances came that the shut-off would not be complete.

CHICAGO

All eyes and all minds in the coal industry during the past week were on Washington and on the fuel distribution system supposed to have taken full effect during that period. Prices on this market did not slide to the bottom, as some expected, for two or three reasons. They stayed up during the fore part of the week because it was anticipated at the outset that the coal then rolling and north of the Ohio River would be about the last fuel on the market here for awhile. Then, when Kentucky mines did not swamp under priority orders and when car supply did not rise much if any above former unsatisfactory levels, a little coal kept coming in at $9 or more.

Then when Robert M. Medill, state fuel distributor, stated publicly that Illinois could not expect any more coal from outside the state, the market, already skittish, suddenly vaulted again to $12 only to quiet down on Saturday to $10. It was generally said, by well-informed coal men, that the outside supply could not, in fairness be cut off from this state. Mr. Medill, in a message to *Coal Age* Saturday said the Illinois supply had not yet been cut off but that the state cannot expect to get "even a large part of our requirements."

Western Kentucky was about the only coal traded on this market during the week. A few cars of eastern Kentucky came in at $8.50 but that was all.

ST. LOUIS

With a week's supply of coal left, St. Louis faces a real famine, although this is not going to be as disastrous as might be expected, for all the larger plants have gone to using oil. The latest addition is the Illinois Glass Co., at Alton, and practically all of the big plants in the east side industrial district have gone to oil. St. Louis every day sees new oil users, especially among those plants that would not be classified as essentials. The Union Electric Light & Power Co. has two weeks' supply ahead and nothing further in sight. The United Railways has gone to oil.

The mayor declined to do anything about the famine but Governor Hyde appointed a fuel administration. It consists of McIndoe of Joplin, chairman of the public service commission, as chairman, E. J. Wallace of St. Louis, E. R. Sweeney of Kansas City, Attorney General Jesse W. Barrett, Edward P. Diel of Charleston, Colonel James H. McCord of St. Joseph and E. L. Wilheit of Springfield.

Kentucky coal is selling at $5@$10 at the mine. All roads excepting the I. C. are observing the priority rules. Alabama is selling $5@$8 at the mine. No West Virginia is coming in and very little Missouri.

INDIANAPOLIS

There is no such thing as a coal market in Indiana now. Demand is big but orders are not being booked even by those who have West Virginia or Kentucky coal for sale because the car situation is growing worse. The utilities of the state who can use Indiana bituminous coal are watching the efforts of state officials to mine sufficient coal to keep them going.

There is some coal drifting into the state from outside sources, but the supply is suffering and there is a positive shortage at the present time. Each day brings reports of more industries shutting their plants because of inadequate fuel. A survey of the situation shows hundred of plants burning their reserve supplies and dozens will be forced to close down within the next week unless there is a change. Prices, naturally, are strong where coal is available.

SOUTHERN ILLINOIS

Quiet still prevails in southern Illinois, although the miners are restless and are finding it hard to make both ends meet.

A few wagon mines are getting out coal for local purposes at a few points in southern Illinois but the tonnage is small. One of these is reported in the Carterville field and a few others in the Standard district. During the past week miners at O'Fallon prevented the loading of several thousand tons of slack that had been on the ground for a few years, which had been sold to the City of St. Louis for the waterworks. The union officials notified the drivers that unless they wanted a repetition of the Herrin affair that they had better let the coal alone. They let it alone.

WESTERN KENTUCKY

A good deal of priority business is reported on the L. & N., while the I. C. does not appear to have very much of this business so far, and with an almost full car supply has been able to furnish more equipment for commercial business than the L. & N. At Madisonville the L. & N. agent is refusing billing on cars unless on priority, or consigned to railroads and utilities.

On priority and railroad or utility business Hoover prices are said to control, plus 8 per cent brokerage if buying is not direct. Prices on commercial business, where there is no priority, were reported sold at as high as $10 a ton this week though prices wavered from $6.50 up.

Operators are dying hard when it comes to acceptance of the Hoover prices, and are holding out for everything they can get, on the basis that priority will eventually take care of all production, and that there are not enough priority orders at this time to enable anyone to withhold cars where Hoover prices are not maintained. Western Kentucky has not accepted the Hoover price, except contingent upon satisfactory car supply. This it has not received.

LOUISVILLE

Tightening up of the market on open commercial coal is resulting from priority orders, and the fact that it is almost impossible to make shipments over the L. & N.—that is from L. & N. mines—except to railroads, utilities or on priority orders.

Local jobbers reported at the end of the week that Chicago is offering $10 @$10.50, where car numbers of coal rolling can be supplied. It is hard to determine a market on either eastern or western Kentucky, as reports are received of some $6@$6.50 coal, and of other coal sold at $10 in both fields.

It is reported that operators who are supplying tonnage at $3.50 are getting a bit wrought up over the fact that others are continuing the high quotations.

Canada

TORONTO

The public is now thoroughly aroused to the seriousness of the situation, indicated by a shortage in the normal coal supply, estimated at 800,000 tons. There is no anthracite now procurable except a limited amount of pea and buckwheat.

The Civic Board of Control has ordered $100,000 worth of Welsh coal for immediate shipment, and has asked for an additional appropriation of $500,000, in order to have an emergency supply on hand during the winter.

Eastern Inland

Cleveland Conference Delays Buyers and Reduces Prices

Believe Settlement May Soon Be Reached—Spot Tonnage Exceeds Priority Orders—Lakes May Be Aided By New Government Fuel Committee.

EVERYONE is watching the Cleveland conference of producers and miners. The feeling is prevalent that a settlement may be evolved therefrom and this is quite a factor in delaying coal purchases. At the same time, operators have found that they still have free coal to offer, in addition to the priority orders for so-called essential industries and prices have softened from last week's peak.

Commercial coal is moving warily, as no one wants high-priced fuel confiscated at Hoover levels. Lake business is still light, but the Northwest needs may yet be safeguarded by the efforts of the Lake branch of the Federal fuel committee.

CLEVELAND

Coal for retail distribution and for so-called essential consumption is considerably stronger, despite the priorities in the movement of fuel effective under orders of the I. C. C. Most of the open market coal is now coming from the Pittsburgh district, at $8@$8.50.

Early this week, operators and wholesalers were unloading at $6, expecting a price of $3.50, or within the Hoover maximum. The B. & O. has started moving coal only on the priority list, but it is finding that not enough orders are in to make the priority movement necessary. As a result, the rule has been lifted temporarily and coal again is being loaded for industries in general. This development has helped to strengthen the Cleveland market.

Applications are being filed by those who believe themselves entitled to coal under the priority regulations. The railroads serving the Southern coal producing territory still are clogged at the southern Ohio gateways. Sentiment is expressed that the government should divert locomotives from other roads to the non-union coal territory so that these roads could move out the coal accumulated on the mine sidings and railroad yards.

The total number of cars of soft coal received in the Cleveland district last week took a sharp turn upward. Up to Saturday, five of the seven railroads running into Cleveland had brought in 682 cars of bituminous coal for all purposes. This was the best six days' receipts on these roads since the week ended July 8. Receipts for the week ended July 1 were 1,145 cars; July 8, 838 cars; July 15, 545 cars, and for the week ended July 22, 489 cars.

EASTERN OHIO

The quantity of coal available in this section increased slightly during the week because of accelerated operations by stripping mines and the release of more non-union coal from the congested Ohio River gateways. The acute distress more apparent ten days ago seems to have subsided, somewhat due principally to curtailed industrial activities rather than the fulfillment of fuel requirements. Buyers of steam coal are holding off in anticipation of an early settlement of the coal strike.

The effect of the growing coal shortage is indicated by reports from various industrial centers in eastern Ohio. Blast furnaces are being banked in the Youngstown district and the Youngstown Chamber of Commerce has appointed a special fuel committee to superintend distribution of coal to domestic consumers and priority orders to industries.

In the Lake trade bunker coal is difficult of procurement and many steamers are either being delayed or discontinued temporarily.

At a meeting of the Lake coal forwarders and dock men, held in Cleveland recently, plans were made for securing a fair share of coal in order to take care of the railroads and public utilities in the Northwest.

NORTHERN PANHANDLE

An effort on the part of one large company to resume operations, even on the basis of the 1920 scale was attended by no success, the 1,300 miners employed declining to return to work in the absence of any nation-wide agreement. Operations in the Northern Panhandle have been affected by the proximity of these open-shop mines to the Pennsylvania and Ohio lines. Notwithstanding this production continues on a fairly large scale.

COLUMBUS

Operators are playing a waiting game, scanning every effort made to settle the coal strike. The position of the operators, as expressed through the officers of the associations is unchanged, that is, to refuse to enter the four-state conference, but to negotiate either by states or mining districts.

Only a limited amount of coal is moving and a large part is going to railroads for fuel. Federal and state fuel commissions have not started to function to a large degree and as a result some commercial orders are being placed, where priorities are not regarded.

Stocks in Columbus are generally sufficient for 30 days on the average. So far no manufacturing plant of any consequence has been compelled to suspend operations. Public utilities are supplied for a time and the same is true of municipalities.

With the opening of the stripping operations at New Lexington a larger tonnage is being produced in Ohio, although no large mines have accepted the invitation of the President to reopen.

PITTSBURGH

While some men are reported at work in certain mines, there is no actual production reported. It is said that many of the miners believe their strike is practically won, the refusal of the Pittsburgh and other districts to go to the conference at Cleveland called by President Lewis not having made an impression as yet.

Coal movement in the Pittsburgh district, involving non-union production from the Connellsville region, Westmoreland County, etc., has not yet been affected by the priority system or price regulations being formulated at Washington. Buyers are receiving coal they have purchased and there is little if any confiscating by the railroads.

From the top point of $8.50 for Connellsville steam coal, reached on July 26, the market reacted sharply, owing to withdrawal of buyers, until on the morning of Aug. 1 the price was down to $6. Consumers then began taking hold again and prices stiffened, the market averaging about $7 in the past few days. Westmoreland gas has hardly been traded in at all. A little Youghiogheny gas has been in the market, at $8@$8.50 lately, while recently prices up to $9@$10 were paid.

Production in Westmoreland County is fairly heavy. In the Connellsville region there are almost constant gains.

DETROIT

Interest is centered on the state and county organizations which are being built in the effort to increase the supply of coal brought to Detroit and Michigan. Meantime, results of the present curtailed movement are being reflected in reports of industries and utilities confronting suspension of operation unless their supplies are replenished within a few days.

Outlining his plans to the Board of Commerce, C. F. Dunn, the Detroit fuel administrator expressed a desire that he be given complete authority to act without being subjected to the delay probable if he is required to refer matters to the Michigan securities commission or the state fuel administrator.

For the present the efforts of the county fuel administrator will be directed toward getting supplies for the utilities and users of steam coal. The matter of replenishing supplies of domestic coal will remain in abeyance until needs are more urgent.

BUFFALO

The situation is a trifle easier, apparently because the cars are moving faster than they were. The consumer is also helping out by refusing in a good many cases to buy at prices above $8.

Everybody is convinced that more mining is going to be done before many days.

All sorts of prices are now paid. If a consumer is in a bad-enough way he will pay $9 for it, but as a rule this section is holding off, in the hope, it appears, that something is going to be done. There are prices for what is called good slack as low as $4.75 and there are prices all the way between.

The worst feature is the difficulty in getting Lake fuel. All prices up to $10 are asked for it, with the amount usually limited to 50 tons. For July the total was 57,700 tons and for the season 832,910 tons.

Northwest

If Mining Resumes Now Northwest Will Rejoice

Experts Figure Region's Needs Can Be Satisfied—Shortage Now Is So Sharp Northern Mines Are Closing—Market Gets Wilder.

THE Northwest is praying for a resumption of mining during the first half of this month—and is beginning to count on it. The general opinion is that if production starts within that period, enough fuel will penetrate this far to stave off suffering. Things are now at a serious pass, however. Many Northern mining industries are closing down, shipping is hampered not only by high bunker prices but by absolute exhaustion of coal at some ports and the coal trade is thrown into confusion here and there by the seizure by railroads of coal on its way to consumers.

A fuel census of Minnesota now going on shows that supplies are at the lowest ebb and that demand from many sources is going to be much heavier than has been anticipated. Freight rates on wood in Minnesota have dropped 20 per cent to help that fuel to reach market.

DULUTH

Many industries over the territory served from the Head of the Lakes docks will be compelled to close down within a few days on account of coal shortage. The sales manager of one of the dock companies had to refuse an order for 500 tons of lump from a mining company on the Mesaba Range. The mining company manager, who had received 14 turndowns from dock companies, said the mines would have to close down. Other mining and industrial concerns are in the same boat.

Ivan Bowan, state fuel administrator, estimates Minnesota's small-town needs up to April 1, 1923, at 560,831 tons of soft coal and 142,958 tons of hard, a total of 703,789 tons. He believes Northwest threshers must have 1,000,000 tons. Well-informed men estimate the requirements of this market up to May 1, 1923, at 1,200,000 tons of anthracite and 8,500,000 tons of bituminous, allowing for approximately 3,600,000 tons of coal on the docks when the season of navigation opened on April 21, last. Dock operators think the necessary tonnage can be moved from Lake Erie ports if mining is resumed during the first half of this month and provided the railroads can do their part.

Docks with anything to sell are asking $8.50 for Youghiogheny, Hocking and splint lump, and up to $6.50 for screenings. Anthracite prices are unchanged.

MILWAUKEE

The coal market at Milwaukee is completely paralyzed. One coal company, which had a fuel contract with a railroad centering here, which it could not fill because of prior obligations, is having its coal on track confiscated by the railroad. Another company, which contracted to deliver 12,000 tons to city institutions, has defaulted on its contract. The company had been paying $7 per ton to secure coal to deliver at $5 as per contract. Another company asked to be relieved from a clause in its contract with the city covering the thermal units of coal.

State institutions and Milwaukee municipal buildings will be among the first to be benefited by priority orders to be issued by the Wisconsin fuel administration.

No cargoes have been received by Lake thus far in August. July's cargo receipts aggregate 167,799 tons of soft coal, making the season's receipts thus far 774,060 tons. About 700 tons of hard coal screenings represent the total receipts of anthracite thus far by Lake. Last year 503,158 tons of anthracite, and 1,515,293 tons of soft coal had been received up to August 1.

Following is the schedule of soft coal prices at retail put into effect Aug. 1; Pitts., Hock. & Yough., $7.25@$10.25; West Virginia, $7.50@$8.50; Pocahontas, $7.25@$11.75; Smithing, $11.25;Kanawha gas, $8; Illinois and Indiana, $7@$8.50; Coke, large sizes, $14, pea and nut, $10.

MINNEAPOLIS

Despite gloomy reports from all sources, this region persists in believing a relief from its fuel shortage is about to appear. It is difficult to imagine how enough hard coal can reach here to satisfy the demand, but bituminous prospects, coal men think, are better.

Just now threshing is beginning to suffer for want of soft coal, however. A 20 per cent decrease in freight rates on wood is expected to help move that fuel. Prices are starting to fluctuate and may continue to do so all winter, for each shipment may be in a class by itself as to cost of handling and other factors. The Lake situation may be remedied through the efforts of the newly-appointed members of the Lake branch of the Federal fuel committee.

New England

Buyers "Wait and See" Before Entering Spot Market

Smokeless Agencies Wary of New Business, Pending Federal Advice—Spot Market Offers Little Tonnage, But Rail Conditions Improve.

THE market here has shown no material change since a week ago. Political gestures have had the effect of postponing buying and there is a general inclination to "wait and see," before negotiating purchases. A few houses are dealing actively in British coal, especially for distribution Inland, but there is hardly enough pressure yet to force any very comprehensive business.

What coal is available at Hampton Roads is being applied almost exclusively on contracts and because the aggregate spot tonnage changing hands at the piers is relatively small there is little data on hand to gage current quotations. The smokeless agencies have apparently concluded to confine themselves exclusively to old sales, pending some clearer direction than has yet emanated from Washington. Meanwhile the railroad labor situation is much clarified.

Improvements are reported on the three roads terminating at Hampton Roads. Certainly if corresponding gains can be made next week on the N. & W. and C. & O. there will be enough increased flow of coal to strike a different sort of ba'ance with respect to New England's supply. It will then be interesting to see whether representative operators will take a leaf out of the book opened by the railroad managers or whether they will submit to distribution by novices regardless of their contract obligations. The farsighted members of the trade are hoping that developments during the month will remove all possible excuse for the wasteful paraphernalia which some are so eager to erect. The lessons of 1918 and 1920 are soon forgotten.

Taking into account the inroads by oil, the textile strike, and reduced traffic generally, present reserves are larger than would justify hysteria, although of course, much will depend upon non-union output the next six weeks. No industry here has the fat margin to work on that was typical in 1918 and there will now be a disposition to "stop, look, and listen" before entering into blind obligations to accept any kind of coal on any old price. The trade, too, will be less likely to underwrite extravagant distribution than was the case during the war period.

Householders who customarily use anthracite will not take kindly to bituminous as a substitute. If one reasonably uniform grade could be assured them, there might be some possible hope of replacing temporarily a certain tonnage, but without doubt they are to be told "coal is coal" and an already deep-seated prejudice against the industry will be immeasurably increased. To the dealer, whether wholesale or retailer, it looks like a joyous winter!

Cincinnati Gateway

Present Emergency Reveals Queer Angles of Coal Trade

Uncertainty in Regard to Priorities—Ruling Without Enforcement Machinery Called Fallacious — New Dodge Evades Hoover Prices—Smokeless District Holds to Hoover Level.

BUSINESS in coal is full of all sorts of queer corners, and, with its pivotal position, the Cincinnati gateway has developed a host of them. At this writing it is difficult to say whether priorities are on or off. The fallacy of creating a ruling without the machinery to back it up is glaringly shown here. Right now there is a large seepage through of cars accepted by agents in the mining districts on billing without any strings attached to them. With these coming through devoid of permits they have given the jobbers and wholesalers something to play with —something that is marketable above the Hoover prices.

This is especially true of L. & N. shipments. The smokeless districts, on the other hand, were holding to the Hoover prices as the basis of trade.

CINCINNATI

Billing and station agents on the C. & O. are held to strict accountability for the permits that are issued so that there are few cars that can be snatched out of the priority pot there. The N. & W., too, have seen to it that their men have been informed of the necessity of watching priority orders, yet here and there a few cars slip through. On the L. & N., however, quite a large number of cars have found their way to the hands of the wholesalers and in consequence these have been going to industries and buyers far down on the preferred list, providing that they will pay the price.

Like all other dealers in surreptitious quantities there is a wide divergence in the price of this coal. The first of the month and succeeding days saw the range of $6.50@$8, quality or preparation cutting no figure. It would appear that those with the low price desired to move what they had before they got their fingers burned.

Locally there has been another boost at retail. Most of the concerns are asking $8.50 for Pocahontas lump, $7.50 for mine run, $7.50 for bituminous lump and $6@$6.50 for slack. This advance was made because the slower deliveries on contract necessitated getting coal in the open market. A move is being made to get a district order to hold up deliveries of retail coal to consumers made upon the lower basis of spring and summer.

HIGH-VOLATILE FIELDS

Kanawha

With the C. & O. concentrating upon the movement of coal from the Kanawha field, conditions began to improve about the beginning of August, even at a time when production in other and adjoining fields was greatly curtailed as the result of a car shortage. Government agencies were beginning to function and prices were steadier.

Logan and Thacker

The accumulation of 3,500 cars in the Logan field is being gradually reduced. At the outset of August there was a slight improvement in the car supply and production began to move upward again. There has been no effort to profit unduly by the emergency and soaring prices have been materially reduced as a result of the warning as to car supply where high prices are extorted.

Until the end of July Kenova-Thacker mines were not producing more than half the output of June owing to the inability of the mines to secure cars.

The irregular supply made it impossible to work more than half time. With embargoes against the movement of all freight except coal, livestock and foodstuffs, operators anticipate a better movement. Committees are functioning in the distribution of coal and prices are approaching normal once again.

Northeastern Kentucky

After experiencing a shortage of cars so serious as to reduce the output to 55,000 tons per week as against a potential capacity of 288,000 tons, the field is beginning to recover, although production is still hampered by the lack of an adequate supply.

LOW-VOLATILE FIELDS

New River and the Gulf

Although more New River mines are operating, yet production has been greatly curtailed as a result of the inability to secure equipment promptly. New River companies are lending their full co-operation to the government in the effort to get fuel to the market promptly and to take care of needy consumers, most of the tonnage shipped moving at the Hoover maximum. There was a decided slump in prices on all grades during the closing week of July or just as soon as the car supply became dependent upon an observance of fair prices.

Production in the Gulf, notwithstanding a shortage of cars entailing a heavy production loss, remained at about 150,000 tons per week throughout July, and as August was ushered in there was a slight improvement in the transportation situation which had the effect of enabling mines to increase their output.

Pocahontas and Tug River

Serious inroads on the Pocahontas output were experienced during the closing days of July as a result of the poor car supply, production being reduced from about 450,000 tons per week to less than 250,000 tons per week, with car shortage losses aggregating almost 400,000 tons. Western connections of the N. & W. were slow in getting empties back to that line. There appeared to be a slight change for the better by the beginning of August, however. There is a probability that the Pennsylvania, under the new fuel order, will secure the bulk of its fuel supply from the N. & W. territory, including the Pocahontas field.

As July came to an end the output of the Tug River field was not over 50,000 tons a week or just about half of the total produced in recent months. Mines could produce no more owing to a lack of cars and to an accumulation of loads. Although the demand was just as urgent as it had been, yet prices were settling back to the Hoover maximum after a brief period of soaring.

South

BIRMINGHAM

Demand continues strong although the situation has eased some from the tenseness of a week ago. Orders are still to be had far in excess of the supply, and so far government control of distribution has not functioned to such an extent as to interfere materially with the normal movement. A large tonnage is moving into the West.

The demand for spot domestic is also good, the supply being somewhat short of the needs at this time. Practically all of the output of the Cahaba mines producing domestic sizes has been contracted for and the better grades are scarce.

Operators have generally agreed to abide by the Hoover price schedule during the present emergency and observe priority orders placed at their mines, it being the intention of the district committee to so distribute preferential business as to interfere as little as possible with regular customers.

Prices on the various grades under the fair-price schedule will be about as follows, f.o.b. mines:

	Mine Run	Prepared
Big Seam	$2.20	$2.50
Carbon Hill	2.60	2.80
Cahaba	3.20	3.50
Black Creek	3.20	3.50
Pratt	2.60	2.80
Corona	2.60	2.80

Higher prices can easily be obtained for all grades of coal than the schedule above and of course a minority is taking advantage of them, as is always the case. Contract prices on domestic coal for August range $2.45@$4.55.

Production is being interfered with very materially by car shortage. The railroads otherwise are furnishing very much better service, as freight is moving more promptly and regularly as a whole.

VIRGINIA

Steady decreases in production marked the course of events during the last part of July, with a prospect, however, that there would be an improvement in transportation conditions. Mines served by the C. C. & O. are producing at a heavier rate than others in the field or at about 71 per cent. Prices began to break as soon as it became apparent that cars would not be furnished to operators charging more than a fair price.

News Items From Field and Trade

ALABAMA

David Roberts, Jr., trustee for the Montevallo Mining Co., has moved the general offices of this company from 1903 American Trust Bldg., Birmingham, to Aldrich. The sales department will in future be located at Aldrich, also.

ARKANSAS

A decree of foreclosure and sale against the property of the **Arkansas Coal & Land Co.** was made by the Federal Court, Ft. Smith, recently. All the property of the company in Johnson and Logan counties is to be sold at public auction on Aug. 28, at Clarksville. The property to be sold includes the $300,000 judgment held by the **Pennsylvania Mining Co.** against the United Mine Workers, as an outgrowth of the labor troubles at Jamestown, Ark. The Pennsylvania company's property was later transferred to the **Fernwood Mining Co.**, and the two mines, among the largest in that section of Johnson County, are known as Fernwood Nos. 1 and 2. The decree placed a minimum sale price on the property of $200,000. The sale was decreed to be subject to the approval of the Federal Court.

CONNECTICUT

Governor Everett J. Lake has appointed a committee to control the fuel distribution in the state. It consists of, John M. Wadhams, chairman, Torrington; E. Kent Hubbard, president of the Connecticut Manufacturers' Association; Ralph D. Bugbee, of Putnam; State Treasurer G. Harold Gilpatrick; State Comptroller, Harvey P. Bissell; and Tax Commissioner, William H. Blodgett. It will be the duty of the newly appointed commission to see that the industries of the state will not suffer; and also have charge of domestic fuel.

G. E. Willis & Son, Inc., Manchester, is planning to establish a new coal yard on the Volvoline Oil property in that city. Twelve coal bins of 200 tons capacity each will be provided and the latest coal handling equipment will be installed.

The Central Coal Co., New London, has awarded the contract for the erection of a $20,000 coal shed building.

ILLINOIS

John M. Poepperling of the Jewel Coal & Mining Co., St. Louis, was in southern Illinois recently. While in the district he spent a few days at Du Quoin where the company has two mines located.

T. C. Keller, head of the Indiana & Illinois Coal Co., Chicago, was on a business trip in the southern part of the state recently.

Reports have been confirmed of the purchase of a strip of ground near Mt. Vernon by the **Wabash, Chester & Western R.R.** The company will build a switching yard which will be used exclusively for coal. The road recently was taken over by the interests of the **Southern Gem Coal Co.**, of Chicago, which also has a number of mines located along its route. The company has had too little storage room for loads during the past three winters. The yards are to remedy this.

INDIANA

Coal production will be the principal business of the **Dugger Martin Coal Co.**, recently organized at Sullivan, with a capital stock of $250,000, although the company reserves the right to engage in any sort of mining business. The organizers of the company are O. H. Martin, Oliver Steele and M. E. Dugger.

The White & Wright Coal Mining Co. has been organized at Clinton, for the purpose of doing a mining, jobbing and retail coal business. The organizers of the company are James A. Wright, Charles J. White and O. Ray Cook.

Morgan E. Greene, F. M. Goble, Russell Shumard, Thomas Goble and Ray E. Greene are the organizers of what is to be known as the **Greene-Goble Coal Co.**, recently incorporated at Shelburn. The company will do a general operating business.

Phelps F. Darby, an attorney of Evansville, has been named receiver of the **Possum Ridge Coal Co.**, which owns a coal mine in Warrick County, about two miles west of Boonville. The receivership grows out of the failure of Fricke & Blair Co., which has been operating the Possum Ridge mine for several years.

William Schrolucke, receiver of the **Metropolitan Fuel Co.**, of Indianapolis, will sell the personal property and assets of the company at a receiver's sale Sept. 7. The company was forced into the hands of a receiver when suit was brought against it by one of the big Indianapolis insurance agencies.

KENTUCKY

The Boone Jellico Coal Co., of Pineville, has been formed by officers connected with the Boone Coal Sales Co., Cincinnati, and several residents of the Pineville district. The officers of the company are M. F. McDermott, president; John Emslie, vice-president; Wheeler Boone, secretary and treasurer. Capital $50,000.

While state troops protected some of the involved operations, several mines in Bell County, with a total potential production of about 1,000,000 tons a year have merged into the **Log Mountain Consolidated Coal Co.** The properties taken over are the **Hignite Coal Co., Yellow Creek Coal Co., Mingo Coal & Coke Co., Bennett's Fork Coal Mining Co. and Log Mountain Coal Co.** The concern is capitalized at $2,000,000.

The Miners-Elkhorn Coal Co., F. M. Preston Paintsville, general manager, has recently opened up two new mines that will develop a large acreage near Riceville on Big Sandy & Kentucky River R. R.

The Elkhorn Gas Coal Co., operating near Martin, is making extensive preparations to open up three new mines. A mile of standard gauge railroad has been built up Bucks Brench and a large twin tipple is being completed.

MARYLAND

Governor Ritchie has announced the membership of the **Maryland Coal Distribution Committee.** Those appointed are Frederick W. Wood, president of the Board of Trade, A. Asbury Davis, president of the Merchants' and Manufacturers' Association, Ferdinand A. Meyer, former United States Fuel Administrator for Maryland, James B. Biays, of Black Sheridan and Wilson, Howard Adams, president of the Maryland Coal Jobbers' Association, Hugh C. Hill, president of the Baltimore Coal Exchange, William Milnes Maloy, chairman of the Public Service Commission.

MISSOURI

Henry Gibson, engineer, has come to Carrollton in the interest of the **Big Four Mining Co.**, with a view of developing the local coal field. It is the plan of the company to open three mines here and push operations. The leases secured are on the royalty basis and will net the owners of the land from $200 to $250 an acre.

The Callaway County Coal Co., which operates a coal mine near Carrington, has filed a petition in the Audrain County Circuit Court, asking for a dissolution of the company. The petition states that the company can no longer be profitably operated.

Robert O. Eddings has filed suit against the **Ray County Coal Co.** for $40,000 damages for injuries alleged to have been received in Mine 50, Feb. 25, 1922. The plaintiff charges that while acting as eager the cage suddenly began to ascend without a warning and that he was caught between the cage and the wall of the shaft. He alleges that he was permnently injured and will be disabled from work in the future.

Members of the **Clifton Hill Banking Co.**, with parties from Bevier and Macon, are interested in the proposed development of several thousand acres of coal rights in the western part of the county.

NEW YORK

The Nashwalk Pulp & Paper Co., with headquarters in New York City, has purchased coal mining areas in New Brunswick. The coal property was recently inspected by officials of the company and it is likely that in the course of the next few weeks activities will be resumed. It is believed that the property will show a fine grade of soft coal. The coal property of the company is located near the pulp land holdings of the concern. Hugh Chisholm of Portland, Me., is the president of the company and E. N. Jones is general manager.

OHIO

The Snake Hollow Coal Co. and the **Powell Creek Coal Co.**, allied interests, formerly with head offices at Nelsonville, Ohio, have opened a Columbus office in the Ferris Building, with Charles Preston in charge. The two companies have an output of 1,000 tons daily when working.

As a means of properly rationing coal to utilities and industries in southern Ohio, the Cincinnati Chamber of Commerce has asked the former members of the Garfield Fuel Administration to act. This is made up of **W. F. Wiley, A. Clifford Shinkle, W. K. LeBland, C. L. Harrison, Walter Schmidt and W. C. Culkins.**

George Poor, appointed by Governor Harry Davis, as fuel dictator for Ohio, is a member of the State Public Utilities Commission. He was a former mayor of Glendale. One of his first moves was to place the railway movement of coal through Cincinnati in the hands of **F. M. Renshow**, in charge of the traffic bureau of that Chamber of Commerce and who had charge under the Garfield administration.

Steps have been taken to raise the receivership of the **Allied Power Industries**, a $10,000,000 trust estate which was forced into the hands of a receiver about six months ago. The concern is a consolidation of a number of properties, among which was a coal producing concern in Tuscarawas County. It also controls the patents for Ohio on the "atomized coal" and artificial gas.

PENNSYLVANIA

The fifth annual meeting of **Cosgrove & Company** was held at the Fort Stanwix Hotel, Johnstown, late in July. Approximately 100 department heads and managers were present when the conference began. Mayor Joseph Caufliel, of Johnstown, delivered the address of welcome to the convention on behalf of the city, while Enoch Carver, Jr., welcomed the convention for the company.

Fayette and Greene county coal producers, in compliance to the request of Secretary of Commerce Hoover, held a special meeting at Uniontown, and effected an organization to be known as the **Fayette & Greene County Coal Producers' Association,** as well as adopting without restriction Mr. Hoover's tentative plan for coping with the present coal shortage emergency. A committee of nine, which is to co-operate with Washington, will be composed of W. C. Hood, of the H. C. Frick Co., John Sincock, of Rainey, M. B. Cooper, of Hillman, C. F. Lingle, of Greene County, George Whyel, W. W. Parshall, Harry McDonald, of Dawson, John B. Moore and W. D. McGinnis, of Connellsville. This committee may later be enlarged.

The State will not await the decision of the Supreme Court of the United States in the constitutionality of the anthracite tax in dealing with appeals by anthracite producers from the settlements of coal tax by the Auditor General, but will prosecute them promptly in the Dauphin County Court, Harrisburg. The appeals filed for the tax computed to be due by Samuel S. Lewis, Auditor General, will be listed for disposal in court just as are other appeals from State taxes. George E. Alter, Attorney General, has been notified of appeals taken from the tax by numerous anthracite companies which have been required to give adequate bond for the tax and the costs and the cases will proceed in the fall. The Attorney General will appear at Washington when the Supreme Court reconvenes to ask that the test case be advanced because of the importance to the next Legislature which must have definite knowledge of the sources of revenue.

Frank Stark, shaft sinking contractor, of Greensburg, has taken a contract and started work sinking the shafts for the large new operation of the **Jamison Coal & Coke Co.** of Greensburg, on the large tract of land recently leased from the Thaw estate of Pittsburgh, near Uniontown.

UTAH

Michael Schoenberger has received a permit for coal prospecting four miles from Fillmore, Millard County. Coal has been found there and efforts are to be made to see if it exists in commercial quantities and quality.

The Clark Co-operative Coal Co., Thompsons, has been organized to work the mines in Thompsons Canyon, owned by U. H. Clark.

WEST VIRGINIA

Increased valuation of coal property in West Virginia has led to protest on the part of coal land owners in some sections, the **Monongahela Coal Association**, as an instance having announced that it would enter a strong protest against the value placed on many properties. There has been a general reassessment of property throughout the state, coal land included, this year, at the direction of the State Tax Commissioner, although the same law has been on the statute books since 1908. The State Tax Commissioner, however, insists that coal be assessed at its true and actual value and in accordance with such instructions there has been a general increase in the valuation placed upon smokeless and all other coal.

The Washington-Elkins Coal Co., Inc., has been formed at Elkins, with capital $300,000; incorporators, C. A. Parvin, E. L. Maxwell, W. B. Maxwell, J. H. Maxwell and Alverna Gloeckner, all of Elkins.

George L. Rogers of the Mon-Scott Fuel Co., with headquarters at Morgantown, was inspecting the property of the Bear Mountain Gas Coal Co., near Flemington recently.

Supplementing recent news to the effect that Paul Hardy, a prominent coal operator of the Guyan and Coal River territory had organized the **Hardy Coal Co.** for the purpose of developing large acreages of coal land on the Four Pole of Tug River in McDowell County and was preparing to begin development work without delay, a contract for building five miles of railroad to connect the Hardy company's property with the main line of the N. & W. has been awarded to Harry Waugh, with headquarters at Bluefield.

The Hood Coal Co. has resumed operations at its mine near West Shinnston. This mine has been idle since November, 1920. It is owned by W. C. Wyatt and Frank A. Burnett.

Plans have been formulated for improvements at the plants of the **E. E. White Coal Co.**, in the Winding Gulf Field to cost between $200,000 and $300,000. The company will provide additional miners' houses at Glen White and Stotesbury to cost in the neighborhood of $75,000. The company has also placed orders for many additional mine cars and will install additional cutting machines in its mines. Although the trackage facilities at both Glen White and Stotesbury have been enlarged, more trackage is to be provided all with a view to securing a possible output of 2,500 tons a day. Extending the scope of its operations the company is preparing to mine coal in the No. 3 vein at Stotesbury.

The Paragon Coal & Supply Co. has been organized by coal people of Cabell County, having a capitalization of $50,000. Headquarters of this company are to be at Huntington. Closely identified with the new company are W. E. Deegans, one of the leading operators of southern West Virginia; A. W. Fitzwater, J. M. Turner, E. A. Dean, J. F. Vass, Huntington.

C. H. Mead, president of the Low Volatile Consolidated Coal Co., with mines at Rock Lick, Bailey Wood and Ragland, and president of the C. H. Mead Coal Co., with mines at East Gulf, and general manager of the Interstate Coal & Dock Co., has taken a vacation and has gone to his Florida home.

BRITISH COLUMBIA

The miners' strike has had practically no influence on the Vancouver Island mines, as the non-union operations in Idaho and Washington were able to take care of the demands of the Pacific Coast. The railway shopmen's strike, however, has now caused a sharp demand for Vancouver Island coal, and the mines, which for the past year have been worked on only part time, are nearly all now working full time as orders are pouring in from all down the coast.

ONTARIO

The outcome of a conference at Ottawa is that the dealers have undertaken to purchase Welsh and Canadian coal to protect the city during the coming winter. A special committee was formed and the indications are that Ottawa will have a good substitute fuel supply until such time as anthracite comes in from the United States.

The Dufferin Coal Mining Co., Ltd., has been organized with head offices in Toronto, to engage in coal mining and to deal in coal generally. The company is capitalized at $500,000 and the provisional directors are G. H. Sedgewick, James Aitcheson, J. W. Pickup, C. C. Calvin and A. E. Hugill, of Toronto.

Sir Archibald Mitchelson, who is connected with a number of collieries in Wales, Yorkshire and Cumberland, has arrived in Toronto on a vacation. Sir Archibald is president of the Davidson Porcupine Mining Co. He states that the United States coal strike is proving a big boon to the British collieries.

Colonel K. R. Marshall, manager of the Standard Fuel Co., Toronto, has returned from a trip through the various coal fields of the United States, where he studied the strike situation and where he says he received assurance that Canadian needs would be looked after immediately work was resumed.

WASHINGTON, D. C.

Senator Cummins of Iowa, has presented to the Senate a petition of W. G. Block Co., of Davenport, urging the prompt shipment of coal for Iowa industries.

The District Commissioners have detailed **Walter C. Allen**, secretary of the Public Utilities Commission, to make an investigation of the coal situation in Washington, in connection with the plans of the city government to distribute coal under the government priority system.

The constitutionality of the Lever fuel control law and regulations of the Fuel Administration during the war, restricting coal jobbers' profits to 15c. per ton, are attacked in appeals filed in the Supreme Court by the **Matthew Addy Co.**, and **Benjamin N. Ford**, its vice-president, who were each fined $1,000 and costs for charging 25c. a ton profit on bituminous coal in Cincinnati during September, October and November, 1917. The case was tried in the Western Division of the Southern District of Ohio, and its decision against the company and its vice-president was affirmed by the Circuit Court of Appeals for the Sixth Circuit. In asking the Supreme Court to reverse the decisions of the lower courts the company argues that the act substituted executive for judicial processes and that it delegated to the President powers not conferred upon him by the Constitution.

Traffic News

The complaint of the **Southern Ohio Coal Exchange** and many individual coal shoppers against the revised coal freight rates from the Ohio districts to Toledo and other Lake ports following the reduction of 10 per cent by the I. C. C. was heard before the Ohio Utilities Commission late in July. The complaint stated that the full 10 per cent was not given to Ohio shippers in the effort of the carriers to preserve the differentials of pre-war times. W. D. McKinney, secretary of the Southern Ohio Coal Exchange was the principal witness for the complainants. The rate from the Nelsonville assembling point to Toledo was formerly $2.10 and has been reduced to $1.99 which is about 6 per cent. The rate from the inner crescent of West Virginia, formerly $2.66, was reduced to $2.39, while that of the outer crescent of West Virginia was reduced from $2.86 to $2.59. J. C. Vinning was the principal witness for the railroads. He claimed that the present rate arrangement had the sanction of the I. C. C.

Rates on coal mined in western Kentucky and moving to northern Georgia consuming points and to Savannah for export have been held by the I. C. C. to be too high in comparison with rates on coal mined in other parts of the state. Railroads have been ordered to fix charges on coal over the haul named at not more than 50c. a ton above the rates which they maintain at the same destinations for coal mined in the Jellico-Middlesboro territory.

The complaint of the **Gulf Coal Co.** has been assigned for hearing by the I. C. C. at Washington, Sept. 22.

The complaint of the **Colony Coal Co.** will be heard at Denver, Oct. 9.

Hearing in the complaint of the **Tulsa Fuel Co.**, assigned for New York Sept. 12, has been canceled.

Because of the application of unreasonable rates on anthracite from the Carbondale, Pa., district to South Utica, N. Y., for delivery on the West Shore Railroad, the I. C. C. has directed the Director General of Railroads to refund $17,973 to **Frank A. Coakley and other shippers.**

The Hocking Valley has been ordered to refund $724 to the **P. Koenig Coal Co.**, for illegal rates on coal from Ohio, Kentucky, West Virginia and Pennsylvania to Detroit.

Coming Meetings

New York State Coal Merchants' Association will hold its annual meeting at Richfield Springs, N. Y., Sept. 7-9. Executive secretary, G. W. F. Woodside, Arkay Bldg., Albany, N. Y.

Coal and Industrial Exposition under the auspices of the Huntington Chamber of Commerce will be held Sept. 18-23 in the Chamber of Commerce Bldg., Huntington, W. Va. **The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers** will again hold its annual meeting in the same building during the exposition.

National Exposition of Chemical Industries will hold its eighth national exposition at the Grand Central Palace, New York City, Sept. 11-16. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Mining Congress. Twenty-fifth annual convention and exposition of mines and mine equipment will be held at Public Hall, Cleveland, Ohio, Oct. 9-14. Executive offices, the Hollenden Hotel; E. C. Porter, convention manager.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Institute of Mining and Metallurgical Engineers will hold its fall meeting during the week of Sept. 25 at San Francisco, Cal. It is proposed to arrange for a party to leave New York on Sept. 10, stopping at different cities en route. Secretary, F. F. Sharpless, Engineering Societies Building, New York City.

American Chemical Society's annual fall meeting will be held Sept. 4-9 at Pittsburgh, Pa.; divisional meetings will be held at Carnegie Institute of Technology and general meetings at Carnegie Music Hall.

The Rocky Mountain Coal Mining Institute will hold its next meeting at Glenwood Springs, Col., Sept. 7-9. Secretary, F. W. Whiteside, Denver, Col.

National Safety Council. Eleventh annual Safety Congress at Detroit, Mich., Aug. 28 to Sept. 1. Executive secretary, W. H. Cameron, North Michigan Ave., Chicago, Ill.

Obituary

Robert M. Wherrett, for 14 years Norfolk manager for the Berwind-White Coal Mining Co., died recently at his home at Ocean View. He was a native of Baltimore, is survived by his widow and one daughter, and was 41 years of age.

John E. Laing, of Du Bois, Pa., a mining engineer and mine owner, died suddenly of heart disease at the age of forty-eight at his home, late in July. He was born at Fallbrook, Tioga County, Pa., and after working in the mines was, at 21 years of age, made superintendent of the Clearfield Coal & Coke Co.'s La Jose mines, studying meantime mining engineering. After nine years as superintendent he became general field agent for the Northwestern Mining & Exchange Co., constructing the central electric power plant at Helen's Mills. In 1915 he came to Du Bois and entered the mining business as mine owner.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

Volume 22 NEW YORK, THURSDAY, AUGUST 17, 1922 Number 7

Time Always Befriends the Striker

AT THE Cleveland convention operators are agreeing to pay wages which only a little while ago they declared they could not pay. There will not be lacking those who will say that they could have paid them when the strike commenced had they only been willing. The reason for the operators' change of viewpoint is that now, after the strike has continued for nearly five long weary months, the stocks are almost exhausted, winter looms ahead, the railroads threaten to be congested and the public must buy from union mines and pay enough to make bituminous mining profitable no matter what the wage may be.

Mr. Lewis hoped to get the same result by unionizing the operators as against the public. He desired to form a big combination of mine operators so large as to be able to fix the price. In compelling them to pay a high wage he knew they must sell the coal at a high figure. They could do this only if they were numerous enough that the public could not sidestep but must buy from them. That is why Lewis wanted the Central Competitive field to bargain with him, and that is why, for a while, he sought to have the Washington authorities declare in favor of a uniform wage in the union and non-union regions alike. He was for unionizing the operators, forming them into a trust which could demand from the public what it would, and would be able out of excessive prices to pay excessive wages to the miners.

But the operators were afraid that such a union or wage trust was illegal. They avoided entering into it even though the President and Secretary Davis invited them, yes implored them to form it, and even though the public wondered why they lacked so greatly a proper sense of obligation that they failed to act in accordance with Federal suggestions.

Now at least there is no risk that the public will buy in the cheapest market because that market is too small for all to enter and is no longer cheap. Even in non-union regions wages have been increased. There is no longer any fear of the competition of non-union men, not at least before April, 1923. The union operators can now safely pay the wage that tended to bankrupt them before April, 1922.

It nearly always ends this way. A strike commences with strong arguments in favor of the operators and ends with conditions such as make the operators friendly and even anxious to concede, because there arrives a time when concession promises profit. Then the only fear is that a contract will be made of such duration that conditions will change before the contract expires.

The conclusion of terms between the union and scattered operators from 7 states does not settle the strike —it breaks the deadlock. The switch in policy on the part of the miners from four-state to district and individual settlements maintains the contention we have made from the beginning that what Lewis was really after was no reduction in wages; that his policy of no district settlements was designed for that and that alone. It was fine propaganda to hold the men in line from January to July but on Aug. 14 it becomes ballast to throw overboard.

Using the Public for His Own Ends

WHEN the coal miners start work it will be with no reduction in wages and under no promise or obligation to arbitrate future wage scales. There is indeed but a slim chance that, as a result of nearly five months of strike, possibly two months of sympathetic rail strike, and no one yet knows how much human suffering and industrial paralysis in the coming winter as a direct result of both, the public will have the least degree of insurance against a similar upheaval next year.

During the Cleveland conference John Lewis said to the public through the press "The miners have won their fight and it is practically over. There is no longer a thought in my quarter that wage reductions will be imposed on the mining industry. The question here is one of procedure *without undue humiliation of the operators. We have no desire to humiliate them.* We only want the immediate resumption of mining, the return to work of the men and the relief of the public." Again, "The miners have not deviated any degree from their original policy." And finally "The miners will never consent to arbitration." Thus from his present pinnacle speaks the head of the miners' union.

Cast your mind back to the early fall of 1919 when John Lewis fell heir to the presidency of the United Mine Workers through the retirement of Hayes. Hayes' legacy to Lewis, an untried leader, was a program so extreme as to shock the country. Lewis had to decide then and there between a policy of moderation and a policy of radicalism. He knew he was accused of being afraid to fight. He knew of the growing influence of the Farringtons, Howats and Brophys. When he set his compass toward "Fight" he took the most momentous step in the labor history of coal.

Taking up Hayes' crazy program of nationalization, 60 per cent increase of wages and the 30-hour week, and throwing it into the mine workers' convention in 1919, Lewis routed his opponents. Violating his contract with the operators, he called a national strike for Nov. 1, 1919, because to have waited until the contract expired on April 1, 1920, would have given the public an opportunity to build up coal reserves. The unlooked for forced resumption of mining by injunction and the forced acceptance of arbitration nearly upset John Lewis, but the 27 per cent increase in wages awarded was so much better than the miners expected that Lewis held his prestige.

Knowing full well that every force in the land was

driving toward liquidation of wages, Lewis in 1921 held to his 1919 decision to fight. To be a successful labor leader one must always be fighting for something more, demanding and never conceding, mindful always that the mine workers have more stomach for a fight than any one else in the country.

How Lewis has held his men in line, despite internal dissent, how he has defied in succession the operators, the President and the people of the country are part of today's realizations.

The burden of all this is that John Lewis is for the moment at the head of the most powerful labor organization in this country. He can hold that cherished position so long as he maintains the offensive and wins his strikes. He is no quitter, hence will have to pull another strike next year or the next. Which is another way of saying that John Lewis, strong as he has demonstrated he is, cannot control the miners. He leads in the direction they are going. The movement is bigger than Lewis—he cannot now put on the brakes.

Which brings us hard up against the problem of what is the country going to do about it? The framers of our government planned to prevent the usurpation of power by majorities. They saw to it that the minority might not be gagged. Little did they forsee the power of organized minorities. Less than 600,000 men of our population of some 20,000,000 workers have this year held the whip hand over all the remainder. The hundred million people who this winter will suffer for lack of the coal that the less than 600,000 refused to dig have not spoken yet. Public opinion is passive. No one in authority has told the people the trouble that lies ahead. What can the public say? It has said "Protect those who would work," but with the protection provided too few have been willing to work. The public can say—"Compose your differences without depriving us of fuel and transportation." If it cannot say that plain enough, forcefully enough, to reach and convince the most unheeding then we must wait till the union disintegrates through its own super-aggrandizement, submitting in the meanwhile to its tyranny, or we must go on fighting it as best we may until it returns to reason.

None of the spectacles are pleasant—which will you have and what are you going to do to bring it to pass?

From those operators who are crawling to Lewis begging permission to mine coal, those he would not "humiliate," to those whose backbones are upright though their knees may tremble is a far cry, with every human motive ranging from mere profit-seeking to the highest ideals of public service.

Strength for the Next Battle

ALTOGETHER apart from the outcome of the passages at arms with John L. Lewis and his powerful organization of labor, it must be said that the coal operators of Illinois and some other sections of the country give signs of having learned a lesson. They have hung together as never before. That is a proud accomplishment even though it may be greeted by humorous sallies concerning separate hangings. In Illinois as in probably no other state, owners of mines have had thrust upon them painful object lessons in the ultimate cost of past surrenders to the union. Every time they broke apart to make peace with the miners for immediate gain, they lost in the long run. Every capitulation added power and arrogance to the United Mine Workers of America. It is all very evident now, even to those operators who, for financial and other reasons, have been most keenly in need of producing coal.

It is so evident, in fact, that every operator knows there lies ahead in this country a battle that must be won. It will be a long battle and one requiring the utmost determination and sacrifice but it must be won if the coal industry is to attain the true normalcy so much desired by everybody but union labor. The skirmishes and heavy engagements of this summer have given the coal operators of the land opportunity to exert those forces for solidarity which are developing. Surely such forces have gained potential strength by this exercise. They certainly have in Illinois. Defeat without surrender in a fight for a just cause often is more stimulating to morale than victory.

It Is Up to Mr. Coal Man

EXERCISE of governmental control over coal distribution is producing the usual and expected crop of knockers. To some everything that is being done by the agencies at work in Washington is wrong. There is the customary blatant critical line of dope being written by the usual onlookers telling the country, or such as their tirades may reach, that it is all wrong. The thing to do, for instance, is to produce more coal and there will be no necessity for the government putting its hand on distribution.

In the first place those who take, or pretend to take, such a stand refuse to recognize that in this crisis the first essential step toward getting more coal out of the ground is to make what coal is being produced go as far as possible toward averting a shortage at points and with those consumers whose continuity of operation is essential to the nation. It is not too much to say that under present circumstances four million tons of coal per week reaching the proper consumers may be worth more than five million tons imperfectly distributed. To argue that Mr. Hoover is making bricks without straw is but partially stating the case—he is short of mud as well.

There isn't enough coal to go around and there isn't going to be enough. It's perfectly absurd for some coal men to complain about the government messing in the situation, because if it didn't, a thousand times as many people who are not coal men would demand it.

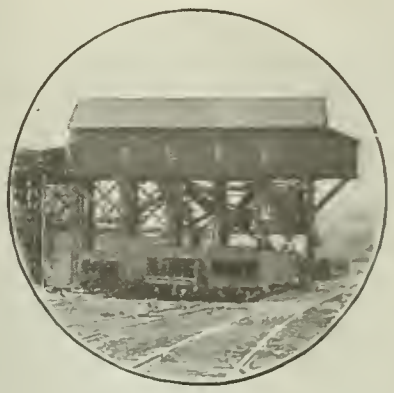
The old job of 1917-18 and of 1920 of spreading a thin supply of coal over a wide and persistent demand and need is here again. It must be undertaken with the best tools at hand. No one who recalls the difficulties that beset Washington in previous years when with wide-spread authority the control of coal distribution was undertaken can but appreciate what Mr. Hoover and his associates are facing.

It is useless to rail at the fact that Washington is putting its hand to the task—it had no alternative. It is childish to curse and growl at the methods, better take a hand in trying to improve them.

We are not at war with a foreign power, it is true, and a call to patriotism falls short on that count. But what is war but an effort to avert national disaster, and what less faces this country this winter with crippled railroads and short coal supply? The coal man knows this better than any one else and he can help or hinder as he wills.



Railroad Electrification Will Make Important Changes In the Coal Industry



Roads Must Do More Work and Do It More Economically—Byproduct Plants and Power Stations Will Be Operated Concurrently; Coke and Gas Being Used for Generation of Energy

By Charles Means*
Pittsburgh, Pa.

COMMERCIAL development in this country seems to move in fairly well-defined cycles. Years ago we started in to build railroads and it now appears that we built them in plenty, although some were not well located with respect to the general requirements of the country. At a little later date telegraph and telephone lines were being constructed all over the land. In recent years we have been engaged in making one of these lines do as much work as several of them were capable of doing at the time they were constructed.

Just now we are engaged in building highways on a scale unthought of a few years ago. Whether our type of construction will handle future traffic is a problem that the next generation only can ascertain. We are engaged also in the construction of high-voltage transmission lines for the conveyance of vast quantities of energy over relatively long distances. It is reasonable to suppose that in time the wasteful burning of coal in small units will disappear and in its place will come large central stations where the coal can be consumed economically with full recovery of valuable byproducts.

Electricity for Low-Cost Transportation

The railroads of the country are facing a problem that, if not solved, may materially affect the development of those regions remotely located with respect to water transportation. Their main problem is not necessarily lack of trackage but high cost of operation. Low transportation expenses and charges are essential for the free interchange of commerce, and the degree of economic development of any district is proportional to its transportation facilities.

As the situation now stands, with the railroads unable to handle successfully increasing inland traffic the next cycle would appear to be the complete electrification of railroads. The railroads we now have must do more work and do it more economically. A wonderful piece of apparatus is the modern steam locomotive, but it has well recognized limitations. Sufficient railroad electrification already has been completed to show us its possibilities, and with the development that will naturally come from increased work of this kind its success is assurred.

Though the electric railway locomotive so far has been limited in its application to unusual or severe conditions, it has made good and will continue to do so increasingly as time goes on. This change in the manner of operating railroads will modify the coal industry profoundly. Coal is an expensive item in the operation of the common carriers, and the supply of railroad fuel is an important part of the coal business. Where it is available and conditions warrant its use, water power will be developed which will displace that part of the locomotive fuel that is now being hauled long distances, reducing the tonnage thus consumed not only by the quantity of coal thus displaced but also by that further quantity which is consumed in the transportation of such coal.

Coal that for various reasons is now considered unsuitable for locomotive fuel can be economically burned in large central stations. The firebox of a locomotive has certain well-defined limits, but the combustion chambers under stationary boilers can be designed to burn any kind of fuel having heat value.

This may mean the development of mines not now considered workable, as entirely new economic conditions will be brought about. It is reasonable to assume that the concentration of power-producing centers will admit of the recovery of valuable byproducts, only that part of the coal having no byproduct content being burned. Much of this content, though not suited to the needs of the chemist, has high calorific value.

Byproduct Plant at Every Power-House Door

The power plant of the future will embody a byproduct plant just as do the steel plants of today. This, however, will be built along somewhat different lines from those now in use, as the requirements will not be the same. The coke or residue after distillation need not possess metallurgical characteristics, heating value alone being the important consideration.

Coals now considered unsuitable for use at steel plants because their coke is not regarded with favor can be used at power plants after having given up their byproducts. Furthermore, lignites or low-grade coals that are not suitable for locomotive fuel or that cannot be transported profitably will then be of value, for they will be found to give satisfactory service when used directly under stationary boilers.

The ordinary steam locomotive necessarily is more

*Consulting engineer.

wasteful in the generation of power than the large central station because of high radiation losses and the inherent inability of the machine to convert any large percentage of the heat produced into useful energy. It is true that with electric currents certain losses occur in transmission, but the reduced cost of transportation, distribution and handling of fuel for locomotives more than compensates for these.

All these phases of railroad electrification have a direct bearing on the coal industry of the future. Because of the utilization of available water power, energy will be supplied in certain districts without resorting to the combustion of fuel. Because of the great increase in efficiency arising from the burning of coal in large central plants one ton in such a station will do the work of two when burned in a locomotive. Further, the burning of fuel in a central plant permits of the recovery of valuable byproducts not now available.

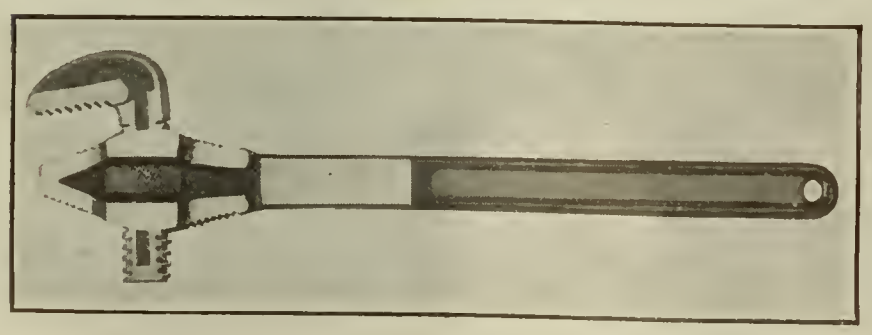
The entire aspect of the coal industry, in so far as railroad fuel is concerned, will undergo a marked change because of the centralization of coal-consuming plants in such locations as naturally offer lowest energy-production costs. Instead of coaling stations being distributed at many points throughout the country, coal used to supply energy for railroad operation will be centralized at a relatively few favorably located centers. Fuel that is now used exclusively by railroads may never reach any of the stations that in future will supply them with power.

While the changes outlined will, no doubt, be gradual, the time when all important lines of railroad will be electrically operated may truly be considered as being by no means remote unless some other now unknown solution for this problem should present itself. With this changed condition will come corresponding alterations in the marketing of a large percentage of the coal produced throughout the country.

Three-Part Pipe Wrench of Great Strength Light Weight and Ease of Application

A NEW pipe wrench embodying a radical change in design from usually accepted standards as well as several original details in construction is known as the Little Giant. It has the end opening that has been so long and favorably known and utilized in machinists' wrenches. This allows the tool to be utilized in much closer quarters than the side-opening wrench.

This new tool consists of three parts only: the frame, the movable jaw and the adjusting nut. The first two pieces mentioned are drop-forged and heat-treated. In the smaller sizes the combined handle and jaw is made with two pipe-gripping faces; in the larger sizes four such faces are provided. All springs, rivets, pins and the like have been eliminated, with the result that the weight of the tool is appreciably less than that of a wrench of the side-opening type.



PIPE WRENCH PROVIDED WITH AN END OPENING
This wrench has only three parts—frame, movable jaw and adjusting nut. Springs, rivets and pins have been eliminated making the tool simpler and lighter.

Despite its comparatively light weight this wrench is unusually strong. The 14-in. size has repeatedly withstood stresses exceeding 4,700 in.-lb. without either slipping or bending. Government specifications for tools of this size require that they shall withstand only 2,800 in.-lb. The two or four sets of what might be termed stationary jaws or those integral with the handle may be engaged at the option of the user and lengthen the life of the tool almost in proportion to their number. The inner or secondary main jaws render the wrench highly efficacious on certain classes of work.

This new wrench is the product of the Greenfield Tap & Die Corporation, of Greenfield, Mass. The 8-, 10- and 14-in. sizes are already manufactured, and 18- and 24-in. sizes soon will be obtainable.

Stripping Methods That Afford Clean Coal

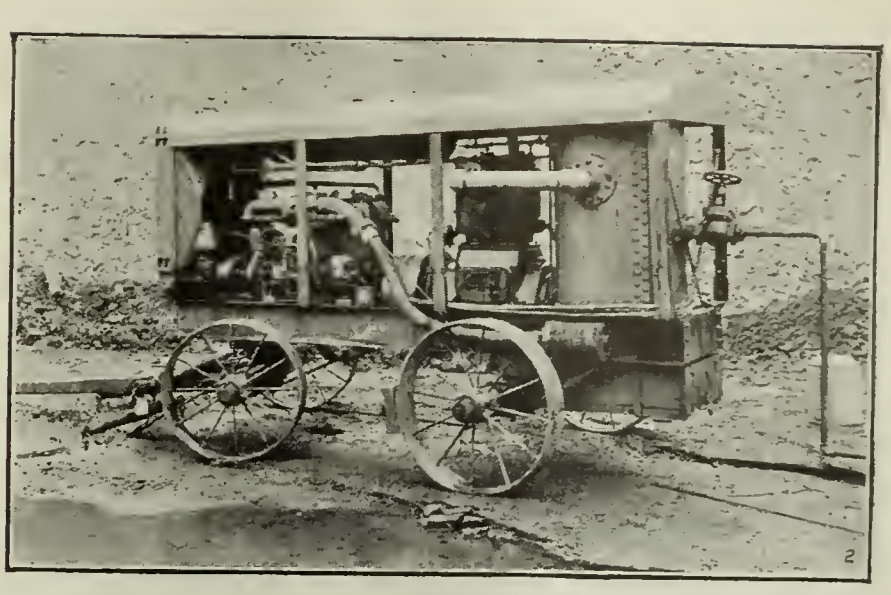
COAL is in general about as clean as the mining methods in use make it. Of course some coal is naturally dirty, but other coal is made dirty by negligent handling. There is no reason why strip-pit coal should be dirty. Unfortunately this type of working had its greatest development during a coal boom and in consequence even the most elementary precautions were not taken by some operators to keep the product clean, for quality then was less sought than quantity. The coal shovel was permitted to dig into the bottom; cover was allowed to fall down on the coal and was not removed from it before loading; the coal shovel loaded coal direct into the railroad car and no picking tables were provided. The result could not be in doubt. Stripped coal was in consequence regarded as being a poor purchase.

With care open-cut coal can be produced that is freer from impurities than that obtained underground. Not infrequently in a mine does the mining machine work its way into the coal bottom and the drawslate fall into the coal. Furthermore the cutting machine breaks up a large part of the coal and shooting tends to reduce what remains from lump to slack.

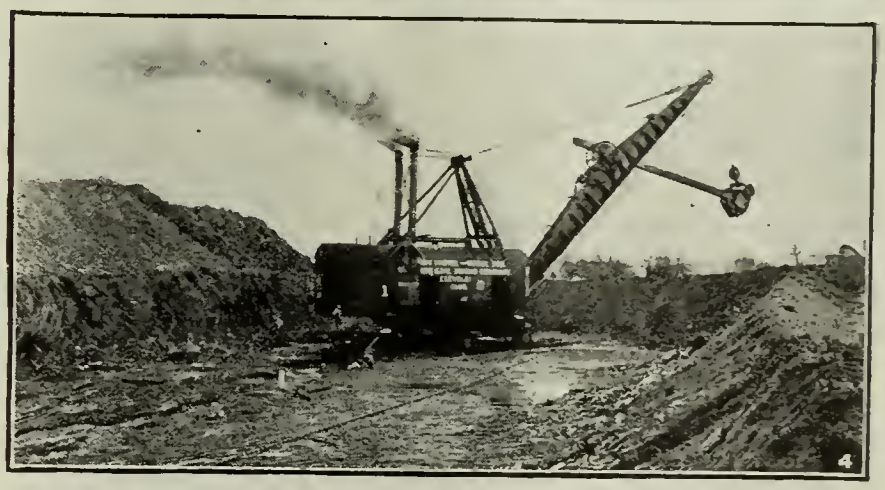
An open-cut mine like that of the Enos Coal Mining Co., in the Ayrshire coal district of Pike County, Indiana, illustrated herewith, avoids these difficulties of underground mining by lifting the overburden and cleaning the upper surface of the coal by hand shovels and wire brooms before the coal is disturbed, also by not attempting to shovel the coal down to the bottom clay, by shooting with due care and by running the coal over a picking table, where it is examined and cleaned by several men. The coal finally is delivered to the cars from the chute and an inspector watches it from a platform as it falls and certifies the coal as clean if it meets with his approval.

The screenings delivered at this mine are unusually large, about 65 per cent being 2-in. nut and practically none of it fine enough to be designated as "bug dust." This mine is typical of the newer operations in southern Indiana. It is connected with the Southern Ry. by ten miles of railroad owned and operated by the coal company. It will soon be connected also with the Big Four. The property was not acquired until May of last year and the first coal was loaded over the tipple in October. Before the strike the production reached 50,000 tons per month. This tipple can handle 3,500 tons in eight hours.

















ENOS COAL MINING CO.'S STRIPPING, THE LARGEST STRIP PIT IN THE STATE OF INDIANA

Fig. 1 shows a steam-driven stripping shovel, one of the largest made, removing the overburden from the coal; Fig. 2, the portable pump by which local dips are freed of water; Fig. 3, a trip of seven dump cars on the way to the tipple; Fig. 4, another of the big stripping shovels also a steam-driven unit; Fig. 5, the dump house, coal conveyor shed and tipple; Fig. 6, loading coal with a caterpillar shovel into cars on a track laid on the top of the coal; Fig. 7, the two picking tables, one for large and one for small coal, and Fig. 8, cars loaded with coal under tipple. Note loading boom to reduce breakage.

Roadway and Other Permanent Supports in Coal Mines of Great Britain*

Horseshoe Sets Coming Into Disfavor Owing to Weakness at The Crown and Often at the Ground—Methods of Stiffening Weak Points—Extruded Fireclay Often Breaks Invert Arch

By John Roberts

THE steel "timbering" used on roadways, either alone or in conjunction with timber or masonry, may be termed semi-permanent supports. Steel rails and girders have been used in mines for many years, the simplest form being a rail or girder stretched across a roadway and resting on wooden props or on masonry side walls, as illustrated in Fig. 1. The objection urged against these girders is that when repairs become necessary the girders are not so easily taken out as are timber "collars." On the other hand, they possess the advantage of greater strength and durability, and when once bent and removed they can be straightened for further service.

In Fig. 2 is shown a system in which a steel rail is supported on cast-iron posts. The posts are hollow and flanged at the ends, and cast-iron chairs fit into the upper ends. These chairs serve to support the horizontal rail on which the timber lagging is set. This system is, of course, suitable only where roof pressure alone is expected.

To resist pressure from both roof and sides the steel sets shown in Fig. 3 have been adopted. The crossbar *a* is of I-section and is supported by legs, each of which consists of two channel-bars bolted together and resting on a cast-iron shoe, *b*. The legs and collars are provided with several bolt-holes so that the sets may be adjusted to suit roads of varying dimensions. The desired batter of the legs is obtained by means of the cast iron shoe *b*, the underside of which is curved and rests in a sole piece, *c*. In another form (Fig. 4) the legs and beam are secured by means of angle irons and bolts or rivets.

Horseshoe Lining Set With Floor Piece

Where the roof, sides and floor require support, the form shown in Fig. 5 has been applied. These sets consist of rails bent to the form of the roadway and fishplated as shown. With timber lagging, well packed behind with fine material, this device gives excellent support.

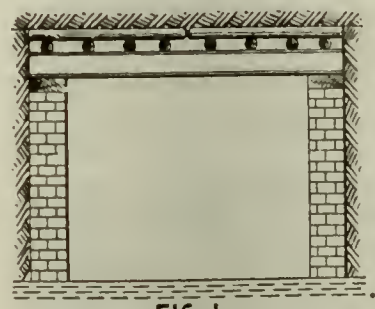
A type of steel set which has become quite popular in recent years, although first used many years ago, is that known as the "horseshoe" set, which consists simply of rails of uniform section bent to the form of a horseshoe and fishplated at the crown, as shown in Fig. 6. These sets are often used in conjunction with masonry and timber, side walls conforming to the rails being built up to a height of about 6 ft. and the upper sections lagged with timber.

When newly erected the construction presents a neat appearance, but the system can hardly be said to give satisfaction. In the first place, objection is taken to the weak joint at the crown of the arch, which is the point where great strength is required. Again the curved form of the sides has a tendency to cause the floor to "heave" or "puck." Generally speaking, the effect on the sets is either to cause the crown to be bent downward or to be driven up into the roof and to break the fishplates. Buckling frequently occurs also at the haunches.

Where a horseshoe set of uniform section is placed to withstand unequal pressures at different points, such premature buckling is only to be expected, and it is somewhat surprising to find that horseshoe sets have hitherto not been specially designed to offer increased support at the points where the maximum pressure is expected. If it is considered advisable to line a road with steel arches it should be worth while making a good and reasonably permanent job. The forms illustrated in Figs. 7 and 8 may, to a certain extent, overcome these objections.

Fig. 7 is a general design, from which it will be seen that the web of the H-section supports is expanded at the crown *a*, the two members forming a unit interlock at *b*. Specially-shaped and long fishplates are used, and these are secured by six bolts of suitable strength. At the haunches, *c*, a double flange and web provides additional support, which resists the tendency to collapse prematurely at these points.

The lower ends of the sides of each unit are so formed that the advantage of the arch-shaped structure is retained. The additional vertical struts or sup-


FIG. 1

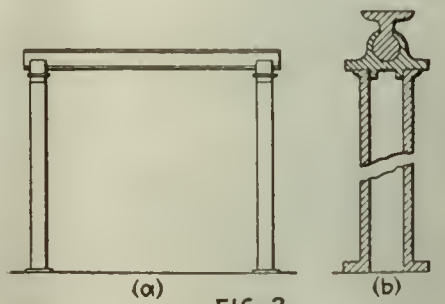


FIG. 2

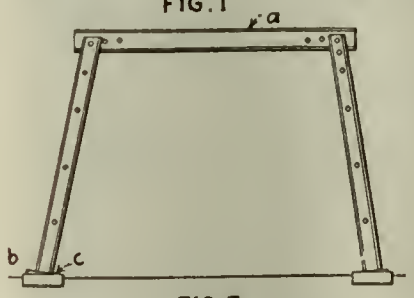
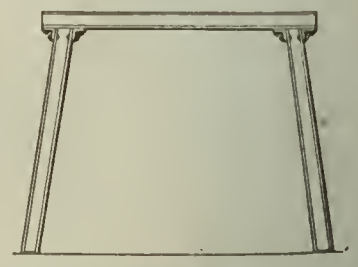


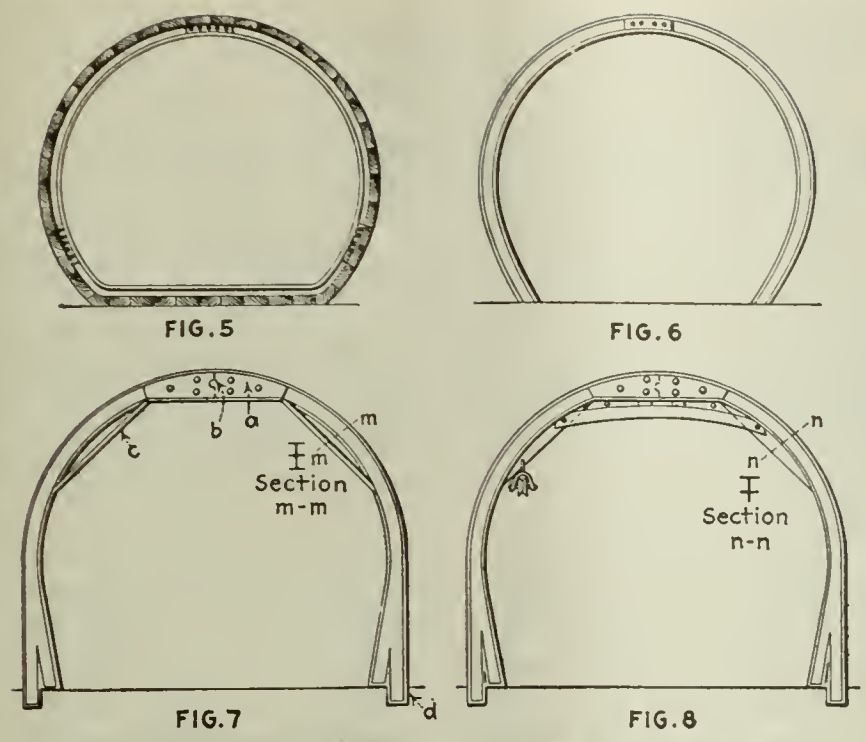
FIG. 3


FIG. 4

WHERE LITTLE SIDE THRUST IS TO BE APPREHENDED

Fig. 1—Steel rail or girder resting on brick or stone walls with transverse and longitudinal lagging. Fig. 2—Steel rail with the ball of the rail held by a chair which forms a cap to a hollow cast-iron post having flanged base; (a) side view; (b) end section. Fig. 3—Steel set with I-beam crossbar and two legs each of which consist of two channel bars bolted together and resting in an iron shoe (b), under which is a sole piece (c). Fig. 4—Steel set with legs attached to crossbeam by angle irons and bolts or rivets.

*Second part of paper entitled "The Development of Metal Supports for Mines," read before the North of England Institute of Mining and Mechanical Engineers, Newcastle-on-Tyne, England. The first part, entitled "Steel Props Furnish Recoverable, Quickly Set and Self-Adjusting Supports for Mine Roof," appeared in the issue of Aug. 3.



HORSESHOE SUPPORTS WITH MODIFICATIONS

Fig. 5—Horseshoe with steel base consists of three curved members with a fishplate at the crown and sides. This section is weak at the crown and haunches. Fig. 6—Simple horseshoe fished at the crown, giving no resistance to heaving. This gives greater resistance to side pressures. If the floor heaves, less damage is done to arch. Fig. 7—An improved horseshoe set with better footing, stronger roof supports and more support at the haunches. The increased supports also strengthen the arch against side thrust. Fig. 8—Still stronger horseshoe with strengthening web. Holes are drilled for the web, and it is added only if the arch shows signs of failure. The web has no flange.

ports provided are adapted to take the major portion of the stresses acting on the roof of the structure, while inwardly curved side members serve to resist the tendency to buckle. This will be obvious from the fact that by fixing the foot of each arm in a notch in the floor, as at *d*, each member is converted from a cantilever (viewed sidewise) into a beam fixed at both ends.

Failure usually takes place above the spring of the arch, while the sides often remain intact; therefore increased strength must be provided at the crown and haunches. The points near the ends of the fishplates will, at first sight, appear relatively weak, but it should be noted that the sharp arched flanges at these points offer much resistance to the pressure; in fact, this form closely resembles the five-piece set which in some fields is used to replace the more general set of only three pieces. When drawn diagrammatically, as in Figs. 9 and 10, the resemblance between the two systems of reinforcement is striking.

In Fig. 8 is shown a slightly modified form of horseshoe set in which a strengthening web (without a flange) is used. Holes are provided to enable a reinforcing strut to be bolted on as soon as the arch shows signs of failure. Cables or haulage pulleys may be suspended from holes lower in the web, thus obviating the fixing up of crossbars for this purpose.

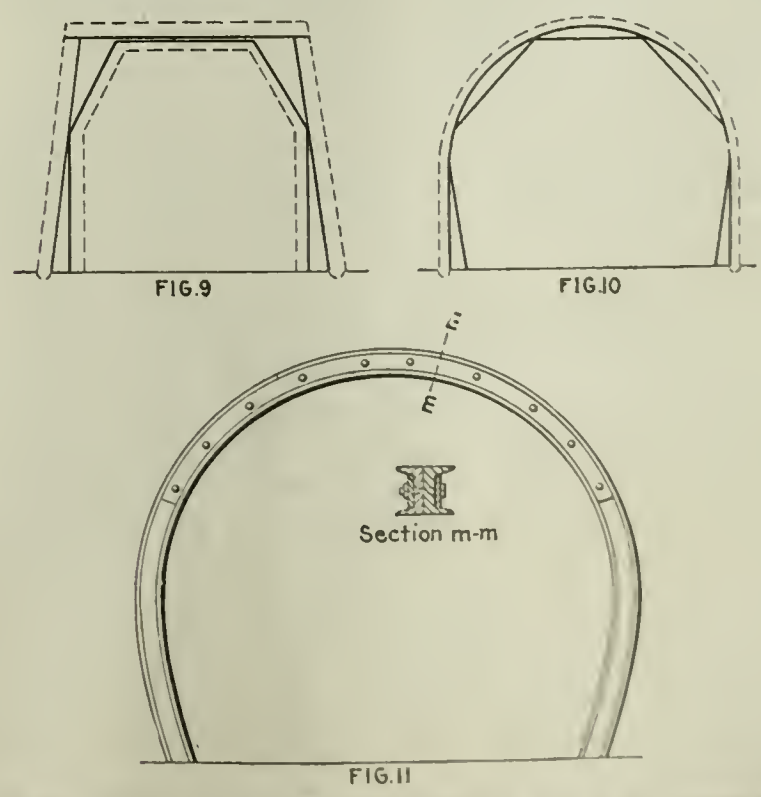
It is highly important that the sets be well packed behind, so that the pressure may be distributed evenly. Particular attention should be paid to this requirement at the crown, otherwise the supports will be driven up into the roof. Failure often occurs also at manholes, as the result of improper packing, and to prevent this it is generally desirable to wall the sides of the manholes behind the steel sets. When the floor also requires support a tie may be stretched under the track and joined to the base of each member. The employment of wooden blocks under the feet of the supports is generally recommended, and where the feet are "stamped" some fine material should be placed in the holes so as to allow the structure to yield slightly to the load until settlement takes place.

It is realized that the manufacture of the suggested new designs will not be such a simple matter as that of plain horseshoe sections. There is, however, the alternative of using double-channel sections, held together not only by bolts but also by plates extending across the crown and haunches. These fishplates would give the necessary additional support to the roof (Fig. 11).

Other supports may be regarded as permanent. The distinction between permanent and semi-permanent is perhaps arbitrary, for in mines where little pressure is encountered the most simple form of timbering may last a lifetime, whereas in others elaborate and costly systems of reinforced concrete may have a comparatively short life. Speaking generally, however, masonry and "ferro-concrete" are regarded as permanent structures. The masonry arch reinforced with steel girders, illustrated in Fig. 12, has given good results. In this example ordinary masonry sidewalls were erected, and arched girders weighing 56 lb. per foot were placed in position about 6 ft. apart and resting on the walls. The masonry then was continued about and between the girders.

Ever since the introduction of concrete as a roof support for mines it has been the practice to reinforce it with metal in a more or less systematic manner. Formerly it was the custom to use old rails or any strips of metal to provide the necessary tensile strength. Reinforcement to be effective, however, must be carried out systematically, and this, as a rule, is now being done.

Engine rooms have frequently been constructed in the manner shown in Fig. 13, where old rails are bent to the required form and then fishplated. The concrete is well rammed behind the rails and the exposed surface is smoothed off to prevent, as far as possible, the accumulation of dust and to facilitate its removal. Such a structure possesses the advantage of having no inflammable material in its construction and com-



SHOWS SIMILARITY OF HORSESHOE ARCH TO TIMBER AND STEEL SETS BUILT TO RESIST THRUST

Fig. 9—Diagrammatic sketch of reinforced-timber set. Fig. 10—Diagrammatic sketch of steel arch. Fig. 11—Horseshoe arch of two channels back to back strengthened by long fishplates on each side which reinforce crown and haunches.

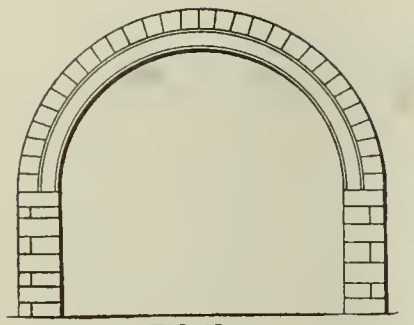


FIG. 12

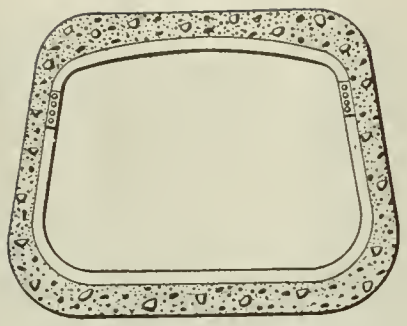


FIG. 13

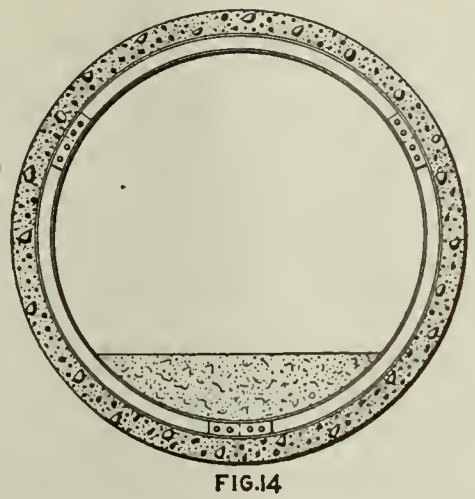


FIG. 14

STILL MORE PERMANENT ROOF AND SIDE SUPPORTS

Fig. 12—Masonry arch reinforced with steel girders. Fig. 13—Old rails backed by concrete used in construction of engine room. Fig. 14—Heavy steel-girder rings for resisting pressure on main roads. These also are backed with concrete.

mends itself where electrical apparatus is installed.

To cope with heavy pressure on insets and main roads heavy steel-girder rings measuring 12 x 6 in. in section and embedded in concrete have been applied. They are made in three segments, which are secured at the joints by fishplates and bolts (Fig. 14). In ground that is fairly well settled the interval between the rings may be 3 ft. or thereabouts, but with a bad roof it may have to be reduced to 18 in. from center to center. A minimum thickness of 18 in. of concrete would be used with girders of the above section. At junctions of branch roads the interval between the rings would be bridged with straight girders or old rails. All cavities should be filled up with concrete or brickwork, or, if this is impracticable, the reinforcement would need to be strengthened.

If, as is generally the case, the roof is expected to give the most trouble, this can be provided against by strengthening the rings with long fishplates similar to those shown in Fig. 11. On the other hand, in some cases the "invert" has failed where the crown has been little disturbed. Such cases are likely to arise when a bed of soft fire-clay interstratified with hard rock occurs at a great depth, as the soft bed is forced out with a pressure that is almost irresistible. Here the maximum strength would naturally be provided at the floor, the fishplates being placed on the lower section of the rings for this purpose. By whichever method the movement of the soft fireclay is controlled provision should be made, if possible, to tap the fireclay either by constructing a passageway behind or by means of holes through the arch. It may also be advisable to use compressible material, such as brushwood, between the arch and the clay, so as to produce a cushioning effect.

An important advantage of steel and iron supports is that they can be made of any desired shape and size to suit any given conditions. Some degree of standardization should, however, be attempted.

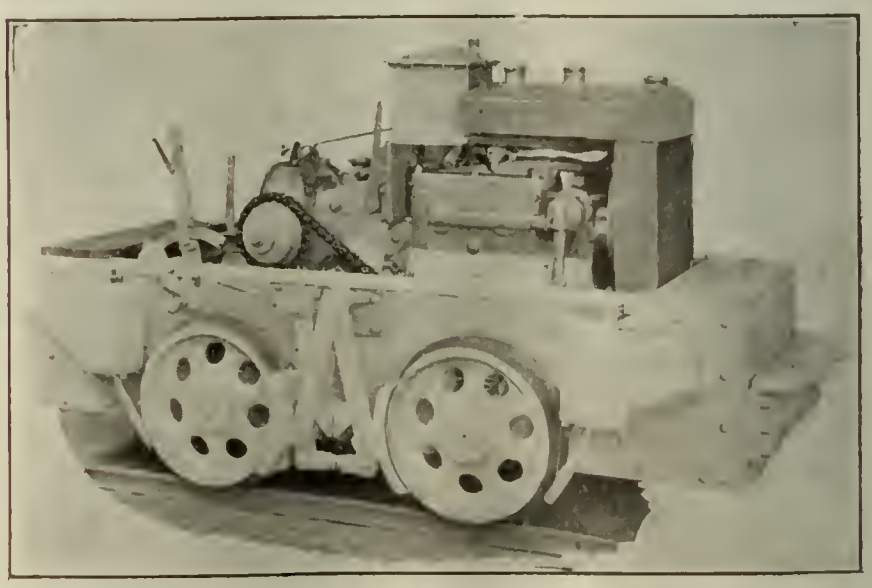
Gasoline Locomotive with Tractor Type of Motor Having Clarified Air Supply

IN ORDER to meet the demand for a gasoline locomotive that would be dependable for light haulage service and that could be made at reasonable cost the machine shown in the accompanying illustration has been developed. This is a substantial locomotive built to withstand severe service. The motor is of the tractor type, the ruggedness of which has been thoroughly demonstrated. All engine parts in this design are thoroughly inclosed and consequently are well protected from dust and dirt, yet are readily accessible for inspection or repair.

Intake air to this engine is washed by being passed through a water clarifier which removes all dust and dirt. The usual simple and efficient splash system of lubrication is employed. All oil used for this purpose is introduced at one point in a central reservoir which supplies all parts of the motor and transmission assuring ample lubrication.

The clutch is placed behind and adjacent to the flywheel and the propeller shaft at its extremity carries a bevel pinion that is in constant mesh with two bevel gears, causing them to rotate in opposite directions. Forward or reverse movement is obtained by engaging either one or the other of these bevel gears by means of a sliding clutch. A neutral position, of course, is provided also. From the bevel-gear shaft drive is made through a spur gear reduction to a jack shaft on the extremities of which are mounted sprockets which connect with the axles through roller chains.

Changes of speed are obtained by throttle control similar in operation to that of a steam locomotive. All levers are grouped within easy reach of the operator. Cast-iron wheels are standard equipment but steel or steel-tired wheels as well as a cab can be provided. The weight is about 4,000 lb.; the minimum radius of curve that can be traversed is 13 ft. and the speed may be anything up to 8 miles per hour. The track gage is 24 in. or more and the height is 54 in. without cab. Assuming a car resistance of 30 lb. per ton of trip weight this locomotive, which is manufactured by the Atlas Car & Manufacturing Co., of Cleveland, Ohio, will haul a 25-ton trip on a level track, 9 tons up a 2-per cent or 2 tons up a 7-per cent grade.



GASOLINE LOCOMOTIVE FOR HAULAGE AT COLLIERIES

A 2-ton locomotive for light service, that can be used on 13-ft. radius curves and with a 24-in. track gage. It has hand brakes, renewable shoes and hand-operated sanders. The frame is of structural steel.

Can Mechanical Replace Human Energy in Underground Loading?



Human Effort in Coal Loading Costs $10,000 a Year per Horse-Power and Almost Ten Dollars per Kilowatt-Hour—Working Efficiency Roughly 2½ per Cent—Cars Changed in 1½ Minutes

AT A RECENT meeting of the Engineers' Society of Western Pennsylvania J. F. Joy read a paper on "The Substitution of Mechanical Energy for human Energy in Underground Mining," of which an abstract follows:

"One of the largest items of expense in the production of coal is incurred in its loading out at the face of the workings. The annual production in the United States, which totals more than 500,000,000 tons, is loaded at the face by approximately 400,000 mine workers out of the 750,000 employed. It is evident, therefore, that this operation absorbs the greater part of the labor employed in the mining of coal.

"It is said that a man at work will through an eight-hour shift develop one-tenth of a horsepower, so that for 400,000 miners the power equivalent is 40,000 hp. Converting this value to kilowatt-hours and allowing 200 working days per year, the work equivalent resolves itself into 47,744,000 kw.-hr. With a daily wage of $5 it will be seen that the loading process costs the coal industry $400,000,000 per year or $10,000 a year for each horsepower.

Pay Five-Hundred Times Too Much for Energy

"Similarly the work costs almost $10 per kilowatt-hour, or four to five hundred times the cost of electrical energy. Because men can perform tasks like these only at enormous cost, engineers are providing means to convert electrical energy into mechanical work, in such a way as to effect greater economy.

"The question of efficiencies must be taken into account in making the comparisons. Assuming that the coal is loose the greater part of the 40,000 hp. is spent in raising it, let us say, 3.3 ft., which is a fair average for the difference in level between the mine floor and the top of the car. In lifting 500,000,000 tons of coal through this distance only 1,000 hp. is consumed, and the resulting efficiency is 2½ per cent. Most of the miner's time is spent in dislodging the coal preparatory to loading, in timbering, laying track, etc., but, regardless of the work incurred in these operations, the efficiency is lowered because he must stoop and erect himself for each shovelful of coal.

"The supplanting of hand labor at the face by machinery has been the aim of a number of engineers for a score or more of years. Progressive mining companies have encouraged this and interested themselves in the project and millions of dollars must have been spent in experimentation. As a result, many different machines, involving a variety of principles, have been devised and operated. Many of these machines work admirably when loading loose coal but have been unsuccessful in loading coal in the semidisturbed state as it exists at the working face after blasting. To meet this difficulty the man who loads by hand not only has a shovel to lift the coal but provides himself with two picks to loosen it, and excessive quantities of powder have been resorted to in some cases.

"Although it has the desired effect—that of producing an easily loaded coal—a loss results instead of a saving, inasmuch as the coal is shattered. Many of the machines were not designed in keeping with the prevalent system of mining. To make conditions more suitable to the handling of a particular type of machine the cry has been raised to supplant the room-and-pillar system by one of the many wall systems.

"It is safe to assume that 98 per cent of the yearly production of coal in this country is mined by means of the room-and-pillar system; the method of working has been adopted after years of study and experience on the part of the operators, so that today it is considered the most practical and economical means of winning coal. In the early development of this method many lives and much money were lost, so that it would be incongruous to consider a different system of working at this time."

A Loader Both Props and Runs Machine

In the discussion that followed E. H. Coxe, general manager of the Snowden Coke Co., inquired whether the runner of the one-man loader set the timbers as well as operated the machine, and Mr. Joy replied that it did. Some doubt was expressed as to the practicability of such practice.

Mr. Coxe then told of a loader that was developed and tried in one of the mines of the Pocahontas Fuel Co. several years ago. Mr. Newdick, who developed this machine, was in the audience. The loader was manned by four men in addition to the operative. The seam being mined was the Pocahontas No. 3, which varies in thickness from 8 to 10 ft. Two motors were used for pulling cars to and from the room face, two 3-ton cars to a trip. Breakthroughs were established at 100-ft. intervals, and in this way two motors could ply back

and forth without interference, one working on the straight and the other from the nearest breakthrough. In this manner it was said that a car could be loaded and moved in 4¼ minutes, or at the rate of one ton per minute, allowing 1¼ minutes as the average time for changing cars.

Mr. Newdick afterwards stated that much time is lost in car shifting, even in the best regulated system; investigation at the mine mentioned proved that on the days of maximum loading the loader was in actual operation not more than 42 per cent of the time; with most favorable conditions and using two motors as cited, much time was lost. The time actually occupied in moving from one room to another with only 60 ft. between centers, traveling the nearest breakthrough, totaled approximately 4 minutes. This time did not allow for delays due to derailments and other accidents. An instance was mentioned where a Meyers-Whaley loader disposed of all the coal from one cut in eight 3½-ton cars (loading time not given), with an average time of changing cars of 1½ minutes. This shifting time agrees closely with that given by Mr. Coxe, which was 1¼ minutes.

The question was raised whether it is not disadvantageous to use a rigid conveyor on a machine mounted on a caterpillar tractor, in that the discharge end of the conveyor moves away from the car when swinging around for more coal. Mr. Joy was asked also whether his type of loader necessitated continual car spotting. To the first question he replied that with the proper manipulation by a skilled runner the discharge point of the rigid conveyor could always be kept over the car and that the rigid conveyor means simplicity in both design and operation. In answer to the second question he said that the conveyor extends over practically the entire length of the car, loading progressively forward, so that the loader and not the car is moved.

To an inquiry made by Mr. Coxe as to the day-in and day-out output of the one-man loader Mr. Joy gave figures of a case where a 3-ft. seam was being worked. In two successive weeks one machine loaded an average of 52 tons in eight hours. In the two weeks that followed this period the average daily output amounted to 60 tons. The operator, he said, claimed a saving of 25c. per ton of coal loaded.



LOADING COAL WITH JOY LOADER

Coal gathered by the machine with the aid of only one attendant. Note the large lumps which are torn from the pile, carried up the conveyor and deposited in the car. The illustration appearing in the title of the article shows a car that has been filled with large lumps by the machine.



DEVICE FOR GATHERING COAL TO CONVEYOR

A wide sloping plate is thrust toward the coal which the two fingers gather and sweep onto the conveyor by which the coal is carried back to the waiting car in the rear.

Mr. Eavenson asked if the loading could be reduced to man-hours per ton of coal, so that a person might figure out his own costs regardless of varying wage scales in the different fields. Such figures were not available at the time, but some interesting facts were given in reply. In the 3-ft. seam already mentioned approximately 12c. was allowed for cutting and 8c. for blasting per ton of coal. One loader operative, a mule and driver had an output daily of from 50 to 60 tons. The tonnage came from three working places; there were only nineteen working places in this mine at the time, and it is the ultimate object of the company to have not more than thirty working places throughout the life of the mine. The company asserts that the number of men on the payroll, exclusive of the men on the loaders, is lessened by one-third due to the concentration of workings.

Mr. Weldin asked Mr. Joy if he had decided to cease manufacturing the high-seam loader. The latter replied that in 1917 and 1918 the Pittsburgh Coal Co. used this type of machine in one of its mines, and produced 100 tons per day, loading slightly less than two tons in two minutes. However, he felt that the smaller one-man loader is more practical for the present at least and that the large machine was beyond the economic limit of present-day requirements.

Mr. Eavenson asserted that his observations led him to believe that the actual working time of a mechanical loader does not exceed 35 per cent. Consequently the greatest difficulty in the adoption of the mechanical loader cannot be ascribed to the loading machines thus far developed but rather to the inadequacy of the schemes of car handling. A successful method of car supply to the face must be worked out before the industry can hope for real success. He also asserted that with an adequate car supply, even a hand loader could almost double his daily output.

He was of the notion that pillars could be drawn more safely, more quickly and with an appreciable saving by means of mechanical loading. Because of the rapidity of mechanical loading the retreat would be so swift as to occasion little menace due to the roof, which would not cave so close to the rib end as it does in the present method of mining. Not only that, but there would be less slate to contend with and mining costs unquestionably would be decreased.

Mr. Joy said that there could be no doubt as to the advantages of the mechanical loader for pillar work. Returning to face loading, he said that in the mine of the Pittsburgh Coal Co. to which reference was made the roof was weak. An I-beam supported at both ends by wooden posts was maintained two or three cuts away from the face, being moved every other day. This provision and the practice of placing the regular timbering closer to the face greatly assisted in insuring safety.

He then mentioned an experiment made in a mine where the mechanical loader was used in wall mining. Entries were driven on 300-ft. centers. A wall cut to a depth of 7 ft. was made, with the track placed 7 ft. from the wall, or 14 ft. from the solid coal. Posts were placed on the opposite side of the track. With this arrangement the loader worked admirably.

At this point Mr. Coxe expressed his surprise that a flame-proof motor had not been developed for loading machines. Unless a safe motor were developed the mechanical loader seldom would be used in gaseous mines. F. A. Barry, of the Westinghouse Electric Co., said that manufacturers had given little thought to such a motor, inasmuch as the present demand did not warrant the cost of its development. Such a motor would require a marked change in design. Mr. Joy added that not only must a motor be developed to exclude gas from its interior but that the controller and the resistance must be protected similarly.

Healey River a New Coal Field in Alaska With Seven to Forty-Six Foot Coal

THE Secretary of the Interior has authorized the immediate construction of trackage connections between the Alaska R.R. and the coal mines recently developed on the Healey River. By constructing a spur four miles in length cheap fuel will be made available to Fairbanks and the mining region tributary to it. The successful development of coal on the Healey River promises to stimulate mining in the Fairbanks region more than any other event in recent years. Even at present, without trackage connections, with all the expense entailed by having to haul the coal four miles to the railroad, unload it at the Nenana River, ferry it across and reload it on cars on the other side of the river, this coal is being laid down in Fairbanks at $8 per ton. With the completion of the Nenana River bridge this winter, and with the establishment of through traffic, Fairbanks will have all the advantages of cheap fuel.

Until the Healey River coal became available the Fairbanks district was dependent largely upon wood for its fuel. Prices last winter were as high as $24 a cord. Even the largest consumers paid $12 a cord on contracts. At such prices no serious efforts were made to thaw ground or even to operate dredges on a large scale. The cost of power prevented the development of large areas of promising placer ground of moderate value.

The coming of the railroad already has cut down the cost of miscellaneous supplies at Fairbanks by one-third. Now, with the assurance of a dependable supply of satisfactory fuel, it will be possible to undertake both lode and placer mining on a scale which costs have made impossible in the past.

What is true of the Fairbanks district will apply in a slightly different degree to all points along the inland rivers, as coal can be delivered by barge from Nenana at prices much below what hitherto has been paid.

Contracts have been let by the Healey River Coal Corporation for driving a 1,200-ft. main adit which will open a series of coal beds which vary from 7 to 46 ft. in thickness. The coal is a fair grade of subbituminous and already is being used extensively for railroad, industrial and domestic use. Steam-boiler tests have been made at Anchorage by John A. Davis, of the Bureau of Mines staff, which show that the Healey River coal has 90 per cent of the efficiency of that obtained from the bituminous coal of the Matanuska field. The corporation engaged in the mining enterprise is being financed and conducted by local men familiar with conditions in Alaska. Only within the last year has it been appreciated that this coal, which occurs near the lignite deposits in the Nenana fields, is not itself a lignite but is of a distinctly better grade. The failure to recognize its quality explains the delay in developing this resource which is expected to play an important part in developing the Fairbanks district.

Outcrops at Healey Forks, Alaska

Careful scrutiny will show a black dump with a coal chute resting on it to the left of the picture, the opening being in the thick bed. Another entry appears in the center at the foot of the same big seam, and on the extreme right is another chute, the drift in the coal which serves it not being visible. Here are apparently six seams, some quite irregular but one unusually thick. In fact the coal, which is subbituminous, measures in places 46 ft. in thickness.



Two-Unit Automatic Mine Substation Erected to Improve Service and Reduce Mining Cost

Surface Substation Runs Without Attendant — Second Motor-Generator Set Not Put Out of Operation Unless for Fully 10 Min. First Set Has Been Adequate, a Short Level Road Making 6-Min. Low Load Frequent

By H. F. Randolph and C. E. H. von Sothen

A REMARKABLE increase in the use of automatic substations in mining service has been noticeable during the last year. Motor generators and synchronous converters have been installed with control devices that permit them to operate with perfect safety even though unattended. Infrequent inspections only are necessary. Because of the elimination of the human element and the possibility of more advantageous location, such stations have been able to afford a quality of service better than that rendered by the ordinary manually-operated mining substation and as good as that of the best.

One of the most interesting installations recently put in operation is the two-unit synchronous motor-generator automatic substation of the Star Coal & Coke Co. at Red Star, W. Va. This company recently undertook a general electrification program which involved the installation of General Electric Co. transformers, induction motors for pumps, tipple and fans, an induction hoist motor with magnetic control, and the automatic substation just mentioned.

This substation is situated on the surface about a mile and a half from the mouth of No. 1 mine. Direct-current at 550 volts is taken down a borehole a distance of 325 ft. to the trolley, which extends approximately 4,500 ft. into the mine in one direction and out through the mine mouth in the opposite direction. From the mine mouth it continues on the surface a few hundred feet, after which it enters No. 2 mine and extends about another mile underground. The present direct-current load consists of one 8-ton and one 10-ton locomotive in No. 1 mine, an 8-ton locomotive in No. 2 mine together with mining machines and gathering pumps.

In No. 1 mine the trips usually consist of twenty 2-ton cars each, except for a short distance where the grade is steep. Here the locomotives pull only eight or ten cars per trip. The loads are brought to the foot of the slope up which they are drawn by the induction-motor hoist over a 7-per cent grade to the mouth, a distance of 5,500 ft. The locomotive in No. 2 mine usually hauls out eight-car trips, the size of trip being such as to bring the full output of the mine to the tipple with as small a demand charge as possible.

Before the new installation was made the haulage system was supplied by two steam-engine-driven direct-current generators. These units have been replaced by the automatic substation, which contains two 150-kw. 500- to 550-volt generators driven by 2,200-volt 3-phase 60-cycle synchronous motors fitted with direct-connected exciters. By making the station automatic it has been possible to place it in the location that will give best voltage at the face, yet minimize attendance charges.

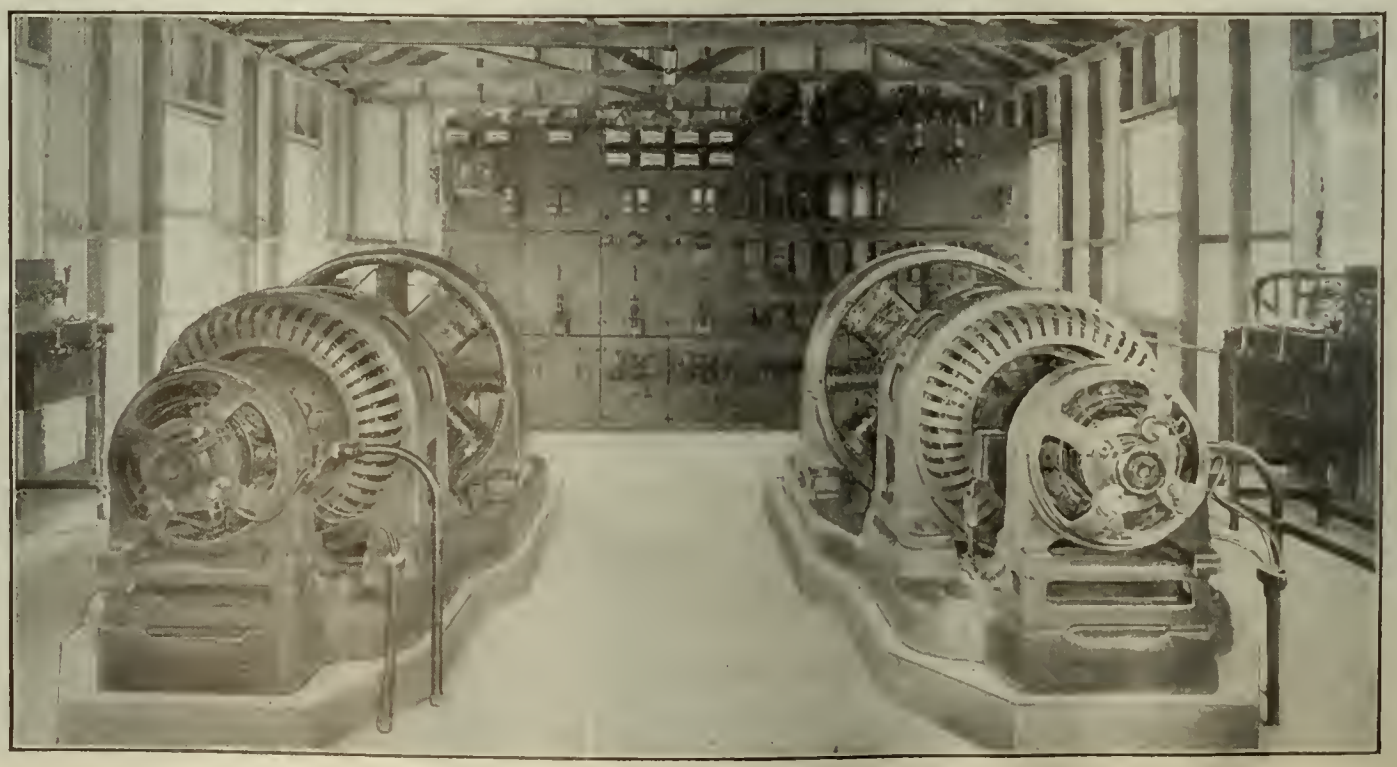
Power is purchased from the Virginia Power Co. Current enters the substation at 2,300 volts through iron conduit laid under the floor. Referring to Fig. 1 the incoming line panel is shown on the extreme left of the switchboard. In addition to indicating meters and overload protection, this panel contains integrating, graphic and demand meters. The alternating current bus connects this panel with the three adjacent ones, which are, in succession, a feeder panel and the two panels that control the synchronous motors. The line from the feeder panel goes to the outside through iron conduit.

Three transformers just outside the station deliver power to the pump motors at 440 volts, the lines being taken down the same borehole as the direct-current

FIG. 1.

Interior View of Substation

Two 150-kw. 500- to 550-volt synchronous-motor generators are installed with every detail of automatic control. Starting on the extreme left of the switchboard the first panel is for incoming current; to the right are a feeder panel, two panels that control the synchronous motors, two that give proper starting sequence and protection, a direct-current panel and one for the relays of the automatic reclosing feeder equipment.



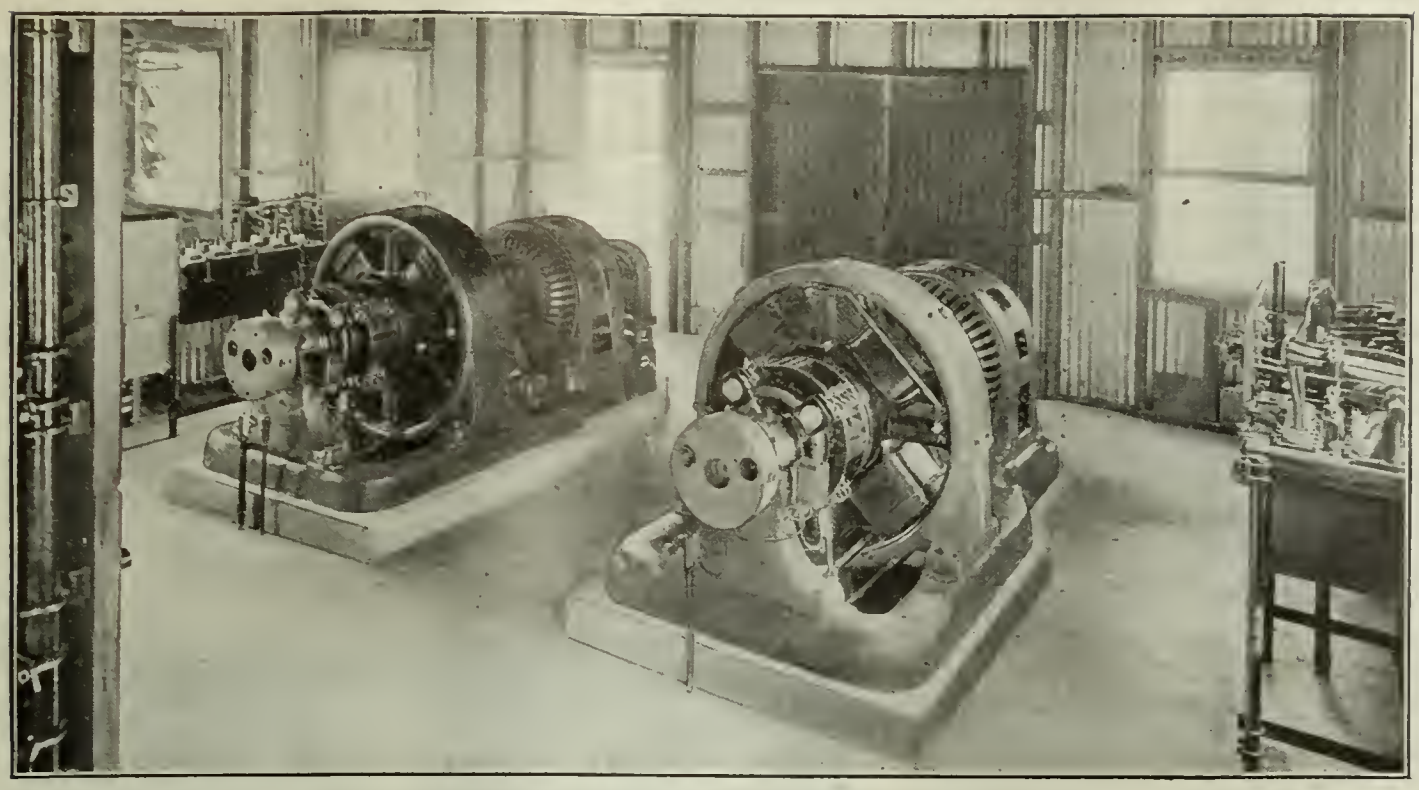


FIG. 2.

Substation that Regulates Itself

Automatic substation of the Star Coal & Coke Co., of Red Star, Fayette County, West Virginia, seen from rear and side of switchboard. This is a view of the room as it normally appears, being occupied solely by the machinery except during inspection. An employee who lives nearby puts it in operation in the morning on his way to work by closing two switches.

lines. The 2,300-volt feeder continues over a pole line to the hoist, the fan, the town-lighting circuit, and to the transformers for the tipple motor and a second small fan. While the incoming line and feeder panels are not necessary for the successful operation of the automatic substation, it was considered desirable to combine them with the automatic switchboard so as to insure alternating current power for the hoist, pumps and fans when the substation is idle.

The remainder of the board consists of two control panels to give proper starting sequence and protection, a direct-current panel containing contactors and circuit breakers for both generators, and, on the extreme right, a panel on which is mounted the relays for the automatic reclosing feeder equipment. The feeder contactor is hung from the pipe framework behind the panel.

Oxide-Film Arresters Sidestep Lightning

Above the switchboard may be seen the six choke coils used in connection with oxide-film lightning arresters on the incoming line and the alternating-current feeder. The two motor field rheostats and the load-indicating resistor for the automatic reclosing feeder equipment also are visible above the board.

Though it is not the purpose of this article to present a detailed description of the operation and protection of this station a brief discussion of it may be of interest. Normally the station will run only during the day. An employee who lives nearby puts it in operation in the morning on his way to work by closing the two control lever switches on the base of the feeder panel or by closing the two oil circuit breakers. Only one motor-generator set starts at this time, however, a change-over switch determining which one shall lead. Provision has been made so that the station may be arranged for starting and stopping from the tipple office, should this be found desirable.

The starting operations are performed in the same order as in manual operation. In other words, half voltage is impressed on the motor until it reaches synchronous speed, then it is excited, and when the field current has built up to about one-half normal the machine is thrown on the line. The moderate starting peak thus obtained results in only a small demand charge and low cost for power.

In Fig. 1 the master control contactor for each motor-generator set is shown on the base of its control panel. When the incoming voltage is sufficiently high for proper operation and all protective devices are in positions showing normal conditions for automatic starting the master contactor of the first set closes immediately after the indication to start has been given. Fig. 2 illustrates the sets with their oil-immersed starting and running contactors. The starting compensator may be seen in Fig. 1, mounted on the end of the pipe framework that supports the starting and running contactors.

Closure of the master control contactor causes the starting contactor to connect the motor to the line through the starting compensator. Soon after the set reaches synchronous speed the exciter voltage builds up to a predetermined value, whereupon a relay picks up and closes the motor field contactor. This device is shown on the base of the synchronous-motor panel.

When the field contactor closes it opens the discharge resistance, which short-circuits the motor field during acceleration and connects this field to the exciter. As the field current reaches approximately three-fourths of its normal value it picks up a relay which opens the starting contactor and closes the running contactor. This connects the motor directly to the line.

Polarized Relay Assures Generator Polarity

When the voltage is sufficiently high a polarized relay, used to verify the generator polarity, closes its contacts. This completes the circuit to the generator line contactor through auxiliary relays. The line contactor closes and connects the machine to the direct-current bus. One section of the load-indicating resistor is next cut into the feeder circuit so as to bridge the feeder contactor. If no severe overload or short-circuit exists on the feeder its contactor closes after a short but definite time delay. The station is now ready to deliver current.

A current relay in the feeder circuit closes its contacts when the load on the first motor-generator set becomes slightly more than full. If this load is maintained for 30 seconds the second set is started, and in less than half a minute is equalized and on the line, helping out set No. 1. When the load falls off to a point

where set No. 2 is no longer needed and remains below this value for approximately ten minutes, this set is shut down completely, but is ready to come on again whenever required.

The reason for using a time-delay value of ten minutes is as follows: There is a stretch of track in No. 1 mine that is practically level, and while a trip is passing over it the total load on the station falls off appreciably. It takes a trip six or seven minutes to cover this stretch, and it would not be desirable to have the second set shut down, but will restart whenever required.

When the mine has finished for the day the station is shut down by opening the oil circuit breakers or the control switches, whereupon all devices return to the proper position for a restart.

In addition to the devices which insure proper sequence in starting the two motor-generators and putting them on the line, others are provided to protect the machines from any damage that may result from abnormal conditions that arise during operation. Two of these protective features have already been mentioned —namely, the relay to prevent starting on low incoming voltage and that for verifying generator polarity.

These protective devices may be divided into two groups: those affording protection in cases of temporary emergency, permitting resumption of service as soon as conditions return to normal, and those that shut the station down permanently when trouble arises of such a nature that the installation should be inspected or repaired.

In the first group may be placed those devices that protect against single-phase starting, undervoltage on the incoming line, overheated motor windings, overheated load-indicating resistor, direct-current overload and reverse power. The second group comprises the bearing-temperature relays and those devices affording protection against excessive starting time, wrong generator polarity, permanent field failure, overspeed and overload either on the incoming line or upon the two motor circuits. The alternating-current feeder also is provided with overload protection. The general arrangement of the bearing-temperature relays, flash barriers and speed-limit switch may be seen in Fig. 2.

Single-phase protection is so arranged that the station cannot start if one phase is dead, but as soon as three-phase power is available it will automatically go into operation. If single-phase occurs while the set is running it will continue to supply power unless the load is heavy enough to cause the motor windings to overheat. In such a case one of the temperature relays will open the main control contactor and shut the set down. It will restart automatically when the windings cool and three-phase power is supplied. The machine temperature relays are connected to the current transformers and have a heating characteristic similar to that of the motor. The automatic reclosing direct-current feeder equipment already referred to is designed to afford proper protection when either or both machines are running.

The service obtained from this substation has been highly satisfactory; all operations of the mine have been speeded up, delays greatly reduced both in number and in total time lost, and power costs have been cut beyond expectation. Other conditions remaining the same, it was found that for the first month of operation with the electric equipment the total cost for power was much less than it had been with the steam plant. This includes the hoist as well as all other apparatus, but the saving in attendance charges on the substation made up a large part of the total. The results obtained clearly justify the increase in investment over that necessary for manually-operated substation.

Dangers Lurk in Unprotected Gears

THIS gear train was found unprotected, as shown, in a headframe of a big mine. Guards are still unusual in tipples. They are making their way in breakers, however. Our mine inspectors rarely examine tipples and would have little authority if they did. But dangers certainly exist in them from the moving parts of machinery, flying coal dust, lack of light and fire.

Fortunately the building itself is fireproof. Even



CORNER IN A TIPPLE WHERE PROTECTION IS NEEDED

Fortunately the exposed gears in a tipple make so much noise that they warn everyone that something is astir that must be watched and avoided. Fortunately also few men go near the gears of a tipple and those, that do, pass them but infrequently.

then the exposed oil would in this case be no little menace, for the bearings are evidently bolted to wood stringers. With speed reducers the gears and the oil would be kept inclosed and space would be saved.

Gas Blows Out Coal in Granby Mine Faces

BLOW-OUTS have been interfering with the working of the Cassidy, Vancouver Island, mine of the Granby Consolidated Mining & Smelting Co. These occurrences have been more or less frequent for months. Because of them the Minister of Mines some time ago prohibited the use of powder underground. Within the last few weeks they appear to have become more severe, for two miners have lost their lives at different times within this period. In each case they were buried under the fall of coal, and life was extinct before the bodies could be extricated. Coroners' juries have returned verdicts of death by misadventure, no blame being attached to any officials. The situation has developed into a problem of some perplexity both for the department of mines and the company management. The coal in the area now being worked is soft and conditions such that there is no assurance but that blow-outs will continue and that further lives be lost unless something is done to safeguard the workers. William Sloan, the minister of mines, has interested himself in the matter personally to the extent of prohibiting the use of explosives, taking up with the U. S. Bureau of Mines the question of the explosibility of the mine dust, and now, it is understood, has instructed his officials to make full investigation.



Problems of Operating Men

Edited by James T. Beard



Practical Test Applied to Safety Lamps

Long-Standing Practice in Scotland—Lamps, at Times, Assembled Without Gauzes — Caution Taken by Firebosses to Avoid Danger of Cracking Glass — Need of Expansion Rings

REFERRING to the letter of Joseph Cain, *Coal Age*, July 13, p. 60, I want to congratulate him on the serious view he takes regarding the importance of testing every safety lamp before it is taken into the mine. Most of us will agree that sufficient attention is not given to this matter.

In Scotland where I gained my early experience in mining, the Coal-Mines Regulation Act requires that firemen (firebosses) examine the safety lamps of all men employed in gassy mines. The examination is made at the fireboss station as the men pass in to their work. At the same time, each man is informed of the condition of his working place.

The importance of making this examination of each lamp taken into the mine has long ago been impressed on my mind, through my experience in making such examinations as fireboss, and from the many accidents attributed to defective safety lamps.

Practice in Scotland

The practice is of long standing in the mines of Scotland. It was the custom, there, to supply every fireboss with a small tin tube, for convenience in blowing around the top and bottom of the glass globes of the lamps. It was nothing unusual for a fireboss to reject as many as five or six lamps in every hundred examined, because of the test showing leakage past the globe.

If any reader doubts that this is an habitual practice in those mines, let him ask a Scotch miner, who has recently come over. Hand him a safety lamp to assemble and he will invariably blow all around the globe, after putting the lamp together lighted and ready for use.

Many a time I have been ridiculed, myself, for this habit, by those who contend that such a small hole would be no larger than those formed by the mesh of the gauze. They seem to forget that the glass globe has no cooling principle like that attributed to wire gauze. Not only would a loosely assembled lamp be unable to withstand a strong blast of air, but it would easily pass flame in an explosive mixture.

As further proof of the importance of examining safety lamps and applying this practical test before taking them into the mine, I have in more than one instance, discovered Marsaut and Mueseler lamps assembled without gauzes. These lamps are provided with slip bonnets that slip over and protect the gauze chimney of the lamp. When this slip bonnet was removed for the purpose of inspecting, the gauze would sometimes be found missing.

Need of Good Expansion Rings

Now a word about the danger of the glass cracking when that has become heated, the lamp being screwed up tight and there being no expansion washers to allow for the expansion of the glass by the heat. I understand that comparatively few lamps have these expansion rings and in few of these is the ring really efficient.

When a lamp is tightened up on a hard-fibre washer that is non-resilient, there is no yielding to allow for the expansion of the glass. Even with a resilient washer, such as asbestos, the globe is sometimes cracked when the lamp becomes excessively heated in a gas-charged atmosphere.

Many experienced firebosses with whom I am personally acquainted have long had the habit of not screwing the lamp tight against the globe, until later when the lamp will have become warm on their way into the mine. These men claim they are very particular about tightening up their lamps before leaving the main intake airway, by which time the globes have become fairly warm and expanded. The same men are emphatic in their claim of globes having been broken by tightening them up too soon.

Lamp Globes Cracked by Heat

On more than one occasion, I have seen the globe crack when a lamp was hanging on a prop and had become overheated, perhaps by reason of the presence of more than the usual amount of gas in the air.

In a little book edited by L. S. Hawkins, chief of the Division for Vocational Education, in the trade-extension classes organized in coal-mining communities, occurs the following reference:

> The expansion ring holds the glass sufficiently firm to prevent shaking and rattling and to keep tight joints, but it has give enough to allow for expansion. If the expansion ring is properly designed it will render it practically impossible to break the glass by screwing the font or lower ring up too tightly.

> The expansion ring is found on only a few modern safety lamps and on only one is it really efficient. Its purpose is to permit the glass to expand when heated and so prevent cracking. This is a common occurrence when no expansion ring is used, for the brass ring in the oil safety lamp, or the font in the naphtha safety lamp, may be screwed up so tightly that the glass is put under strain and when it becomes heated the additional strain causes it to crack. A cracked glass is a great source of danger.

The United States Bureau of Mines has given much attention to the examination and testing of different types of safety lamps, several of which have been approved by the bureau engineers. One of these lamps, which has an efficient expansion ring, successfully withstood fifty tests in a most explosive mixture of gas and air traveling at a velocity of 2,500 ft. per min., without a single glass being broken or cracked.

Bayview, Ala. JOHN WALL, SR.

OTHER LETTERS

WITH much surprise I read the account of Joseph Cain, *Coal Age*, July 13, p. 60, where it is stated that three firebosses, whose lamps he found to be improperly assembled, gave the excuse that they feared to screw up their lamps tight, believing that the heat would expand and crack the glass.

Such an excuse seems to me more like a grandmother's dream. It is strange to me that there are such firebosses around. Every one looks to the fireboss as the man whose duty it is to warn them of walking into danger. It is hard to understand how they, themselves, would be guilty of doing the very thing they are supposed to keep others from doing.

Humorous View of Reckless or Careless Firebossing

The fireboss who would prefer to enter a mine with his lamp in an unsafe condition, rather than to make it safe by screwing it up tight, ought not to be bothered with a safety lamp. Taking a carbide lamp, he should suggest to his brother firebosses that they stay outside of the mine while he goes in to make an examination, doubtless, to his own suicide. Better that, than to have a number of men killed through his ignorance.

But, laying joking aside, let me say without hesitation that, in all the gassy mines, in the bituminous region of Pennsylvania, in which I have worked, no fireboss would ever make his second round with a safety lamp in the condition stated by Mr. Cain.

While I agree fully with his suggestion that all safety lamps should be examined and tested before being taken

into the mine, his method of making the test, by blowing around the glass of the lamp, is not the one that I would use to determine the safe condition of the lamp.

In my opinion, the blowing test is insufficient. If such a test should cause a lamp flame to flicker and possibly go out, we might all agree that the lamp was unsafe; but, to my mind, the security of a lamp, under conditions to be met in the mine, has not been proved by blowing against it.

Instead of the blowing test, I would advise having an explosive mixture of gas and air, prepared on the surface at a place so arranged that the lamp could be subjected to such an atmosphere while its action is being observed. I consider the testing of lamps before taking them into the mine an important matter and hope to hear from others along that line. JAMES THOMPSON.

Mayport, Pa.

WHAT seems strange to me, in reading the letter of Joseph Cain, *Coal Age*, July 13, p. 60, is that he should condemn three lamps as being unsafe, simply because the light could be blown out with his breath.

The fact that Mr. Cain only made his special examination of the mine, once in three months, to ascertain its gaseous condition, would indicate that he had every confidence in his three firebosses, who asked to accompany him on this occasion.

HAS LITTLE FAITH IN BLOWING TEST APPLIED TO SAFETY LAMPS

It is well known that the breath from the human body contains carbon dioxide, which would have more or less of an extinctive effect on the flame in a lamp. As I look at it, it is not strange that the three lamps inspected by Mr. Cain could be blown out with his breath.

Let us suppose, for example, that the flame of each lamp was first lowered, as when making a test for gas. Then, if the lamp was grasped tightly with both hands, the fingers covering more or less the openings in the air-admission ring below the glass, it is easy to believe that the flame of each lamp could be blown out.

Our friend states that he blew hard, just below the glass cylinder where it rested on the brass ring supporting it. It is my belief that it is possible to blow out the light, in any Wolf safety lamp, by blowing hard against the lamp under the air-admission ring.

My conclusion is that this is not a proper test to determine the security of a lamp, and I think that most gas inspectors will agree with me in that regard. It is more important to make a close examination of every lamp and see that all parts are clean and properly assembled and that there is no defect or injury apparent in the gauze. But when a lamp has been so prepared and lighted, its flame can generally be blown out with the breath, in the manner described. OSCAR H. JONES.

Wilder, Tenn.

Heating of Gob Areas

Cause of heating—Use of salt as a preventive—Excluding air from the waste by different means.

IN THE issue of *Coal Age*, May 25, p. 886, a mining engineer asked for suggestions in regard to eliminating the trouble arising from the heating of gob areas, in longwall advancing. He stated that the primary cause of the heating is the mixture of fine coal, slack and clay cuttings containing pyrites.

It seems that a radialax machine is used for the mining, which was done in a clay band in the coal, a foot from the roof. Under these conditions, there can be little doubt but that a large amount of fine coal and clay cuttings would accumulate at the working face and have to be either loaded out or stowed in the waste.

Owing to the presence of the sulphur, the stowing of this refuse in the gob would easily cause the waste to heat. To my mind, the suggested application of salt, unless used in excessive quantities, would keep the place moist and have practically the same effect as to saturate the place with water, which it is claimed would increase the trouble.

Not wholly knowing the conditions, it is only possible to make a few suggestions that may or may not be applicable in this instance. Where certain areas are giving trouble by heating, it may be possible to cover up the exposed portion with soil or clay taken from the surface into the mine. Mixed with some salt, this coating would probably remain moist and pack down so as to form an airtight covering, particularly if a light application of water was used.

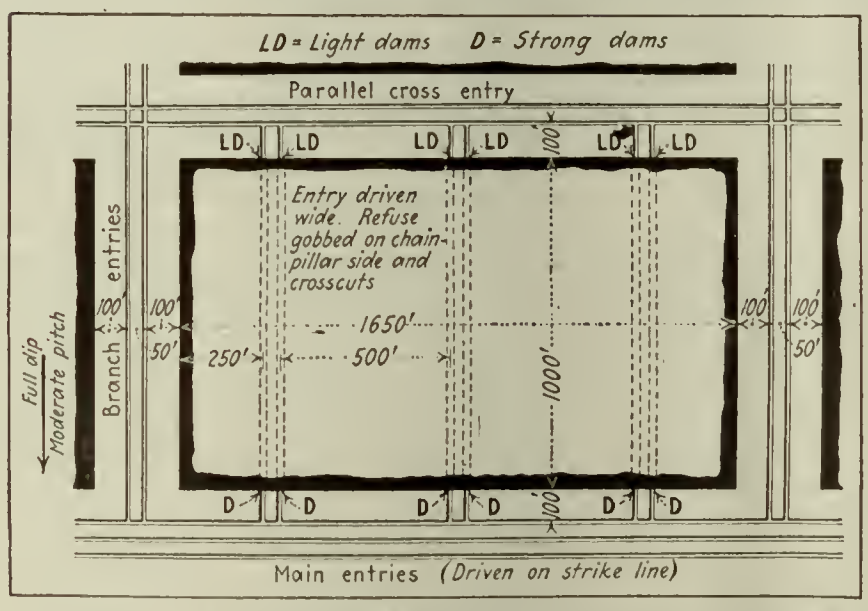
To be brief, in my experience, there are two ways of fighting these conditions with any degree of satisfaction. The first is, to seal off the area so as to completely exclude the air; or, second, cause a sufficient air current to sweep the waste area to keep it cool by carrying off the heat generated.

Of these two methods, the last named is less practical than the first, because the noxious gases generated are liable to be carried into other parts of the mine. If permitted, I would suggest a combined panel system and modified longwall method of working, in order to eliminate gob-fire troubles.

As shown in the accompanying figure, this proposed method consists in driving the main developing entries three abreast, on a grade favoring the loaded cars. The seam is said to have a moderate pitch and these main entries are driven approximately on the strike but so as to afford a slight grade in favor of the loads. The entries are driven narrow and the machine cuttings are loaded out from them.

At intervals of 1,900 ft., branch entries are driven up the pitch, in pairs and on 50-ft. centers, with 95-ft. barrier pillars on either side, leaving solid blocks of coal 1,650 ft. between them to be worked out as panels, on the longwall system. The panels are completed by driving cross-entries, at intervals of 1,250 ft., in pairs, parallel to the main entries and on 50-ft. centers, with 95-ft. barrier pillars on either side. This makes the size of a working panel 1,650 by 1,000 ft. In driving all these entries, the safest practice is to load out the machine cuttings rather than to gob this material, which will heat if stowed in the crosscuts, as is common practice.

Starting on the main headings, each panel is worked by driving three pairs of butt headings on 50-ft. centers and directly up the pitch, thus leaving 245 ft. of coal on each side of each pair of butts, to be worked out as longwall - retreating faces. The butt headings are driven narrow, 10 ft. wide, through the 95-ft. pillar, after which they are widened out to 15 or 18 ft., depending on roof conditions. This extra width not only avoids payment for yardage, but affords room for storing the cuttings, on the chain-pillar side, between the crosscuts. I want to say, however, that such practice is not recommended, it being advisable to always load out these cuttings.



COMBINED PANEL AND MODIFIED LONGWALL SYSTEM

Working a panel on the retreating system, starting at the top of the pitch, there would be practically six 250-ft. faces or, if worked in steps, say thirty 50-ft. faces. Allowing four men working each 50-ft. face and assuming a machine cut of 6 ft., would give an output of, practically, 45 tons, per day, from each face, making the total daily output between 1,200 and 1,500 tons, from a single panel.

The concentration of work thus effected would enable all the coal in a panel to be taken out before much heating took place in the waste. Of course,

the chain pillars, in the headings, should be pulled as the work proceeds. In case trouble develops, however, the narrow openings, in the 95-ft. barrier pillars, will afford ample opportunity for the building of good airtight stoppings sealing off the district.

By making these stoppings sufficiently strong to withstand the pressure of the water, any panel or district could be flooded, if this became necessary. If a district is simply sealed off the usual pipes should be built into the stoppings for drainage and for testing the condition of the air within.

The method I have described, furnishes a means by which the gob-heating problem can be successfully handled. As the development of this system proceeds, the more newly turned branch entries can be used for haulage roads and airways, while pulling the barrier and chain pillars of the cross-entries. With the complete extraction of all the coal in each panel, and allowing for a 20 per cent loss on the barrier and chain pillars, this method should net a 95 per cent extraction of the seam.

Mt. Harris, Colo. THOMAS ALLEN.

Making Americans

Illiterate Americans harder to manage than foreigners—Intimidation of foreigners by American leaders—Votes in meetings no criterion—New standard of Immigration needed.

READING the excellent article of S. D. Hainley, *Coal Age*, Apr. 13, p. 618, I am reminded of numerous experiences of my own in the coal fields of Pennsylvania, West Virginia and Kentucky.

While I am in hearty accord with every effort that should be made to educate the foreigner, in regard to his obligations to the nation, yet my experience teaches that the illiterate American is a harder subject to manage than the average foreigner, whom I have found more thrifty, energetic and religiously inclined than the ignorant American.

In practically every instance of misunderstanding with the men, I have found the foreigner always willing to do the right thing, except in cases where he has been intimidated by leaders, who are usually American born. It is these leaders who control the situation and it is their action that is responsible for the attitude of foreign miners assembled in a body to consider questions of what they assume and believe to be to their interests as workers.

It is a common occurrence for a meeting composed of a majority of foreign miners to be ruled by one or more individuals acting as their leaders. The votes taken at such a meeting are no criterion of the real feeling of the men, who are misled and blinded by the representation of these leaders.

Taking everything into consideration, I believe it is going too far to expect every man entering our country to be able to read and write the English language. This opinion is strengthened when we consider the hundreds of thousands American-born workers, who are illiterate and about whom we exhibit less concern than the foreigner who migrates to our shores. I am speaking now educationally.

In my judgment, a far better standard on which to base our immigration laws would be one based on a higher moral and physical footing. The moral attribute, in a man's character, stands for more than his intellectual attainments when we are striving for citizenship and national ideals. Proceeding on this plan, there will be little doubt but that the educational training required will follow.

Pikeville, Ky. GEORGE EDWARDS.

Inquiries Of General Interest

Effect of Storage on the Heating Value of Coal

Size and Piling of Coal More Important Than Ventilating the Pile—Experience Proves Heating Value Not Materially Impaired—Prejudice Due to Various Causes

KINDLY permit me to ask a question that, at the present time, has a peculiar interest. It relates to the storing of coal during periods when the production exceeds the demand. There has been a well defined prejudice against the use of storage coal, the claim being advanced that its heating value has been impaired and that the coal does not burn as freely as when it is freshly mined.

The present state of the coal industry must impress everyone with the many advantages to be gained by storing coal. Not only would it be the means of affording miners more steady work, during the dull season when trade is slack and the market demand low; but it would tide over such periods of depression when industrial disputes have closed the mines and the supply of coal is limited.

With these thoughts in mind, I want to ask the question: If coal is purchased and kept in storage for one year prior to its being used does it possess the same heating value as freshly mined coal? In other words, does coal depreciate in heating value and to what extent? Can a furnace be handled as easily with old coal as with coal fresh from the mine? W. L. JACOBSON.

New York City.

The question of coal storage is, indeed, an interesting one at the present time, when the consuming public is brought face to face with a condition that will be appalling if continued but a few weeks longer. As pointed out in this inquiry, the storage of large quantities of coal would have the advantage of keeping the mines running more regularly during a slack market, or when the supply of cars is wanting.

It would eliminate one of the chief hindrances in the work of the miner, by giving him fairly constant employment. It would help to stabilize the industry, in the matter of the price paid by the consumer, and avoid the fluctuation that is common to the present system. With the guarantee of fairly steady work, the coal miner would not have the excuse he now offers for demanding higher wages, and the present high price of fuel would more quickly become normal.

Referring to the question asked by the inquirer, it can be stated that the heating value of coal that is properly stored is not impaired to the same extent as is generally believed. Much depends on the size of the coal and the manner of piling. These factors are more important than the matter of ventilating the pile, which has often been urged as a necessary requirement, in order to prevent overheating and spontaneous combustion.

The result of the experiments made along this line, by the Federal Bureau of Mines, as well as work of a similar nature undertaken by the University of Illinois, shows that the heating value of coal, properly stored, does not materially decrease.

Attention has been drawn to the need of eliminating from the coal to be stored, the smaller sizes, including fine coal and slack. It is also needful to prevent the segregation of coal of different sizes, as invariably happens when the coal is dumped at the top of a conical pile. The larger sizes then roll down the sides of the pile, leaving the fine coal at the top.

In order to avoid this condition, the coal should be deposited in uniform layers over the entire area. There is less weathering of the coal when it is stored under cover, but this is not always possible or practicable.

The prejudice prevailing more or less widely in respect to the use of stored coal arises largely from one or two sources; namely, the improper piling of the coal and the mixture of refuse gathered from the floor of the pile, in replacing the coal. Naturally, there is a greater loss in the storage of the softer and more friable coal, than occurs in the storage of anthracite and the harder grades of bituminous coal.

Little trouble is experienced in the storage of anthracite, owing to a less

tendency to slack; and there is not the same danger from overheating in the pile and spontaneous combustion resulting therefrom. Coal containing sulphur (pyrites) is more subject to overheating and firing, by reason of the oxidation of the sulphur. For these reasons, all coals are not stored with the same degree of success, the softer and inferior grades requiring to be watched more closely than coal of better quality and harder.

When coal is to be stored a large level area should be selected and prepared by removing all refuse and vegetation from the surface. For a permanent storage plant, nothing is better than a concrete floor. Large storage bins, if properly erected, will greatly assist the reclaiming of stored coal. In any event, every precaution must be taken to reduce the breakage of coal in handling and eliminate its rough use of any kind.

Some difference of opinion exists in regard to the ventilating of coal piles. If this is done, however, sufficient air must penetrate the pile to carry off the heat generated. The introduction of a small amount of air only gives rise to oxidation, while not reducing the amount of heat that results.

Consequently, better results will often be obtained by excluding the air and moisture as far as possible. The floor of the pile should be well drained; but tiles, for that purpose, should not be laid beneath the pile, as that would give opportunity for the entry of air to the center of the pile. Every storage pile should be closely watched for the first evidence of heating, and space should be available for the removing of such portions of the pile before the trouble increases.

It should be stated, in closing, that stored coal loses some of its coking qualities and has not the same value for making gas. In storage, the coal loses some of its gas and, in firing, needs to be spread in thinner layers over the firebed. At the same time, its heating value, depending largely on the fixed carbon, is not depreciated.

Examination Questions Answered

Miscellaneous Questions

(Answered by Request)

QUESTION—*In a mine giving off 2,250 cu.ft. of marsh gas (CH_4) per minute, the volume of air entering the mine being 70,000 cu.ft. per min., what is the percentage of gas in the air current at the outlet?*

ANSWER—The total volume of air and gas, at the outlet, in this case, is 72,250 cu.ft. per min. The percentage of gas in this current is, therefore, $(2{,}250 \times 100) \div 72{,}250 = 3.11$ per cent.

QUESTION—*What are the duties and qualifications of a shotfirer?*

ANSWER—The duties of a shotfirer are determined largely by the company who employs him. In some cases, the shotfirer is charged with the duty of examining, charging and firing all shots prepared by the miners that are, in his judgment, safe. At other times, the miners not only drill their own holes, but charge and tamp them ready for the firing. But, in such cases, the shotfirer must examine every hole before it is charged by the miner. After the men have left the mine, it is the duty of the shotfirer to make his rounds and fire the shots in regular order, starting on the end of the air and proceeding against the air current.

The safest practice, however, is to make the shotfirer responsible for the entire work, locating and drilling all holes, and then charging, tamping and firing them, after the men have left the mine. In that case, the work of the miner is limited to loading the coal into the cars ready to be hauled out of the mine. In other words, the miner becomes a loader only and is not permitted to perform any of the work of blasting the coal.

The qualifications of a good shotfirer are the possession of the necessary knowledge, experience and judgment that will enable him to break down the coal in the safest and most economical manner possible. In other words, he must be able to produce the largest amount of coal, with the least weight of powder consumed, and in the best marketable condition. He must be an active, industrious man, cautious and not given to taking chances.

QUESTION — *Blownout shots: (a) Under what conditions may a blownout shot take place? (b) What danger may arise from the same?*

ANSWER—(a) A blownout shot may result from the charge of powder being improperly located or because the shot has not been properly mined or sidecut, making the line of least resistance correspond more or less closely to the axis of the hole. Again, the hole may be overcharged, or improperly tamped, or have too large a diameter; or different grades of powder may have been used in the same hole.

(b) A blownout shot always projects a large volume of flame from the mouth of the hole. If there is any dust accumulated in the place, this is blown into the air by the force of the shot and will probably be ignited by the flame of the burning powder and produce a local explosion of dust, which may or may not be extended throughout the mine, depending on the conditions existing in the workings.

QUESTION—*Describe how you would timber an entry where the roof alone needs support.*

ANSWER—Assuming a fairly good slate or shale roof where the coal is hard, it is common practice to support the roof, at short intervals of, say five or six feet, with good crossbars, set in hitches cut in the top of the coal as shown in Fig. 1. When in position the

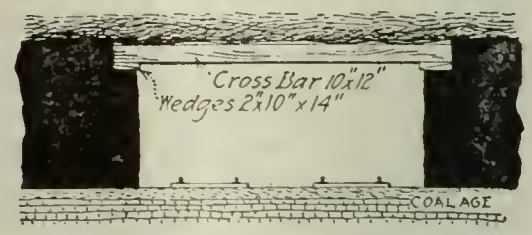


FIG. 1. CROSSBAR SET IN HITCHES

bars are firmly wedged at each end. Where the roof is more frail and liable to scale off and fall between the crossbars, some form of lagging must be used above the bars.

Where the coal is less hard, the crossbars must be supported on legs, on one or both sides of the entry. If the hardness of the coal will permit, short legs set in hitches cut in the rib, as shown on the left in Fig. 2, are used to support the bars. Otherwise, the long



FIG. 2. SHORT AND LONG LEGS

legs, shown on the right of the figure, must be used. At times, in order to avoid their being knocked out by a derailed car, these legs are set back into the rib.

QUESTION—*Make a sketch of a set of timbers, showing how you would wedge them and give reasons for your method.*

ANSWER—As shown in Fig. 2, in the last question, two wedges should be driven between the collar and the roof, near the top of each leg. The effect of this is to transfer the weight from the center to each side post and not permit it to bear on the center of the collar.

QUESTION—*What is the weight, in tons, of the air constituting the ventilating current of a mine when the combined volume of the several currents or splits is 2,240,000 cu.ft.?*

ANSWER—We understand this question as referring to the weight of the entire air volume of the mine. To ascertain its weight, it is necessary, however, to know both the temperature of the air and the barometric pressure. Assuming a temperature of 60 deg. F. and a barometer of 30 in., the weight of a cubic foot of air is 0.0766 lb. The weight of the given volume, in short tons, is then $(2{,}240{,}000 \times 0.0766) \div 2{,}000 = 85.8$ tons.

Is Western Kentucky Lolling In Downy Bed of Wealth?

Many Coal Producers Reap Unheard-of Profits—One Lucky Striker Pays $1,500 for "Pot Hole" and Gets $2,200 for Four Carloads—But Car Shortages and Few Contracts Restrict Earnings in Feast-or-Famine Field

By A. W. Williams
Louisville, Ky.

THE EYES of the coal industry have been turned on western Kentucky during the past few weeks, and few questions are heard oftener than the one concerning "enormous profits." However, giving the devil his dues, it is necessary to look at both sides of the situation impartially. Some western Kentucky operators are making big money. Some are doing well. Some have been barely "skating along."

Western Kentucky for many years has been a field that failed to make much progress or any large amount of money. While West Virginia and Pennsylvania operators were looked upon as "coal barons," western Kentucky operators were having a hard time in operating their mines and getting interest out of their investment. For years western Kentucky had a quite fair demand for domestic sizes in the Louisville, St. Louis, Nashville, Memphis and some Southern markets. Freight rates were against her in going north of the Ohio River. There was cheap coal in Illinois and Indiana, Ohio, Alabama, Tennessee and eastern Kentucky, and production was cheaper as a result of western Kentucky being a pit-mining section, while many other fields were using drift methods.

Old timers tell interesting stories of how they tippled screenings into cars free of charge to railroads for use in building fills and grades. There was no demand to speak of for mine-run other than a little railroad demand. In producing lump coal at a low price in order to compete with other fields it was necessary to give away or bank the screenings. There were no big industrial cities that could take western Kentucky fuel profitably at a price that would allow the operators to make money. The fuel was consistently "knocked" by competitors because some of it was poorly mined and of poor quality. However, most of western Kentucky's fuel is of good quality—a little high in sulphur, a little high in ash, but also quite high in heat units.

The operators finally pulled themselves up by their bootstraps, so to speak. They put in a first-class traffic department and engaged a high priced and competent traffic lawyer. They worked for equitable rates to the North, West and South, and were signally fortunate in improving their condition. During the war period Pittsburgh coal dropped out of the Ohio Valley and Southern markets as Ohio River transportation methods fell into the discard, and war activities took the entire production of the Pittsburgh district. Western Kentucky coal then moved into a wider area and made good.

Following the war there were periods of feast and famine. In 1920 the field made some money. It was not amenable to the efforts to enforce fair prices, as Federal Judge Evans, of the U. S. District Court for Western Kentucky, at Louisville, believed in the laws of supply and demand, and held that any effort to force a so-called fair price was unconstitutional. Western Kentucky asked her own prices and obtained them.

In 1921 between higher production costs and trouble in meeting competition some mines lost part of the profits they made in 1920. Then the eastern Kentucky sections, which were non-union, cut back to the 1917 wage scale, and offered western Kentucky a brand of competition that it was impossible to meet profitably, except in a few cases where freight rates favored.

However, back in the spring of 1920, when the old wage agreements had been up for renewal with the unions operating in western Kentucky, the operators were foresighted enough to hold out for a protecting clause when the strike came off. The strike lasted a short time, and finally an agreement was reached whereby the same general wage scale was offered as that in effect in Indiana, Illinois and elsewhere, but with a no-strike clause, under which the workers would not go out on strike in event of a national coal strike, provided the operators paid the peak wage, as called for in the contract, and continued paying this wage until the national strike was settled and a new general basis was arranged for mine labor.

The western Kentucky operators realized that a national strike was inevitable in 1922, when it was a foregone conclusion that the producers of the nation would endeavor to lower the wage scale which was forced upon the country by war-time demand and conditions in the labor markets.

The consequence of the good work of the western Kentucky operators was that when the national strike came off there was no labor trouble in the field. However, Mr. Hoover in deciding that a mine-run basis of $3.50 a ton for all fields was equitable and just placed the cart before the horse in the judgment of western Kentucky. Such a basis if fair for eastern Kentucky and West Virginia, operating on a 1917 wage-scale basis, was held to be unfair for western Kentucky, operating on the peak scale. Western Kentucky offered to accept $4.25 mine-run basis, but was turned down. That maneuver left the field under no obligation to the first Hoover conference.

Supply and Demand Only Real Price Basis

As demand for industrial and rail fuel increased and stocks in hands of public utilities, railroads, industrial concerns, etc., were reduced, prices began climbing. The old laws of supply and demand came into their own. Western Kentucky holds that there is no real price basis other than supply and demand, and any other effort to shape prices causes a fictitious market.

The operators proceeded to mine all the coal they could and sell it for the top price offered. Mine disability, some shortage of labor in a field that has not had opportunity to operate at capacity, some car shortage caused through poor distribution of equipment, and the fact that the physical capacity of the roads was not equal to the capacity of the mines prevented full-time production. However, prices hung at between $3 and $4 a ton until the walkout of shopmen resulted in severe car shortage, not only in the western Kentucky union field but in the non-union fields elsewhere.

Disticts which had never purchased a pound of coal in western Kentucky began to demand it. Coal became coal, and there was no argument concerning size, prices being the same for any size. Long freight hauls, which under ordinary conditions would prevent purchase of western Kentucky coal, were forgotten. In June many consumers held off and refused to buy while waiting for the freight-rate reductions of July 1, which resulted in a rush of buying after that date, along with the rail strike.

Why should western Kentucky sell coal at $3.50 a ton in districts where she had not had any previous business and no prospects of future business, if this same coal could be sold for $7 or $11 a ton? Seven and eleven were always triumphant numbers.

Buyers representing jobbers were active in the fields, searching for coal that could be supplied on demand or on accepted orders. Buyers for the big utilities were in the fields, from the industrial plants and from every line of steam consumption. Retailers for a time were interested, but didn't buy much coal, figuring that if the strike broke right, they could obtain it cheaper later on.

As prices advanced jobbers demanded a larger fee for handling coal. In taking the financing of $7 to $11 coal the

jobber had to carry big credits, and at 15c. a ton couldn't get his interest out of investment. He demanded up to 50c. a ton and got it.

From July 1 forward car supply has been one of the most uncertain of all uncertain things. One day there are no cars at many mines. The next day there may be a supply of 33 per cent, or 50 per cent. Railroad figures showing cars asked and cars supplied don't always tell a true story. Operators assert that they haven't received nearly the percentage of cars asked. Many cars loaded with coal were days and even weeks in getting away from the mines, due to the shortage of engines and to congestion in terminals. Other connecting roads were unable to handle cars turned over to them or to get empty cars back to the originating lines.

Getting down to cases, any mine producing full capacity and selling at $7 to $11 a ton would clean up. A mine with a daily capacity of 3,000 tons, produced at an average of $2 a ton and sold at an average of $8 a ton, would coin $18,000 a day, or something over a million dollars in sixty working days. However, there are not many 3,000-ton capacity mines or companies in western Kentucky and, unfortunately none of them has been able to run at capacity, or even 50 per cent of capacity as an average.

Production costs on full time operation, it is alleged, could be held at $1.90 or under even on the peak wage scale, although some operators argue that the cost is $2.25 or thereabouts and that it runs up to around $2.50 a ton on only part-time operation. However, anything over $2@$2.25 a ton appears mythical, in view of the fact much lower prices were quoted in the spring, when mines were not busy.

Take, for instance, the week of Feb. 13—prices quoted at that time through jobbers showed lump, $2.25@$2.75; mine-run $1.70@$2; slack, $1.15@$1.60. Screenings during the early spring sold at under a dollar, with no appreciable increase in lump. Operators asserted that they were losing money, but were forced to run to hold their trade and to take care of contracts.

Playing Fair with Railroads Insures Car Supply

Contracts—another feature overlooked by those who assert that western Kentucky is cleaning up—have been taking coal from more than one mine at prices ranging from $2.25 to $2.75 a ton. This accounts for a part of the small production that has been available in the market during the last few weeks and left less coal for the open market than generally figured.

One operator without business last season was treated white by the Illinois Central R. R., which took his production at $2.60 a ton. Just recently the road is reported to have offered to take his production at $2.75 a ton, and the operator played fair and accepted the proposition at a time when he could have sold his production on the open market at a much higher figure. However, he is getting car supply.

So there have been all sorts of obstacles to getting rich quick. The big operators are not as likely to have been making big money as the "pot hole" operators. One small mine was sold a few months ago for $1,500, it being little more than an opening in the side of a hill. On Saturday, July 22, the owner was offered $2,200 for the four 50-ton cars he had loaded, the average being $11 a ton. In buying the mine he took a chance, played his hunch, and made money. Under ordinary conditions he would merely have a hole in the ground. As he couldn't hope to compete with the large mines, with fine equipment for producing at a low cost, his mine would be idle and he would be paying taxes on a hopeless investment. As it was his production cost for the four cars was much higher than at well-equipped mines, yet those four cars paid for the whole mine.

Railroads have been taking a great deal of the production in western Kentucky, paying all the way from $2.60 to $3.50 a ton where purchased by the line on which the mine is located. Outside railroads, such as the Rock Island, have had to pay the market. The advantage in treating the originating line right lies in car supply. There have been some contracts at $2.25@$2.50, and in some cases agreements have been reached whereby the price was advanced and deliveries continued.

Throughout the period of high prices car supply on the Illinois Central R. R. to western Kentucky mines has been fair, running up to around 75 per cent most of the time. This would indicate that mines which have been fortunate enough to be located on the Illinois Central, are the ones that have been cleaning up. Of course the Illinois Central has been drawing coal supply for the entire system from these mines, reducing the available supply for open market. However, on the Henderson and Ohio & Northern divisions of the Louisville & Nashville R. R., car supply has been rather steadily under 50 per cent average, running a little better than that on the Henderson perhaps, and down to around 30 per cent on the Ohio & Northern.

Some produced coal has been under load for two weeks without moving, Madisonville, Ky., reporting coal loaded on July 11 finally moving out on July 24. This is in the "interesting if true" category.

It is held that the potential capacity of the western Kentucky fields is around 1,900 cars daily. However, the railroads can't handle that amount of tonnage. In a recent big week it is reported that 8,000 cars were gotten out, which would figure about 1,330 cars a day, although, generally speaking, operators assert that railroad capacity is around 1,500 cars a day. It is said that the Illinois Central R. R. on Tuesday, July 25, handled 878 cars of coal from its western Kentucky mines, but this cannot be verified. Total production of the field probably has been around 750 to 1,000 cars a day, according to some well-posted coal men.

Feel Entitled to Clean Up If Able To

Whether western Kentucky is cleaning up is a matter of conjecture. The field frankly enough feels it is entitled to do so if it can get away with it. As one coal man aptly expressed it: "There ain't no one that ain't a going to sell whatever he is selling for all he can git for it." Another coal man remarked: "There isn't anyone that is going to buy our coal from us unless they can get better coal for less money from us than from anybody else. They are not going to pay us any more than they have to pay in some other field. They are not going to pay a higher freight rate to get our coal under normal conditions than they will pay to get a lower grade coal from another field. On emergency business you are handling business that you may never get another crack at, as price is the governing commodity in ordinary fuel coal. If we can meet the price of the other field we can't always meet the freight rate. A lot of good it would do us to take care of a lot of buyers who have never been in the field before and who never will be in it again, merely for the hopes of getting some of their business when conditions round out to normal again.

"The western Kentucky coal man is being blamed for a lot of things over which he has no control. He is not given credit for being an intelligent business man. The old talk of the orphans and cold tenements is bobbing up, but it is still a long time before cold weather, and all immediate production is emergency production, which wouldn't go to the retailer anyway. Cutting prices of fuel isn't going to reduce prices that the mine operator will pay for his blasting powder, for his picks, shovels, mine cars, etc. The cost is being paid by the utilities, which do a bit of gouging whenever they have the opportunity; by the railroads, by big industries, etc., and of course the consumer has to pay a little of the cost himself. However, the coal game is a dirty one; therefore it should pay a profit."

The general motto has been: "Get it while the getting is good." The coal trade in western Kentucky is generally described as one in which either a feast or a famine prevails. The leftovers from the feast take care of the periods of famine; otherwise most companies would be broke.

The American Federation of Labor has discontinued its mining department which had been maintained at the Washington headquarters for special consideration of mining matters. James Lord, who has been president of the department, has taken the field as a labor organizer and will operate in the Pacific Coast region. It is said the abolition of the department was due to a large extent to differences which have arisen between Samuel Gompers, president of the American Federation of Labor and John L. Lewis, president of the United Mine Workers.

Washington Officials View Outcome at Cleveland As Makeshift Truce—Public the Loser

By Paul Wooton
Washington Correspondent of *Coal Age*

EVENTS at Cleveland have progressed to the point where they foreshadow the beginning of the end, observers in Washington believe. The agreement promises to bear enough semblance to a national arrangement to save Mr. Lewis' face. It is regarded here, however, as very evident that Mr. Lewis has lost his fight for a national agreement. It was regarded as a farce to follow out the old plan of two operators and two miners from each state when the votes from Ohio represented practically all of the tonnage covered by the agreement they proposed.

Federal officials are inclined to regard the result as something of a draw. The strength of the union has been clearly demonstrated. The mine workers have successfully resisted a reduction in their pay. The check-off will continue and working conditions remain unchanged. The operators at least have broken up the central competitive field. The prospects are that the union will lose the weakly-organized districts. No one of the fundamental ills of the coal industry has been remedied. Every issue involved in this strike must be fought out again. A truce now appears to be a certainty, but it will be a make-shift one.

The public is more concerned with the net effect of the strike. There has been a great industrial set-back. There has been widespread unemployment. The nation's fuel bill for 1922 will be $300,000,000 more than it was in 1921. One-half of one per cent of the population has taken advantage of its position to dominate the supply of a necessity of life. The interests of 99.5 per cent of the population have been affected adversely. There has been no humbling of the organization responsible. No industrial disciplining has resulted. Nothing of permanent value to the public has come from the strike.

While there is no doubt that many operators will not hold out long against the restoration of the 1920 wage scale, it is recognized that should Pittsburgh or any of the other individual districts refuse to become parties to the Lewis agreement, they must make up their minds to take severe punishment. They are certain to get it. With many union men working, strike benefits soon could be paid which would enable the men in those districts to hold out longer. It would be particularly difficult to reduce wages when even the non-union fields are pushing wages to the 1920 level.

As more and more is learned of the situation, it is being revealed that the United Mine Workers were on the ragged edge when they induced the President to call the conference in Washington. They appealed for arbitration as a last refuge. They knew that arbitration meant a reduction in the wage scale. But before the conferences had progressed very far, the railroad shop crafts went on strike and demonstrated unexpected strength.

This change in the situation put a new face on the whole matter. Mr. Lewis was quick to take full advantage of it, but he over-reached himself. He thought the operators would be forced to push themselves through the needle's eye that he held up for them at Cleveland. In that effort there is evidence that he was bolstered and encouraged by coal operators in eastern Ohio. The response to his invitation was a great disappointment but the real need for a national agreement had passed so Mr. Lewis has been willing to negotiate with eight per cent of the country's normal tonnage. His previous declarations that he would deal only with the bulk of the tonnage were abandoned without explanation.

One of the big factors influencing operators to get back to work is the fear that they will lose markets permanently to the non-union districts which have a better coal. Reports to Washington indicate that many industries, now that they have had a taste of high-grade coal, intend to use it permanently. Other companies fear the loss of business gained at great cost in the Northwest. They do not want to see Illinois get the business which represents a large outlay to them. There are other operators who think they can make enough in the next six months to make it attractive to take chances on the future.

Some expect to sell all their coal for the high dollar as long as the market lasts and then go out of the business. Those with such ideas in mind will be interested in today's statement by Fuel Distributor Spencer that agreements as to maximum prices will be sought immediately in those districts which return to work. He did say that it is possible that no control over prices would be attempted if the entire union area should resume operations. He called attention to the prompt flattening out of the market following the settlement of the 1920 strike.

An official, when asked what would happen if the union operators were to sign up until March 31, 1924, replied that it would be a great victory for the non-union coal operators, as it would mean that the non-union fields would supply most of the country's coal next winter.

There is some speculation as to the number of coal miners who may have gone into other industries during the strike. Some think they may stay with their new line of work and that there may not be such a superfluity of coal miners in the future. The majority opinion, however, seems to be that coal mining at the 1920 rate of pay is so attractive, when all other circumstances in connection with the work are considered, as to insure the return of the business of every man who has ever engaged in it and a considerable number of men from other industries where the wage scale is lower and where working conditions are more strict.

Interference of Priority with Contracts to Be Limited Except in Emergency

THE Federal Fuel Committee is giving serious attention to the problem of transporting coal supplies from Kentucky and the Virginias up the Great Lakes before navigation is suspended. It has been agreed tentatively that at present 250,000 tons per week will be alloted to this service, but this figure may be changed at any time as the daily coal production and movement varies.

The problem of the distribution of car supply between mines engaged in the shipment of coal classified under No. 1 priority and those shipping coal to public utilities and other consignees under previously-made contracts continues to demand the attention of the Fuel Committee according to a statement issued on Aug. 10. Though the committee desires to preserve the integrity of contracts as far as possible, its feeling is that general contracts must in a measure take secondary position to the meeting of particularly urgent coal necessities created under an exigency which has arisen since such contracts were made.

Present plans of the Fuel Distribution Committee are that orders for Class No. 1 coal shall be so distributed so as not to disturb seriously the proper distribution of cars. All orders for coal considered to be within that classification will go to the district committees who will apportion the orders among the mines in their districts. In such apportioning of orders it is expected that contracts will be observed as far as possible. In this connection, it is pointed out that many operators, having in mind the maintenance of their normal business relations, would prefer to devote their energies to filling their regular contracts.

The Fuel Committee is seeking a practical method of insuring that coal ordered through a retail dealer for the use of public utilities or hospitals will not be diverted to other channels. Where it is manifest that an order for coal comes

within a particular classification, no certification to the railroad will be necessary to obtain priority under order No. 23, of the Interstate Commerce Commission.

Where, however, the consignee of a shipment does not show the character of the coal and its uses it will be necessary for the shipper to obtain a certificate from the State Fuel Administrator that the coal is to be used in Class 2 priority, and a certificate should accompany the consignee's order to the mine. This will obviate taking matters of this kind to the Washington Central Committee, as it will give the mine operator the information needed to enable him to obtain from the railroad, cars to which he is entitled in making shipments of priority coal.

The U. S. Geological Survey has estimated that 765,000 tons of bituminous coal weekly will meet the immediate needs of gas and electric public utilities and domestic consumers in the territory east of the Mississippi River. Of this, New England would require 9.2 per cent; the non-coal-producing states of the coast region exclusive of New England, 21.6 per cent; coal-producing states of the coast region, 22.9 per cent; and Ohio, Indiana, Illinois and Michigan 46.3 per cent. Railroads in the same territory will require 2,000,000 tons weekly, making a total emergency requirement of 2,765,000 tons. Coal is now being produced in this territory at the rate of 3,800,000 tons weekly.

The railway mechanical situation on coal-carrying lines in the Virginias, which has been hampering the shipment of coal, continues to improve with the importation of mechanics from eastern and western lines. The requirements of the Chesapeake and Ohio and the Norfolk and Western systems are said to have been practically met, and mechanics are now being diverted to the Virginian Ry. Shipments of coal from southeastern Kentucky are being retarded to some extent by conditions at Corbin, Ky., where more than 300 railway mechanical employees are said to have left their employment because of threats of violence, but in the western Kentucky field coal production has been accelerated by a 100 per cent car supply.

The Department of Justice has rendered an opinion to the effect that priority orders for coal issued under Classification No. 1 of the Interstate Commerce Commission, have preference over other orders which operators may have on their books.

Washington, Aug. 12—After checking up ship charters, the National Merchant Marine Association estimates that imports of British coal during the next month will approximate 1,000,000 tons. Practically half of that amount will be carried in vessels flying the American flag. The rush to charter coal ships is welcomed by the Merchant Marine Association for the effect it is having on the idle fleet of the United States Shipping Board. In the course of its study of the situation, the Association found that 2,000,000 tons a month is the absolute limit of British exports at this time. The capacity was greater during the war, but much of the coal handling machinery at tidewater no longer is servicable. Since Great Britain is not likely to neglect its regular export coal trade to look after the temporary needs of the American market, the Merchant Marine Association reaches the conclusion that exports from England to the United States are not likely to exceed 1,000,000 tons a month. Secretary Hoover states that the cancellations of orders placed in Great Britain, which have been mentioned in the press, only applied to orders which the British industry could not fill.

Fuel Distributor Spencer states that wholesalers are being allowed to charge the commissions provided under Dr. Garfield's regulations. This commission is not allowed, however, when railroad coal is purchased through a sales agency, Mr. Spencer stated. While weak spots have developed in the supply of coal for public utilities, Mr. Spencer states that speaking generally the public utility situation is not in bad shape. Most of the utilities, he said, have stocks sufficient to last from ten to forty days.

"DYNAMITE'S DANGEROUS FOR THEM as ain't used to handlin' it; but an experienced miner like me doesn't have to be careful."

He doesn't—now.

Holbrook, of Bureau of Mines, New Head of School of Mines at Penn State

E. A. HOLBROOK, the assistant director of the United States Bureau of Mines, has accepted an appointment as dean of the School of Mines of Pennsylvania State College.

Mr. Holbrook frankly admits that he is leaving the government service with reluctance. He says that the work has been particularly congenial and that the opportunity offered to do valuable public service never was greater. He believes, however, that he has made all the contribution to the public service that he can afford and has accepted this new position because of the very material salary difference.

The resignation of Mr. Holbrook has been called to the attention of the congressional committees studying reclassification of government salaries and cited as an example of the loss of highly necessary technical skill which absolutely cannot be replaced at present salaries.



Harris & Ewing

E. A. HOLBROOK

The salary of the assistant director of the Bureau of Mines has stood still for ten years. Formerly, salaries in educational institutions were on about the same level for comparable positions in the federal service. During the period that federal salaries have remained the same, college salaries have more than doubled.

Priorities Reduce Steel-Mill Operations

UNDER priority orders as well as under the system of car distribution now in effect steel mills in the Wheeling District and in the neighboring states of Ohio and Pennsylvania are suffering from a fuel shortage which has resulted either in restricted operations or in a complete suspension. It is next to impossible for many of the mills to obtain fuel owing to the preference given the railroads and utilities. Other industries are also suffering from a lack of fuel, but the shortage is making itself felt to a greater extent in the steel industry than in others where there was not as much activity. Steel mills had already been adversely affected by the rail strike but with their fuel cut off and with open-tops being given to the mines to the exclusion of other industries, steel mills have found it impossible to transport their products to market.

Illinois Operators Determinedly Hold Out at Chicago When Lewis Refuses Arbitration

By E. W. Davidson

ARBITRATION was the one important issue which prevented President Lewis of the United Mine Workers of America from drawing Illinois into his Cleveland conference last week. For four days from Tuesday until Friday, the operators of Illinois remained in session at Chicago, burning up the telephone and telegraph wires to all points of the compass making suggestions and proposals that would have opened the way to their taking part in the Cleveland conference—on a basis of straight-out arbitration. That state even sent a delegation composed of Andrew J. Maloney, J. W. Needham and H. C. Perry to Toledo to meet W. A. Glasgow, attorney for the miners, but it refused to approach Cleveland unless arbitration was agreed to. This Lewis refused. So Friday at noon the operators adjourned sine die and went home saying Lewis might sign up a string of operators in some sections but that their job was to keep Illinois men out of it.

Before the Illinois men adjourned they cast a heavy bomb into the labor camp by publishing a letter from President Harding endorsing their position. All week long they offered to deal with Lewis, sending the miners back to work at the 1920 wages and conditions provided he would agree to arbitration. Then they notified Lewis they were through. They wired Frank Farrington, Illinois miners' president, who was balking at the Cleveland conference, that their previous one-state offer to him to reopen the mines at the old scale for the winter pending arbitration still held. It was a week of determined refusal to surrender. Illinois said it would not go to Cleveland to deal with Lewis on his terms and it didn't.

During the first two days of the Chicago secret sessions of the operators there was a strong sentiment in favor of capitulation. There were operators who said there was no use kicking any longer against the pricks, and that the attainable price of coal this fall and winter would justify Illinois in surrendering. But sterner stuff prevailed. The majority clung to their belief that if Lewis would not agree to arbitration when all his other points were conceded to April 1, 1923, then he would be hanging himself if he were allowed to go ahead and make a wage scale with as many operators as he could line up.

"It's a fight to a showdown," was the final word of W. K. Kavanaugh, president of the 5th and 9th District Operators' Association as he started for his home in St. Louis at the end of the week.

"We did everything we honorably could to produce a strike settlement out of this occasion," said an operators' official. "Having been in great doubt as to just exactly what Lewis was willing to do—since he was trying to reach us through outside parties—and being unable to find out any other way, we sent our delegation of three to Toledo to meet Mr. Glasgow and find out. We found out Mr. Lewis had nothing to offer that we could accept. Mr. Lewis cannot say hereafter that we did not give him every opportunity to meet us on the fair basis we proposed."

There is no doubt but that the action of Alfred M. Ogle, president of the National Coal Association helped to strengthen the unity of the Illinois men against Lewis's conference basis. When it became known that Lewis had met Ogle in Philadelphia previous to the Cleveland conference, and that Ogle had practically agreed to do his best to bring Illinois and Indiana into the meeting, the feeling against Ogle in Illinois was bitter. There is much discussion about withdrawals of western groups from the National, as a result.

All week long there were preparations being made at many of the Illinois mines clearing the works for production. Boilers were fired, mules were taken from pastures down shafts and pumps and fans were speeded up. Officially the operators denied that this meant any weakening on their part. Certain owners believed they might have opportunity to dig coal all of a sudden, and they were getting ready; that was all. Union officials throughout the state prophesied they would all be back at work soon.

"If they are," commented an operator at the close of the week in Chicago, "then it will be because we have made a separate state agreement with Farrington. That, it seems to me now, is the most likely outcome of this whole case."

The letter of President Harding to the Illinois operators, addressed to Dr. F. C. Honnold, written Tuesday, Aug. 8, follows:

"I am writing to make acknowledgement of your telegram of Aug. 4, in which you convey to me the proposition made to the mine workers in the State of Illinois. I am frank to say I do not see how your workmen can refuse such a proposal. If terms can not be settled on so liberal an offer it is manifest that the mining situation is very badly tied up, and the government must find for itself some way of extrication."

The final message to President Lewis on Friday noon was this:

"The operators of the State of Illinois have today adjourned their conference. They are willing to reconvene to consider any proposal of the miners of the State of Illinois that carries with it and without equivocation the most liberal arbitration proposal recently made by the President of the United States, carrying old scale of wages and conditions. We regret exceedingly your arbitrary position and your refusal to consider any plan except the unfair and unreasonable one you have offered. The people of the United States must now draw their own conclusions and we are willing to leave our case in their hands."

The telegram to Farrington renewing the Illinois offer to reopen the mines at the old wages and to fix a new scale and set of working conditions by unbiased arbitration was:

"The operators of the state of Illinois have adjourned their conference today subject to the call of the three presidents. They are prepared to reconvene at any time to discuss with the miners of Illinois the proposition of resumption of mining along the lines heretofore submitted to you as their president. We will not attend the conference at Cleveland as Mr. Lewis has refused all our suggestions that carried the proposal of the President of the United States and that provided arbitration points on which we will be unable to agree.

"We ask you again to carry out your contract with us to provide a contract to settle the mining scale in Illinois, and we again renew our proposition to open our mines at once on the old scale and conditions with an agreed submission of all disputed points to a board of arbitration composed of fair-minded citizens of the state of Illinois who are not in any way connected with the coal industry, their findings to be accepted without reservation by both sides and to be effective April 1, 1923."

The Illinois case as it stood at the end of the week is set forth to the public thus: "The adjournment of the meeting of Illinois operators who have been constantly in session here throughout the last four days, and their repeated refusal to attend the present meeting at Cleveland, Ohio, which was called by Mr. Lewis, is due to the following facts:

"1. The question involved is the right of the public to have a voice, through arbitration, in the determination of industrial disputes, thereby preventing the abusive use of power by labor leaders.

"2. The four state conference method of determining wage scales and working agreements in the coal industry has proven its ineffectiveness, its lack of fairness as a means of determining a basic wage rate and also has been challenged by the courts as being an illegal and improper procedure.

"3. The mine workers' plan of a national conference of operators and miners is open to the same objections and in addition thereto would practically guarantee a country-wide monopoly of mine labor such as that now prevailing in the State of Illinois.

"4. The Illinois operators have submitted to the mine workers several very fair proposals for a settlement. The operators have given the most careful and thorough consideration and reply to every proposal by the mine workers, or submitted by public officials or public spirited citizens.

They have accepted without reservation the proposal of the President of the United States and have continually offered to confer or negotiate, provided that, in the event of failure to agree, there should be public arbitration of disputed points and thereby avoidance of a repetition of the present tie-up. Mr. Lewis has constantly declined every proposal which carries bona fide arbitration of disputed points, and has always refused to meet except after acceptance of his own particular methods.

"The Illinois operators, after twenty-five years' experience, are convinced that joint collective bargaining such as now prevails in the coal industry, is not only unsatisfactory but inimical alike to the coal miners, to the coal operators and to the coal consuming public, and that for such procedure negotiation supplemented by fair arbitration must be substituted.

"5. The present meeting in Cleveland is in no sense representative of the coal industry. Operators producing possibly 30,000,000 tons of coal per annum, out of about 500,000,000 for the country and 225,000,000 tons for the former Central Competitive field, are there. The states of Illinois and Indiana, producing more than half of the old Central Competitive field tonnage are practically unrepresented.

"6. We have renewed our demands that the Illinois mine workers honor their contract obligation to meet us in State conference—and have also renewed our offer of Aug. 4 to re-open the mines on the old wage basis until March 31, 1923, pending negotiation and arbitration of a new wage scale."

Ford's Plan to Run Corbin Shops Fails—L. & N. Says It's "Unthinkable"

HENRY FORD'S efforts, aided by Governor Groesbeck of Michigan, to obtain control of the L. & N. shops at Corbin, Ky., regarded as the key to the coal supply of the Northwest, has so far failed. Governor Morrow of Kentucky, who was understood to be lined up for the Ford proposal, did not come to Louisville for the conference between the L. & N. and Ford's representatives, but went to Corbin, the "railroad neck" between Kentucky coal fields and the Northwest, to investigate rumors of disorder. Mr. Morrow said the Ford proposal would not be accepted by the men.

Several representatives of Mr. Ford held a conference with President Mapother, of the L. & N. last week, after which Mr. Mapother declared as "unthinkable" the proposal that Mr. Ford be allowed to take over the Corbin shops and operate them with his own men. Mr. Mapother pointed out that Mr. Ford would institute a wage scale which the L. & N. would not maintain when the emergency had passed.

Peabody Predicts Failure of Priority System

"THE government's system of priority distribution of coal is bound to fail this fall and winter," F. S. Peabody, chairman of the board of the Peabody Coal Co., told 300 members of the Chicago Association of Commerce late last week. "It is to be operated on entirely the wrong basis and will lead to such confusion that the railroads will be hampered rather than helped in distribution."

Mr. Peabody said the Hoover plan thus far has operated to keep coal down to $3.50 where cars are short and to hoist prices out of sight wherever cars are numerous. In L. & N. territory the supply of cars has been much less than 50 per cent at the mines where the $3.50 price has been prevailing generally, whereas the Illinois Central has been giving nearly 100 per cent car service and the coal that that road has hauled to the commercial market was selling at $10@$11 on the day Mr. Peabody spoke.

"We have a mine down on the L. & N." said Mr. Peabody. "One day recently we were allotted 15 cars. Every single one of the 15 was shipped out on a different priority order. That illustrates what is happening and will continue to happen under the Hoover system. Imagine the tremendous and complicated work of billing and switching and juggling of cars under all the priority orders that will be issued!"

He declared the mines of the country would be working within two weeks and that if they were enabled to work their limit they could produce a billion tons of coal in the next eight months. However, he said railroad service will be so hampered by one thing and another that the country will be able to get just barely enough coal to prevent industrial and domestic distress.

Mr. Peabody freely lambasted the national administration, declaring that governmental delay and interference in the strike situation had delayed a possible settlement by five weeks.

State Prods Williamson Officials—Sheriff Makes a Few Motions

GOVERNOR LEN SMALL of Illinois, under fire at a conference in Chicago late last week with important business organizations, promised he would do something about the Herrin massacre in which 19 non-union men were killed and 30 wounded June 22 after they had surrendered to a mob which attacked them at a strip mine. He said he would not declare martial law in "Bloody" Williamson County to hasten the administration of justice, however, until he had given the county officials another chance. On Friday the sheriff and county attorney announced they were doing some sleuthing but that no arrests would be made until the September term of the county grand jury. That is all that has happened. Every instigator and participant in the Herrin horror remains as free as he was the day of the slaughter.

At the Chicago conference the governor was urged by the Illinois Manufacturers' Association and the Chicago Association of Commerce to throw troops into the county at once and make a thorough and complete job of gathering evidence and pushing the administration of justice. He was also urged to call a special session of the legislature and recommend that it create a state constabulary. He did not take kindly to the idea.

The public clamor for a special session to repeal the coal miners' qualification act so that non-union men can get into the mines to dig coal has received the same sort of cool treatment by the governor. He has done nothing about it and gives no sign of doing anything. Members of the legislature have said they doubted whether a quorum could be assembled because the representatives have already drawn their annual salary of $2,500 for this year and probably nothing would get them back to Springfield this year except extra pay.

Coal Retailers Make Survey of Stocks, Regional Reserves Compared

A SURVEY of the stocks of anthracite and bituminous coal on hand in various sections of the country as of July 8, 1922, has been made by the National Retail Coal Merchants' Association, Philadelphia, the information being collected for the use of Secretary Hoover. Based on consumption during the preceding thirty days, stocks of hard coal ranged from 60 days' supply at Albany to practically nothing in the Middle West, the tonnage tapering off as the distance from the source of supply grew greater. Bituminous coal stocks, on the other hand, were more adequate throughout Ohio, Michigan and other Middle and Central Western points than in the Eastern centers. Exceptions were New York City, with three to four weeks' supply, and New England, with 60 days' stocks.

THE SOUTHERN APPALACHIAN OPERATORS' ASSOCIATION, in a public statement, has charged the Kentucky-Tennessee Operators' Association with trying to "break up the arrangement brought about by the government to hold down the price of coal," in that the Kentucky-Tennessee operators have made a deal with union officials raising wages $2.50 a day for day workers, 24c. a ton to tonnage men and 20 per cent extra on dead work and yardage. The Southern Appalachian Association reiterated its intention never to deal with the miners' union again.

Lewis Abandons Four State Contract to End Coal Strike Gets High Wages and Avoids Arbitration

NEGOTIATIONS between the United Mine Workers and several groups of soft coal operators, in session since Monday, Aug. 7, were brought to a conclusion on Tuesday, Aug. 15, when Lewis abandoned his policy of a four state contract or nothing and opened the way for individual producers in any field to sign up with the union.

All through the first week of the negotiations at Cleveland the union fought to gather in a skeleton representation from the old Central Competitive Field, but when the skeleton was erected it refused to stand, for a few of the more prominent of the Ohio operators, although supporting the idea of the interstate contract, refused to sign at the high wage scale demanded by the miners unless they in turn would agree to arbitrate the scale to follow after April 1, next. The conference had sufficient semblance to the real thing to hold back Farrington from delivering the Illinois miners as a district.

Late on Monday, Lewis opened the doors to any and all coal operators in Cleveland to participate in the meeting. On the Thursday previous he had ordered them out of the room, where none were allowed save from the old Central Competitive Field. For a week T. H. Watkins and a group from Central Pennsylvania had been waiting that opportunity. They had reached a tentative understanding with the union that it would give consideration to their plan, adapted from the Crews-Glasgow plan, providing for compulsory investigation and a fact finding commission. Substantial tonnages from other outlying districts and smaller tonnages within the original four states not represented in the conference, were lined up to back Mr. Watkins' proposal. When Mr. Gallagher and Mr. Robbins broke away from the negotiations because they could not force arbitration on the miners, Lewis opened the doors to the others.

Agreement Reached After Midnight, Monday

On the basis of the tentative plan prepared by T. H. Watkins, this new conference began negotiations at once and by 1 a.m. on Tuesday had reached a temporary agreement. This was referred to the policy committee of the miners on Tuesday morning when the assembled operators also took it under advisement.

Tuesday afternoon the joint conference ratified the agreement and extended an invitation to others not present to come put their names on the dotted line, and the strike in the soft coal fields was considered broken if not ended.

At the end of the first week the situation at Cleveland may be summed up as follows:

The cut and dried program laid out by Lewis and announced from Philadelphia the previous week had been wrecked by delay. The program provided that the Ohio operators, with sufficient tonnage from the other three districts making up the old Central Competitive Field to give semblance to its continuance, were to march up and sign a new four-state contract.

The first delay was caused by the sudden interjection of a substitute plan by Ogle, known as the Crews-Glasgow plan. This stalled the conference on Monday, held it over until Wednesday with no action,, and delayed matters still further on Thursday and Friday morning while negotiating with Illinois and Indiana in the hope that they would decide to come to Cleveland on the terms of the Ogle plan.

The second important delay followed the sudden and determined resistance of certain of the more important eastern Ohio operators to any settlement that did not include arbitration of the next wage scale. The determination was a distinct surprise to the miners. They had understood that no such question would be raised by the producers. President Harding's message to the Illinois operators released on Friday was important in developing this situation. In fact it was this particular matter of arbitration and the division in the ranks of the Ohio producers that finally broke up all hope on the part of the miners for their long cherished desire for an interstate wage agreement.

A day was lost getting the legal aspects straightened out and thus a week passed with no contract, with the miners' delegates becoming impatient and the strength of the operators gaining perceptibly.

As hope of even a skeleton four-state contract was fading, Lewis had in the background a substantial tonnage of outside tonnage assembled in Cleveland ready to make terms with him. The terms they would accept were acceptable to Lewis personally, it seems, but it was essential for him to prepare the ground in advance with his own people before advocating their acceptance.

Union Policy Demands Interstate Contract

To grasp the significance of the meetings at Cleveland it is essential to review the events leading up to it. The United Mine Workers have been maintaining their policy of not meeting with the coal operators unless they are permitted to do so through the medium of an interstate conference, that is a conference with the four states comprising the old Central Competitive Field. To this program the operators of Pittsburgh and of southern Ohio have not agreed, and the operators of Illinois and Indiana, willing at first to take up the old form of conference have since been reluctant to engage in such an undertaking. Eastern Ohio has from the first been willing and it might be said, anxious to participate in that form of conference, but the Mine Workers could not meet with this group alone and be consistent.

On the first of August John Lewis, then in Philadelphia, announced that he had assurances from operators in the four states comprising the old Central Competitive Field that they would answer a call for a meeting to negotiate a new scale and bring the strike to an end. He said that he had some 75,000,000 or more tons of annual production in line, and he called a conference at Cleveland for Aug. 7. He stated that the miners would not have to take any reduction in wages and that the mines would be in operation within a week or so. It was generally admitted that if he should in fact succeed in getting a bona-fide four-state contract he would have won the strike.

In accordance with schedule the meeting was convened at Cleveland on Monday, Aug. 7. The entire official roster of the miners was present with more than a hundred members of the policy committee of that organization. Many Ohio operators and a scattering representation from other fields were on hand, but it was not clear how many of those who were there purposed to participate in the conference and how many had come there simply as observers. The meeting that day was of short duration. It selected officers and adjourned to meet on Wednesday. The news leaked out that a new plan had been proposed that bid fair to bring in all the outstanding tonnage. The meeting would wait a day or so to give those not present opportunity to come.

The plan that was hopefully expected to do this was not officially given out. It was known as the Crews-Glasgow plan. It was reported to have the approval of John Lewis and A. M. Ogle, president of the National Coal Association. The general terms of the agreement were as outlined in last week's issue of *Coal Age*. Nothing came of this effort, for, according to Mr. Ogle, it "was killed by too much premature publicity." Mr. Lewis stated on Thursday that it was definitely out of the running.

The miners and operators assembled on Wednesday at 3 p.m. according to schedule. Nothing was accomplished, for they were still playing for time, waiting, in the hope that Illinois and Indiana would agree to come to Cleveland.

Thursday morning the policy committee of the miners met and in the afternoon the joint conference convened. By that time the miners had been notified that Illinois and Indiana were not coming. It is true that a ray of hope was held out by the fact that Mr. Glasgow, the chief legal ad-

visor to the miners suddenly left Cleveland by automobile bound for Toledo late Wednesday night, his purposes being to meet a committee of three operators from Illinois, who had refused to put in an appearance at Cleveland. The Illinois men were headed by Andrew Maloney, vice president of the Chicago, Wilmington & Franklin Coal Co. They were generally understood to represent the sentiment from their state that opposed making any settlement with the miners that does not embrace arbitration. No announcement of what transpired at Toledo has been vouchsafed to a waiting public. Mr. Glasgow returned to Cleveland on Friday evening and reported, but John Lewis said, nevertheless, that he could tell nothing of what had transpired. It is fair to assume that the Illinois men were told that the miners were unalterably opposed to arbitration, and that Mr. Glasgow was informed that the Illinois operators were just as determined on their part to have it invoked. Such a difference in view in no way could be compromised.

After the meeting of the policy committee on Thursday morning, Mr. Lewis made the following statement:

"The policy committee authorized the scale committee to proceed with operators of various states who are assembled here. The committee will meet with the operators prepared to swing right into developing the operators' position and working out a possible scale. A scale will be reported back for the review of the full committee.

Illinois and Indiana Hold Back

"It still appears that Indiana and Illinois associations are sharply divided and engaged in prolonged debate about the advisability of entering this conference. We will be glad to have them if they will come. If they continue their arbitrary refusal it will make no difference. We will proceed with the work of this conference. In any event, we have assurances—the definite assurances—that if a scale is reached here important producers will break away from Illinois and Indiana associations and sign the scale.

"I confidently predict that when a scale is made here, that 75 per cent of all bituminous tonnage now on strike will sign the scale and return to work in one week. A settlement in the anthracite fields will naturally follow.

"The miners have won their fight and it is practically over. There is no longer a thought in any quarter that wage reductions will be imposed on the mining industry. The question here is one of procedure without undue humiliation of the operators. We have no desire to humiliate them. We only want the immediate resumption of mining, and the return to work of the men and the relief of the public."

After the meeting on Thursday afternoon Mr. Gallagher, chairman of the convention stated that "progress had been made." The names of a committee on credentials and rules were given out. This committee was as follows: S. H. Robbins, Ohio; Jas. Paisley, western Pennsylvania; F. O. Parker, Indiana, and Judge Campbell, Illinois, for the operators and P. T. Fagan, Lee Hall, John Hessler and Frank Farrington for the miners. It was stated that over 40,000,000 tons of annual production from the old Central Competitive Field was in the meeting divided as follows: Ohio, 27,000,000 tons; Pittsburgh and Freeport, 9,500,000 tons; Illinois, 1,500,000 tons; Indiana, 2,000,000 tons.

Outlying Field Operators Thrown Out

The most significant move at the meeting Friday afternoon was the ejection from the conference, on demand of the miners, of all operators *not in the old Central Competitive Field*, and the statement of John Lewis, after the meeting that the miners had not deviated in any respect from their original policy. It was to be no wage reductions and a four-state settlement, just that and nothing else.

Friday was devoted to a scale-committee meeting. The representatives for the operators on the scale committee were five from eastern Ohio, S. H. Robbins, T. K. Maher, R. L. Wildermuth, W. H. Haskins, A. A. Augustus; one from Indiana, W. A. Satterlee; one from Illinois, Richard Campbell; and one from western Pennsylvania, Jas. Paisley. There were eight from the miners, Lee Hall and Geo. Savage from Ohio, Farrington and Fishwick from Illinois, Hessler and Roberts from Indiana and Fagan and Hargest from Pittsburgh. John Lewis, William Green and Van Bittner for the miners, Michael Gallagher and W. L. Robison for the operators were included in the group.

The scale committee had two meetings on Friday and got nowhere. To the surprise of many and perhaps of the miners who had gained an idea that the agreement was all cut and dried, the operators registered a demand for the 1917 wage scale and arbitration of the scale for 1923. Quite naturally the miners would not consider this. There is an element among the operators present who will sign anything the miners want. They were known at the Cleveland Conference as the "tonnage-hungry crowd." They were not in harmony with any move to hold back a settlement for such little matters (so they viewed them) as an agreement to arbitrate or investigate. They said, "Let the next contract take care of itself. Time enough for that when the time comes." The debate within the operators' ranks has been going on all week to the impatience of the miners, who think that they have won and want signatures on a contract so that they can go to work. This sentiment is expressed both at the mines and at the Cleveland Conference.

The position taken and so firmly held by the Illinois operators against settlement without arbitration, has had a profound influence on many of the operators of Ohio and western Pennsylvania who are attending the meeting. Publication Friday night of the letter from President Harding to the Illinois operators sustaining their stand put heart in those who are holding for that kind of settlement and made the miners furious.

Instead of holding a joint scale meeting, the miners and operators met separately on Saturday morning. It was quite apparent to the small army of observers about the hotel corridors that something was wrong, that things were not going according to schedule. Ohio interests substantially responsible for the bringing of the meeting together suddenly developed a powerful desire to force arbitration on the miners. To persist in that stand meant a break-up of the conference.

Conference Disposes of Legal Complications

Another question loomed large when Friday night word was received that the government would look on an interstate agreement as possibly illegal; that is, in contravention of the Sherman law. This complication was taken up by some of the operators as a means of stalling the proceedings, it appeared, but John Lewis got around the trouble by agreeing that whatever agreement and scale was signed would be between the United Mine Workers, and the operators as individuals. On this point the conference, on adjourning at 5 in the afternoon, issued the following statement, signed by Lewis and Gallagher:

"In order to allay the misapprehension which exists in some quarters as to the purpose of the meeting of operators and miners now in session in the City of Cleveland, Ohio, this statement is issued.

"We are assembled for the purpose of negotiating, if possible, a new wage agreement between the representatives of the United Mine Workers and the individual operating interests represented in this meeting. The conference is in no sense what may be termed a four-state conference and does not undertake to represent the operators of any particular state or district or any operating interests not represented herein. Its sole purpose is to promote a mutuality of understanding as between the operators participating and the representatives of their employees.

"This statement is the joint action of the meeting assembled."

This was interpreted, despite the assertions of the labor leaders that it bore no such significance, as a distinct concession on the part of the miners. It said in so many words that there was no longer a Central Competitive Field. It was explained that the miners could and would agree on a base scale for that district and that this would preserve the form of the old contract, and that the operators would simply be called on to sign as individuals. This legal hurdle having been surmounted, the conference adjourned until Monday morning.

Contract Negotiated and Signed at Cleveland Conference

Following is the scale report approved at the Cleveland conference Aug. 15, 1922:

Report of the sub-scale committee Aug. 14, 1922:

(1) All mines of operators represented here in this joint conference which are now on strike, are to be opened immediately upon the execution of supplementary contracts extending to March 31, 1923. The terms, provisions and conditions of the contracts affecting such mines are to be as they respectively existed on March 31, 1922, except as to renewal or continuation clauses in such contracts.

(2) The participants of this conference agree to send and this conference invites the bituminous coal operators of the United States to send representative delegates from coal producing districts or from substantial groups of operators, which delegates shall as far as possible be representative of the bituminous coal industry of the United States; such delegates to assemble in joint conference in Cleveland, Oct. 2, 1922. This joint conference shall appoint a commission of equal numbers of representative operators and miners, which commission shall formulate a method to be followed by the bituminous coal industry in the negotiation of wage scale agreements to become effective April 1, 1923, and the method so formulated shall be reported to the joint conference to be held Jan. 3, 1923, as hereinafter provided.

(3) The joint conference convening Oct. 2 shall further select a committee of inquiry, the members of which shall be of commanding public reputation for character and ability, and whose personnel shall be approved by the President of the United States. The duty of this committee shall be to develop promptly all of the pertinent facts in regard to the industry for the benefit alike of the public, the operators, and the mine workers. Such investigation shall include every phase of the industry deemed material by the committee of inquiry and such committee shall be furnished with all information desired and aided in every manner possible by the operators and miners alike.

In the event such joint conference shall fail to agree upon the members of such committee of inquiry by Oct. 10, 1922, it shall petition the President of the United States to appoint the members thereof in his discretion and in the event of a vacancy the President is requested to fill same by appointment. The cost of such committee of inquiry shall be paid by the industry, one-half by the operators participating in the joint conference and one-half by the United Mine Workers of America. Such committee after developing all the facts shall make such recommendations as it may deem proper and advisable and shall so far as possible embody these recommendations in a report to be submitted to the joint conference to be convened Jan. 3, 1923, as hereinafter provided.

In order to reach a final and proper determination of the controversy in the bituminous coal industry for the benefit of the miners and operators and the public as well, the following principal points are presented for consideration by the committee of inquiry: The wage rate in any district shall, as far as reasonable, be properly competitive within the mining industry and shall at the same time be fully compensatory to the miners, being sufficient to afford not only a living wage but also to allow reasonable opportunity for accumulating savings. The encouragement of a proper spirit of obligation and responsibility on the part of all parties for contractual obligations and the establishment of proper machinery, both local and national, for prompt determination and settlement of any points of dispute and of any local state or district contracts, without resorting to strike or lockout.

The determination of a proper policy to encourage efficiency of operation, not only on the part of mine management in the mechanical operation of the mines, but also on the part of individual miners in the performance of their daily work.

4. The participants in this conference agree to send, and this convention invites the bituminous coal operators of the United States to send representative delegates from coal producing districts, or from substantial groups of coal operators which delegates shall as far as possible be representative of the bituminous coal industry of the United States, such delegates to meet in joint conference Jan. 3, 1923, at such place as may be designated by joint conference held Oct. 2, 1922. This joint conference shall receive the report of the committee appointed in conformity with paragraph 2, and shall finally determine the method to be followed by the participants in the conference in the negotiation of wage scale agreements to become effective April 1, 1923, to the end that new wage scale agreements to be effective April 1, 1923, shall be determined upon as speedily as practicable and further strikes be thereby avoided. The method of negotiating wage scale agreements which shall be determined upon by joint conference shall provide that such machinery as is created by it to develop a new wage scale agreement shall commence to function not later than Jan. 8, 1923. The wage scale agreement concluded by such machinery shall be effective April 1, 1923, and shall be in effect during such time as it may determine.

Watkins Praises Cleveland Conference Reason Restored, He Says

At the adjournment of the conference on Tuesday T. H. Watkins said: "As the result of conciliatory efforts inaugurated by President Harding at the Washington conference a constructive agreement has at last come out of the Cleveland meeting. The Central Competitive Field conference to which we attribute most of our past difficulties was definitely broken up and abandoned yesterday and the meeting was thrown open to operators and miners from every district in the United States. The method of renewing contracts expiring March 31, 1923, is left to a joint committee of miners and operators which will report on Jan. 3, 1923. All parties have engaged themselves to every effort to promote an amicable settlement and equitable wages next spring. The outstanding feature of the new agreement was the incorporation of a clause providing for the election of a commission of inquiry composed of prominent and unbiased citizens instructed to make a most exhaustive investigation of the whole industry and to lay down recommendations on which future voluntary agreements can be negotiated on sound economic lines between the operators and the miners. For the first time in the coal industry important labor leaders and employers have joined together in a crisis and voluntarily set up the machinery not only for a resumption of work but for the establishment of a public tribunal before whom they engage themselves to appear with all the facts of the industrial activities of both parties. The recommendations of this commission are to be the guide for necessary steps toward a permanent solution as well as for future agreements negotiated without interference or compulsion except as both sides must bow to the powerful influence of opinion of a well informed public. The document means that reason has been restored. The exercise of force whether through strike, compulsory awards, or arbitrary procedure, has no place in the program upon which we have agreed. Compulsory arbitration has failed too often in recent industrial crises to offer any hope of effectiveness in a situation which requires a basic solution, not merely a reconciliation of immediate differences. We believe that the door has been opened to a new era in the coal industry in which the consuming public as well as those producing coal will have access to the essential facts of the industry and will be an influence in guiding it into more peaceful channels.

Anthracite Negotiations To Be Resumed on August 17 at Philadelphia

EVIDENCE that the union is slowly yielding to the pressure of public opinion is found in the sudden interest taken in the anthracite situation. On Friday, Aug. 11, John Lewis wired the Mayor of Scranton in the hard coal region saying that the miners were ready to again meet the operators to discuss a new contract. He said:

"Replying to your wire, representatives of the United Mine Workers are not making anthracite negotiations secondary to bituminous negotiations, despite all reports to the contrary. We have understood attitude of anthracite operators to be that they would refuse to make any settlement in advance of base being made in bituminous. If this is not now true, and it is developed that anthracite operators are ready to go into direct negotiations with the United Mine Workers on the basis of the old wage scale and demands of the Shamokin convention, we will be glad to attend a joint conference on any date designated by the anthracite operators' representatives."

Mr. Warriner lost no time in making reply, asking Mr. Lewis to meet the anthracite operators in Philadelphia on Wednesday, Aug. 16.

The meeting has been postponed until Thursday, Aug. 17, to give the union officials time to finish their business at Cleveland.

NEARLY ALL IMPORTANT OPERATIONS in Nova Scotia were closed on Tuesday by a strike of more than 12,000 miners. Five thousand Cape Breton workers at a mass meeting at Glace Bay and another large meeting at New Waterford repudiated the agreement which their officers made with the operators and declared the strike. Other fields joined, thus tying up a source of supply that has been utilized by the United States since early in the present strike.

The companies' offer raised wages from $2.85 to $3.25, and contract rates 10 per cent, about 20 per cent below the wages of 1921, which the miners are asking.

Coal Price Legislation May Supplant Voluntary Control, Hoover Asserts—Lake Shipments Speeded Up

FORECASTING legislation aimed to control the price and distribution of coal during the emergency this winter, Secretary Hoover, on Tuesday, Aug. 15, said: "If the control over prices and distribution is maintained, Congress must provide legislation." It is impracticable, he said, "to try to continue the control indefinitely on a voluntary basis. While 60 or 70 per cent are always willing to do the square thing it is not fair to them to have the remainder in a position to profit by taking advantage of the situation. The legislation necessary has not been worked out. A number of alternatives are under consideration but no decision will be reached until the depth of the problem is known."

In discussing the co-operation he had received in the control of prices and distribution, Secretary Hoover said he had been given 100 per cent co-operation in the smokeless field, and almost as good a performance in Virginia and other parts of West Virginia.

Advices reaching Washington are that British gas coal arriving in New York is not readily salable. It also has been found that no coal rates are in effect from New York to Inland points.

The problem of expediting coal shipments to the upper Great Lakes region in order to attain the necessary total movement to that territory before the close of navigation is a problem being given the serious attention of the Federal Fuel Distribution Committee. The Federal Fuel Distributor expects shipments aggregating 250,000 tons of coal will be made to the Lakes in the present week as compared with an estimated shipment of 147,000 tons for last week. A figure of 400,000 tons has been set for Lake movement during the week beginning Aug. 21.

The ability to supply urgent Lake requirements depends largely upon the coal production situation in Pennsylvania. Mines in Pennsylvania that ordinarily ship Lake coal are at present closed and the question of whether Pennsylvania coal will be available in considerable quantity for early Lake shipment hinges largely on the question whether the coal tonnage produced in Pennsylvania will be sufficient to take care of that state's own urgent needs and to allow of a supply for diversion to the Lake country. A partial solution to the problem may be found by replacing Pennsylvania Lake shipments by importations into that state of Tidewater coal from the southern Appalachian district.

The matter of fair prices for coal mined in the various Pennsylvania districts is expected to be definitely settled at a meeting in Harrisburg, Tuesday, Aug. 15, between the Pennsylvania Public Service Commission and a committee of coal operators. This meeting is a continuation of the session held in Philadelphia Friday and Saturday of last week, at which sessions the matter of definite price fixing was deferred for a few days for further investigation. The Pennsylvania Public Service Commission, which is acting as the State Fuel Administration is engaged in making an inventory of the urgent fuel requirements of that state.

A total of 13,258 cars of coal were loaded throughout the country, Friday, Aug. 11. This represents an increase of 753 car-loadings over the same day of the previous week. Loadings of 69,000 cars were reported for the first five days of last week, an increase of 5,660 cars over the corresponding number of days of the previous week. Loading of coal on the Chesapeake and Ohio system Friday amounted to 1,319 cars; on the Norfolk and Western, 2,115 cars; and on the Louisville and Nashville system, 1,609 cars. Coal loadings on these three lines represent an increase of more than 400 cars over the figures for Friday of the previous week.

An estimate of the fuel requirements for public utilities and domestic consumers in the District of Columbia has been submitted by the board of commissioners of the district.

Governor Hardwick of Georgia has designated the Georgia State Railroad Committee to act as the State Fuel Committee. A fuel distribution committee for the city of St. Louis has been appointed by Governor Hyde of that state to function under the general direction of the State Fuel Committee. This committee will co-operate with the St. Louis Chamber of Commerce.

The necessity for giving preferred classification to smithing coal has been presented to the Fuel Distribution Committee. Various organizations representing the steam laundry trade have set forth the fuel requirements of the industry. They have been informed that each laundry should take up with its state fuel committee the matter of fuel needs.

Inquiries from Kansas and other trans-Mississippi states relative to the obtaining of coal supplies from producers in the Rocky Mountain region are being referred by the Central Fuel Committee to the coal distribution agencies in the states now producing coal in that territory.

Representatives of a large industrial concern owning its own coal mines conferred today with the fuel distribution committee relative to placing the entire coal production of this mine, subject to the orders of the fuel committee for use by essential industries.

Senator Swanson and representatives Harrison and Bland of Virginia, accompanied by Maj. Alexander Forward, State Fuel Administrator, and a delegation of prominent citizens of the state, called upon Fuel Distributor Spencer today to ask that a specific allotment of coal be turned over to the Virginia committee for distribution among essential industries in accordance with the plans of the federal organization.

The suggestion was made by the central committee that an organization for the distribution of fuel supplies be formed in Virginia similar to organizations in other states, to co-operate with the state fuel administrator.

Fuel supplies of the various branches of the federal government have for some time been fairly well assured and no especial efforts to safeguard these supplies are required just at this time. Naval fuel reserves are said to be in especially good shape.

A South Carolina delegation conferred with the fuel distributor relative to the situation in that state. The delegation declared that the matter of fuel distribution was progressing satisfactorily in South Carolina and that available fuel supplies were being distributed to those industries where the need was the most keen.

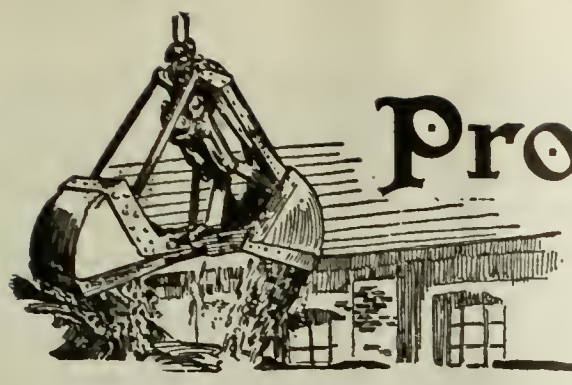
The I.C.C. on Tuesday reprimanded the carriers for confiscating coal moved under priority orders. Calling attention to the increasing frequency of this practice, the commission declared it tended to defeat the efforts of the government to insure equitable distribution of the curtailed supply of coal. The roads were ordered to refrain from such action.

National Coal Directors Meet in New York

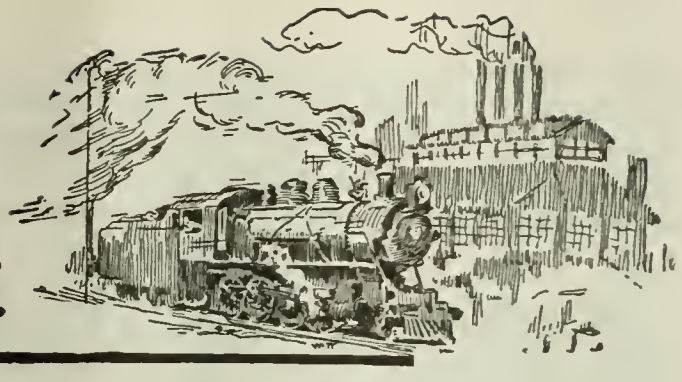
PEACE and harmony prevailed at the meeting of the board of directors of the National Coal Association in New York on Monday, Aug. 14, despite predictions to the contrary from several quarters. About 20 directors were present, mainly from the East and South. Those from the West were not able to attend because of the acute labor situations in their respective districts.

The meeting lasted all day, during the course of which many routine matters were considered and matters of policy of the National Coal Association were considered at length. After the meeting A. M. Ogle, president of the Association, said:

"It always has been and is now the policy of the National Coal Association not to interfere in any way with wage negotiations or the determination of the labor policy within any district in the bituminous coal fields. The Association does not undertake to settle strikes. This is a matter which must be determined by representatives of the several districts involved. It does undertake, however, to properly represent the bituminous industry generally in all its phases before the public."



Production and the Market



Weekly Review

A PECULIAR situation exists in the spot coal market. Prices are high but are not soaring, free coal is even more limited than a week ago, but the demand has declined apace with the amount of tonnage offering.

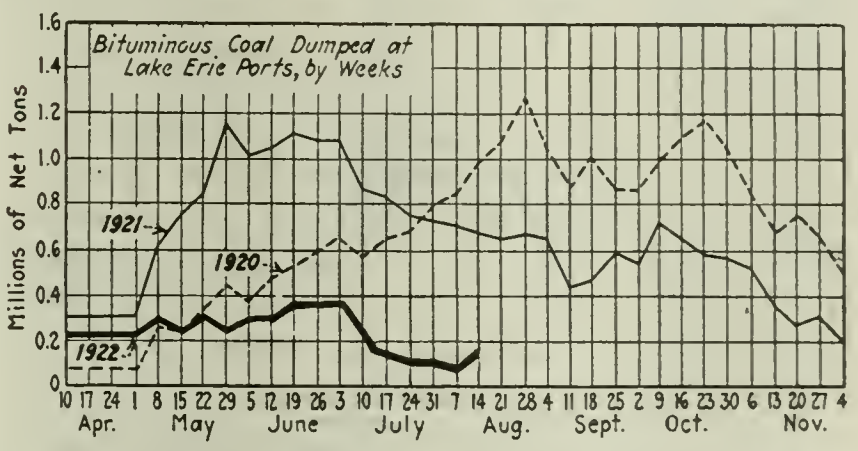
Procrastination has ruled the coal buyer. The Cleveland conference gave hope of resumption of mining, and consumers pared their purchases to the quick in order to be able to take advantage of the easier flow of coal when union-mined tonnage is again available. The diminution of demand has been accomplished in many cases by the curtailment or complete shut-down of plants by those who feel that this is preferable to paying the high premiums now being secured by spot coal shippers.

Priorities Rule on Bulk of Tonnage Moving

Those who must keep in operation, and this class includes the railroads and "essential" industries, are actively bidding for the meager current production that is available to the spot buyer. Priorities rule on the bulk of the tonnage moving but there is much confusion as yet in carrying out these orders and railroad confiscations are heavy. The situation is further complicated by the rail trouble and consumers on the preferred list are often forced to pay the going price to replace delayed shipments of coal.

There is little of this spot coal available, for, although production is increasing, most of it is needed on priorities. Spot coal prices have risen to an average of $6.66 per net ton at the mines, *Coal Age* Index on Aug. 14 going to 550 as compared with 511 for the previous week. This is a rise of 39 points for the index and 48c. in the average price for the week. The coal commission at Washington, recognizing unusual expenses of certain operators now producing, has sanctioned an increase from the original $3.50 Hoover level to $4.50 for New River and $4.75 for Kanawha.

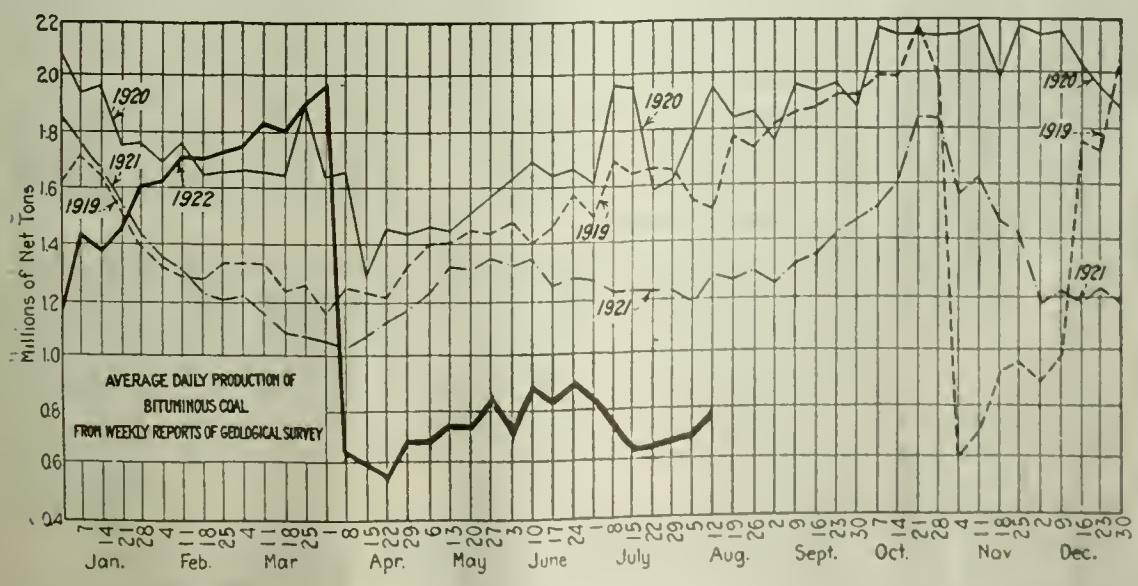
Railroads are functioning better but the traffic congestion is still acute and lack of motive power is hampering dispatch of loads and the placement of empties. The roads are gradually enforcing the priority orders but State and Federal committees have not yet clamped the lid down on high prices. The fear, however, that a settlement of the strike may find them with a large tonnage of high-priced coal en route is causing jobbers to be extremely cautious. Orders are taken on a day-to-day basis now, and there is less tendency to exact all that the consumer might pay. Quick turnovers are the rule and the desire for large premiums and commissions are not allowed to delay present sales.



The edge is off the market for British coals. Cargoes are arriving daily but consignees are for the most part essential industries who will be the first served after the strike. As this British coal is relatively higher priced than our own fuel and the British market is sold well into September there will be few additional orders placed since mining will be resumed at an early date.

The situation at Hampton Roads is slowly improving, as the railroads are able to clear their lines. An embargo has been placed on exports, and bunkers are due for a slump as priorities leave little tonnage for vessel fuel. The accumulation at the piers is running down and tonnage awaiting cargo is heavy.

Shippers are being deluged with requests for quota-



Estimates of Production

(Net tons)

Week Ended	1921	1922
BITUMINOUS		
July 22 (*b*)	7,380,000	3,692,000
July 29 (*b*)	7,319,000	3,952,000
Aug. 5 (*a*)	7,186,000	4,309,000
Daily average	1,198,000	718,000
Calendar year	231,915,000	207,606,000
Daily av. cal. yr.	1,270,000	1,131,000
ANTHRACITE		
July 22	1,837,000	27,000
July 29	1,750,000	27,000
Aug. 5 (*a*)	1,772,000	27,000
COKE		
July 29 (*b*)	45,000	112,000
Aug. 5 (*a*)	55,000	116,000
Calendar year	3,617,000	3,744,000

(*a*) Subject to revision (*b*) Revised from last report

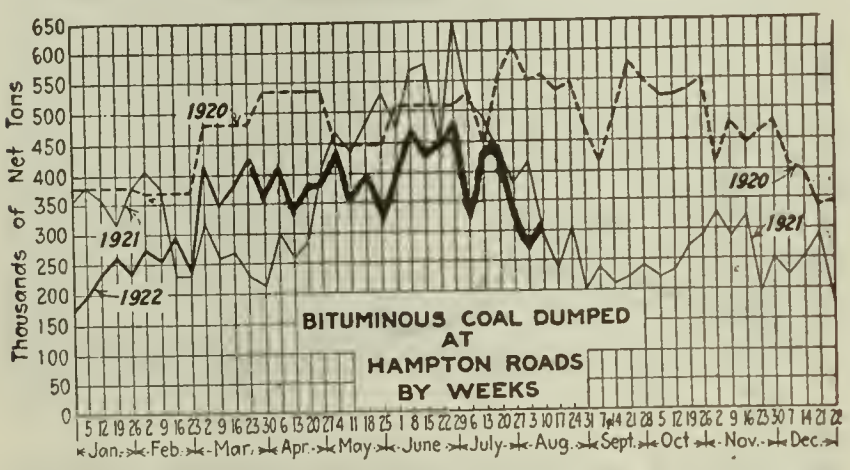
tions and the prospect that coal mining is to be resumed has brought many orders for delivery "immediately after the strike." The price question is being carefully left open and shippers are accepting orders on that basis, promising delivery at the earliest possible moment.

BITUMINOUS

"The nineteenth week of the strike (Aug. 7-12) opened with a decided increase in production," according to the Geological Survey. "Returns so far received indicate an output of soft coal of about 4,800,000 net tons, or 500,000 tons more than the week before. The increase is due to gradual improvement in traffic conditions on the railroads serving non-union fields and also, but only in a very small way, to increased production in fields hitherto throttled by the strike. Despite this increase in bituminous coal output the nineteenth week finds production still about 550,000 tons below the level reached before the shopmen's strike.

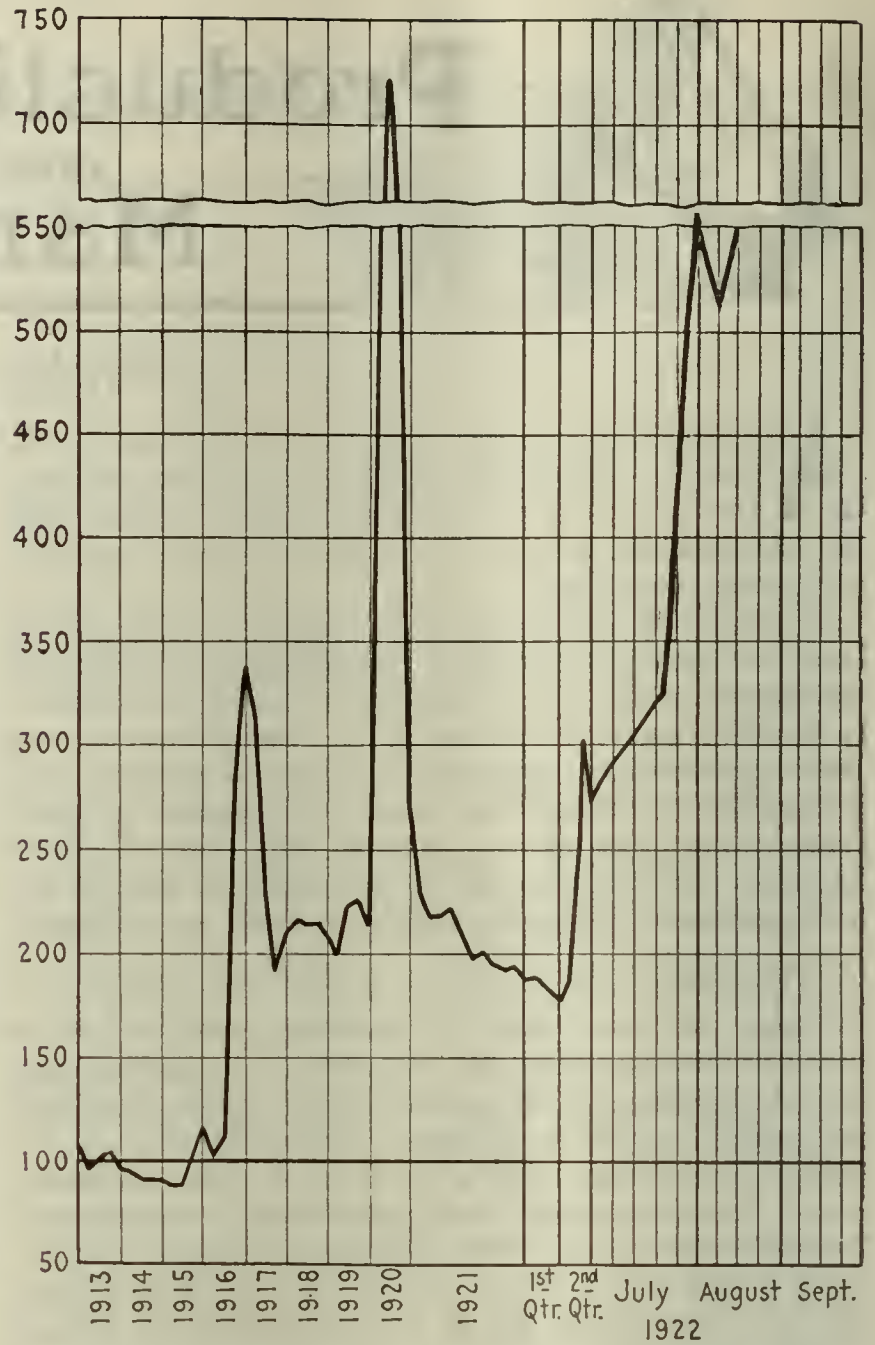
"The total output of all coal, anthracite and bituminous, in round numbers is 4,880,000 tons; in the corresponding week of 1921, 7,771,000 tons of bituminous coal and 1,772,000 tons of anthracite were produced.

"Detailed records of shipments from each district indicate that the addition to the coal supply from mines that have reopened is small, although four weeks have elapsed



since the invitation to resume production was extended. There have been only very small gains in a few of the stronger organized districts.

"In the middle and southern Appalachians, which have been the principal sources of supply, production has been curtailed by the shopmen's strike but has gradually increased during August. The unorganized districts of this territory has gained, by relief from traffic congestion, about 200,000 tons over the output of last week. The non-union and partly organized fields of this region are now furnishing about 41 per cent of the total output in the United States, whereas they furnished 54 per cent in the week



Coal Age Index 550, Week of Aug. 14, 1922. Average spot price for same period $6.66. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the total output of the United States, weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. (Pittsburgh District, Illinois, Indiana and eastern Ohio prices not included in figures for last week.)

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

	Market Quoted	July 17, 1922	July 31, 1922	Aug. 7, 1922	Aug. 14, 1922†
Low-Volatile, Eastern					
Smokeless lump	Columbus	$3.95	$8.50	$5.60	**$3 75@ $8 50**
Smokeless mine run	Columbus	3.75	8.15	5.25	**3.50@ 8.00**
Smokeless screenings	Columbus	3.45	8.00	5.10	**3.25@ 8.00**
Smokeless lump	Chicago	4.15	8.10	6.35	*3.75@ 8.00*
Smokeless mine run	Chicago	4.15	8.10	6.25	*3.50@ 8.00*
Smokeless lump	Cincinnati	4.40	5.90	5.90	*3.75@ 7.50*
Smokeless mine run	Cincinnati	3.80	5.50	5.50	3.50@ 7.50
Smokeless screenings	Cincinnati	3.25	5.15	5.40	3.25@ 7.50
*Smokeless mine run	Boston	6.55	8.15	8.90	**9 25@ 11.00**
Clearfield mine run	Boston	3.40	6.00	6.90	**7 00@ 9.00**
Cambria mine run	Boston	3.85	6.65	7.40	**8.50@ 9.50**
Somerset mine run	Boston	3.50	6.00	6.90	**7.75@ 9.00**
Pool 9 (Super.Low Vol.)	New York	.....	.....	8.65	.....
Pool 9 (Super.Low Vol.)	Philadelphia	4.75	8.25	8.25	7.50@ 9.00
Pool 9 (Super.Low Vol.)	Baltimore	4.50	7.25	7.25	**7.00@ 8.00**
Pool 10 (H.Gr.Low Vol)	New York	4.80	.....	8.00	**7.75@ 8.50**
Pool 10 (H.Gr.Low Vol.)	Philadelphia	4.55	8.00	8.00	7.50@ 8.50
Pool 10 (H.Gr.Low Vol.)	Baltimore	4.50	7.25	7.25	**7.00@ 8.00**
Pool 11 (Low Vol.)	New York	4.60	7.75	7.25	**7.50@ 7.75**
Pool 11 (Low Vol.)	Philadelphia	4.40	8.00	7.85	7.50@ 8.25
Pool 11 (Low Vol.)	Baltimore	4.30	7.75	7.25	*6.50@ 7.75*
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	4.70	7.75	....	*7.50@ 7.75*
Pool 54-64 (Gas and St.)	Philadelphia	4.40	8.15	7.85	*7.50@ 8.00*
Pool 54-64 (Gas and St.)	Baltimore	4.10	7.90	6.25	**6.00@ 7.00**
Kanawha lump	Columbus	4.00	8.00	5.60	**3 75@ 8.00**
Kanawha mine run	Columbus	3.65	7.75	5.50	3.50@ 7.50
Kanawha screenings	Columbus	3.40	7.75	5.10	**3 25@ 7 50**
W. Va. Splint lump	Cincinnati	4.25	6.40	5.85	*3.75@ 7.50*
W. Va. Gas lump	Cincinnati	4.25	6.40	5.85	*3.75@ 7.50*
W. Va. mine run	Cincinnati	4.00	6.00	5.50	3.50@ 7.50
W. Va. screenings	Cincinnati	$3.60	$5.90	$5.10	**$3 25@ $7.50**
Hocking lump	Columbus	3.80	8.15	5.85	**3.75@ 8.50**
Hocking mine run	Columbus	3.70	7.75	5.50	**3.50@ 8.00**
Hocking screenings	Columbus	3.40	7.75	5.35	3.25@ 7.50
Pitts. No. 8 lump	Cleveland	4.75	8.50	7.85	*7.00@ 7.50*
Pitts. No. 8 mine run	Cleveland	4.40	8.50	7.85	*7.00@ 7.50*
Pitts. No. 8 screenings	Cleveland	4.40	8.50	7.85	*7.00@ 7.50*
Midwest					
West Ky. lump	Louisville	6.15	7.25	6.35	3.75@ 9.00
West Ky. mine run	Louisville	6.15	7.25	6.25	3.50@ 9.00
West Ky. screenings	Louisville	6.15	7.25	6.10	3.25@ 9 00
West Ky. lump	Chicago	6.50	7.60	6.85	**3.75@ 10.50**
West Ky. mine run	Chicago	6.50	7.60	6.75	**3.50@ 10.50**
South and Southwest					
Big Seam lump	Birmingham	2.35	4.50	3.50	**3.50@ 6.00**
Big Seam mine run	Birmingham	2.20	4.50	3.20	**2.20@ 5.50**
Big Seam (washed)	Birmingham	2.40	4.50	3.50	**2.50@ 5.50**
S. E. Ky. lump	Chicago	4.15	8.00	6.35	*3.75@ 8.00*
S. E. Ky. mine run	Chicago	4.15	8.00	6.25	*3.50@ 3.00*
S. E. Ky. lump	Louisville	4.40	7.75	5.85	3.75@ 8.00
S. E. Ky. mine run	Louisville	4.15	7.75	5.75	3.50@ 8.00
S. E. Ky. screenings	Louisville	4.25	7.60	5.60	3.25@ 8.00
S. E. Ky. lump	Cincinnati	4.25	7.75	5.85	*3.75@ 7.50*
S. E. Ky. mine run	Cincinnati	4.00	6.00	5.75	*3.50@ 7.50*
S. E. Ky. screenings	Cincinnati	3.75	5.90	5.60	*3.25@ 7.50*
Kansas lump	Kansas City	5.00	5.00	5.25	**5 00@ 7 00**
Kansas mine run	Kansas City	4.75	4.75	5.15	**5.00@ 7 00**
Kansas screenings	Kansas City	4.25	4.25	4.90	**5 00@ 7 00**

*Gross tons, f. o. b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.
NOTE—Smokeless prices now include New River and Pocahontas.

ended June 24. The districts in Pennsylvania and the central competitive field and those west of the Mississippi have been less affected by traffic congestion. Changes in shipments there measure better the direct influences of efforts to overcome the strike. In Pennsylvania the output since the last week of July has increased somewhat. Union districts in West Virginia also reported slight increases."

The Northwest is in desperate need of coal and the coal distribution committee has issued priority orders on cargo and vessel fuel in an effort to get a supply to the upper docks as soon as possible. Dumpings at Lake Erie ports during the week ended Aug. 14 recovered from the extreme slump of the week before. The total dumped was 147,358 net tons—123,121 tons cargo and 24,237 tons vessel fuel—as compared with 92,747 tons during the week ended Aug. 7. The total movement for the season is only 4,776,684 tons; last year's figure was 14,789,941 tons.

Tidewater dumpings at Hampton Roads increased during the week ended Aug. 10 as the carriers have been able to clear up some of the congestion between the mines and piers. The dumpings were 306,258 net tons as compared with 277,072 in the previous week.

July witnessed a decline in Tidewater dumpings. In comparison with June the total dropped 21 per cent, principally caused by decreased movement from Hampton Roads to New England.

TIDEWATER SHIPMENTS FOR JULY, 1922
(In Thousands of Net Tons)

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	July Total	June Total
Coastwise to New England	16	9	..	663	22	710	874
Exports	...	1	..	58	21	80	104
Bunker	86	11	3	147	8	255	301
Inside capes	...	32	21	113	..	166	290
Other tonnage	113	..	..	503	10	626	764
Total, July	215	53	24	1,484	61	1,837	....
Total, June	269	51	33	1,945	35	....	2,333

Because the strike has curtailed shipments to the three Northern ports—New York, Philadelphia and Baltimore—the cumulative Tidewater movement from Jan. 1 to July 31 was much below normal. Shipments during the first seven months of 1922 were 29 per cent less than the average for the corresponding period in the three years preceding. The chief element in the decrease was a sharp decline in exports. Shipments to New England were greater than in any of the 3 years preceding, because of the effort of New England consumers to obtain water-borne coal to replace dwindling all-rail shipments.

CUMULATIVE TIDEWATER SHIPMENTS, JANUARY-JULY, 1918-1922
(Net Tons)

Destination	1919	1920	1921	1922
Coastwise to New England	4,674,000	5,824,000	4,347,000	6,548,000
Exports	3,406,000	10,748,000	8,294,000	1,230,000
Bunker	3,891,000	4,895,000	5,577,000	2,914,000
Inside capes	1,984,000	1,828,000	1,802,000	1,813,000
Other tonnage	6,061,000	4,860,000	4,177,000	4,663,000
Total	20,016,000	28,155,000	24,197,000	17,168,000

ANTHRACITE

The hard coal situation is unchanged. Production is nil except for a weekly output of less than 30,000 tons of steam coals dredged from the rivers. Pea coal is all that is moving and even this is slowing down as railroads are reserving tonnage at the mines for their own use.

Anthracite wage questions will be discussed in the coming conference which follows the Cleveland soft-coal negotiations. An early resumption of hard-coal production is likely to result therefrom.

COKE

Production of beehive coke continues to increase slowly. During the week ended Aug. 5, 116,000 net tons were produced, 4,000 tons in excess of the previous week. There is less spot coke offering, however, demand is lighter and there is more dickering over price as users are forced to close rather than pay any further premiums. Only those foundries with most pressing business are attempting to remain open.

The growing scarcity of coal was reflected in a decrease in the output of byproduct coke in July. The total production for the month was 2,486,000 net tons against 2,580,000 tons in June.

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 Inclusive	April 3 to July 29, 1922 Inclusive	Week Ended July 29
U. S. Total	45.6	55.7	....	....
Non-Union				
Alabama	63.5	64.6	76.0	91.1
Somerset County	55.5	74.9	45.0	50.3
Panhandle, W. Va.	55.3	51.3	44.5	41.8
Westmoreland	54.9	58.8	83.4	92.0
Virginia	54.8	59.9	76.2	50.9
Harlan	53.3	54.8	45.1	20.2
Hazard	51.7	58.4	52.1	21.3
Pocahontas	49.8	60.0	70.8	44.4
Tug River	48.1	63.7	75.9	39.1
Logan	47.6	61.1	67.8	19.8
Cumberland-Piedmont	46.6	50.6	16.8	22.7
Winding Gulf	45.7	64.3	67.8	34.6
Kenova-Thacker	38.2	54.3	73.8	41.2
N. E. Kentucky	32.9	47.7	51.2	15.1
New River‡	24.3	37.9	29.7	27.3
Union				
Oklahoma	63.9	59.6	14.5	11.9
Iowa	57.4	78.4	0.0	0.0
Ohio, Eastern	52.6	46.6	0.0	0.0
Missouri	50.7	66.8	2.3	5.0
Illinois	44.8	54.5	0.0	0.0
Kansas	42.0	54.9	16.7	21.8
Indiana	41.4	53.8	0.0	0.0
Pittsburgh†	41.2	39.8	0.0	0.0
Central Pennsylvania	39.1	50.2	11.9	11.8
Fairmont	35.3	44.0	4.2	4.1
Western Kentucky	32.5	37.7	62.1	52.9
Pittsburgh*	30.4	31.9	0.0	0.0
Kanawha	26.0	13.0	5.8	6.1
Ohio, Southern	22.9	24.3	0.0	0.0

* Rail and river mines combined
† Rail mines
‡ Union in 1921, non-union in 1922

Car Loadings and Surpluses

Cars loaded:	All Cars	Coal Cars
Week ended July 29, 1922	859,733	76,374
Previous week	861,124	76,060
Same week a year ago	795,432	149,439
Surplus cars:		
July 22, 1922	203,322	141,430
July 15, 1922	233,029	151,727
Same date a year ago	350,000	170,000

In spite of the decrease as compared with June, the July rate of output was within 3 per cent of the average for 1920, the year of maximum output. The byproduct plants of the country continue to be called upon to make good the deficit of beehive coke caused by the strike in the Connellsville region and elsewhere. The beehive ovens produced only 450,000 tons in June.

MONTHLY OUTPUT OF BYPRODUCT AND BEEHIVE COKE
(Net Tons)

	Byproduct Coke	Beehive Coke	Total
1917 Monthly average	1,870,000	2,764,000	4,634,000
1918 Monthly average	2,166,000	2,540,000	4,706,000
1919 Monthly average	2,095,000	1,638,000	3,733,000
1920 Monthly average	2,565,000	1,748,000	4,313,000
1921 Monthly average	1,660,000	463,000	2,123,000
April, 1922	2,208,000	528,000	2,736,000
May, 1922	2,537,000	432,000	2,969,000
June, 1922	2,580,000	458,000	3,038,000
July, 1922	2,486,000	450,000	2,936,000

The coal consumed in the manufacture of coke in July is estimated at 4,281,000 tons, of which 3,571,000 tons was charged in byproduct ovens and 710,000 in beehive ovens.

That this rate of consumption cannot be continued long unless the production of coal is greatly increased over the present rate, will be apparent from the fact that the coal used in coke manufacture during July was equal to 28 per cent of all the coal mined that month. This was possible because the byproduct ovens were able to draw upon coal held in storage.

ESTIMATED MONTHLY CONSUMPTION OF COAL FOR MANUFACTURE OF COKE
(Net Tons)

	Consumed in Byproduct Ovens	Consumed in Beehive Ovens	Total Coal Consumed
1917 Monthly average	2,625,000	4,354,000	6,979,000
1918 Monthly average	3,072,000	4,014,000	7,086,000
1919 Monthly average	2,988,000	2,478,000	5,466,000
1920 Monthly average	3,684,000	2,665,000	6,349,000
1921 Monthly average	2,385,000	731,000 (a)	3,116,000
April, 1922	3,172,000 (a)	833,000 (a)	4,005,000
May, 1922	3,645,000 (a)	681,000 (a)	4,326,000
June, 1922	3,707,000 (a)	722,000 (a)	4,429,000
July, 1922	3,571,000 (a)	710,000 (a)	4,281,000

(a) Assuming a yield in merchantable coke of 69.6 per cent of the coal charged in byproduct ovens, and 63.4 per cent in beehive ovens.

Foreign Market And Export News

American Orders Have Bolstered British Prices And Quieted Threatened Labor Troubles

THE advance of British prices as a result of the American demand has been little short of miraculous. Recently pits were talking of closing down and practically no signs of the American demand were forthcoming. Prices of steam coal in Wales are now nearly 10s. higher. The extent of the American demand in Wales is not known, as no figures of much value are disclosed. It is evident, however, that ships to carry 300,000 tons were ready at Cardiff to be sent off before Aug. 10.

The American buyers were able to obtain their coal comparatively cheaply because they arrived on the market at a time when colliery owners were at a loss to know how to keep their pits open and how to dispose of their accumulated stocks.

Production during the week ended July 29 was 4,989,000 gross tons as cabled to *Coal Age*. This is a considerable increase from the previous week's figure of 4,391,000 tons.

Coincident with the demand from the United States there sprang up a brisk trade with South America, which had disappeared since 1914. At the same time merchants on the Continent, who had been delaying getting their autumn requirements in the hope of a further fall in prices, hurried their orders, so as to get them placed before the American boom caused a further rise.

There is no sign of any labor trouble. The miners do not know the destination of the particular coal they are producing, and, apart from that, they are not at all anxious to find any cause for stoppage.

Some hundreds of thousands of tons of gas and coking coals have been contracted for in northern England, and the entire Durham field is operating at top pressure to cope with the orders. As a result Northumberland and Durham pits are entirely booked up until the end of September. European contracts include one of 20,000 tons of gas coals at 22s. 3d. for Bergen and 60,000 tons of special gas coals at 26s. for Amsterdam.

On the whole, the attitude in North England has been transformed from pessimism into optimism. The present position is that business is restricted only by the need of further shipping facilities.

French Production During May

Production of coal in France in May was divided as follows between the various coal fields:

		Metric Tons
Nord and Pas-de-Calais	Non-devastated mines	631,803
	Devastated mines	621,993
Centre coal fields		620,434
Southern coal fields		356,387
Western coal fields		10,146
Eastern area (small Ronchamp coal field)		8,459
Lorraine coal field		346,169
Total		2,595,391

IMPORTS IN MAY AND YEAR TO DATE

	May, 1922	January-May, 1922
Sarre	255,942	1,374,533
Great Britain	968,136	5,100,996
Belgium	198,737	1,019,918
United States	3,194	13,380
Germany	552,514	1,651,975
Netherlands	79,886	342,432
Various countries	39	3,272
Totals	2,058,448	9,506,506

Sarre coal production in May was 846,862 metric tons.

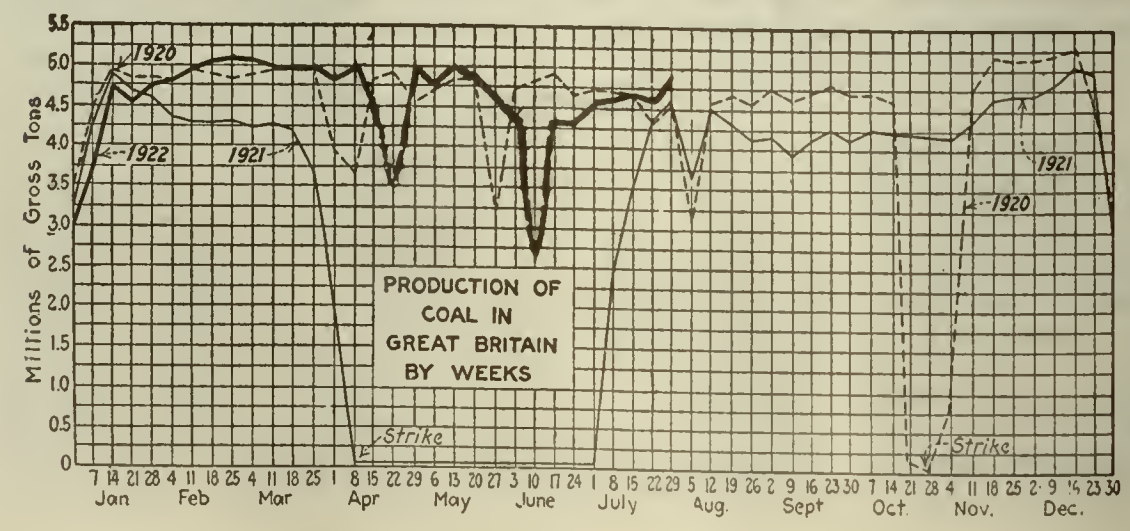
Hampton Roads Pier Situation

	Week Ended Aug. 3	Week Ended Aug. 10
N. & W. Piers, Lamberts Point:		
Cars on hand	766	808
Tons on hand	46,796	49,220
Tons dumped	105,752	131,863
Tonnage waiting	59,975	71,500
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	660	512
Tons on hand	35,850	28,350
Tons dumped	70,203	80,861
Tonnage waiting	78,938	64,450
C. & O. Piers, Newport News:		
Cars on hand	418	408
Tons on hand	22,000	20,000
Tons dumped	71,431	60,721
Tonnage waiting	11,455	23,115

Inland Demand Cuts Supply at Roads

The market was quieter last week than during the earlier period of the strikes, although quotations remained firm at advanced levels. From the spectacular point of view emphasis has shifted from the off-shore to the inland demand on account of the numerous appeals for fuel which have besieged shippers at Norfolk since the lack of coal in Virginia and North Carolina became acute.

Movement has been in about the same proportion as in the previous week on all three railroads. Stocks at Tide have contracted slightly, but have hovered very close to 100,000 tons for the greater part of the time.



Coal Paragraphs from Foreign Lands

ITALY—The market is dull. Imports during May totaled 1,043,000 tons, of which 52,000 tons were from the United States, 662,000 from the United Kingdom, 318,000 from Germany.

Cardiff steam first is now 42s. 6d., according to a cable to *Coal Age*. Last week's quotation was 40s. 9d.

GERMANY—New coal prices, caused by the increase in miners' wages which came into force on July 1, show an addition of about 30 per cent. Fat coal now costs about 1,200 m. per ton at the mine, which is about 100 times above the pre-war figure. Before the war the price was 12@12½ m. per ton. Other coals have advanced relatively.

Production in the Ruhr district for the week ended July 29 was 1,802,000 metric tons, according to a cable to *Coal Age*, 2,000 tons in excess of the previous week's output. The International Miners' Congress is sending members to the Reparation Commission to request a modification of the Spa coal convention.

Export Clearances, Week Ended Aug. 10, 1922

FROM HAMPTON ROADS:

For Atlantic Islands:	Tons
Nor. S.S. Fram, for St. Lucia	4,004
For Cuba:	
Br. S.S. Berwindvale, for Havana	7,735
Am. Sch. Edna M. McKnight	1,874

Pier and Bunker Prices, Gross Tons

PIERS

	Aug. 5.	Aug. 12†
Pool 10, New York		$12.00@12.25
Pool 11, New York	$11.00@11.25	**11 00@12 00**
Pool 1, Hamp. Rds	9.25@10 00	**9 50@11 00**
Pools 5-6-7 Hamp. Rds.	9.25@10 00	**9.50@11 00**
Pool 2, Hamp. Rds.	9.25@10.00	**9.50@11 00**

BUNKERS

Pool 10, New York		12.25@12.50
Pool 11, New York	11.25@11.50	**11 25@12 25**
Pool 1, Hamp. Rds	9.25@10 00	**9.50@11 00**
Pool 2, Hamp. Rds	9.25@10.00	**9.50@11 00**
Welsh, Gibraltar	38s. 6d.	38s. 6d.
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	38s. 6d. f.o.b.	38s. 6d. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	38s. t.i.b.	38s. t.i.b
Welsh, Algiers	38s. 6d. f.o.b.	38s. 6d. f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b.	65s. f.o.b.
Welsh, Maderia	42s. 6d. f.a.s.	42s. 6d. f.a.s.
Welsh, Teneriffe	40s. 6d. f.a.s.	40s. 6d. f.a.s.
Welsh, Malta	42s. 6d. f.o.b.	42s. 6d. f.o.b.
Welsh, Las Palmas	40s. 6d. f.a.s.	40s. 6d. f.a.s.
Welsh, Naples	38s. f.o.b.	38s f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore	53s. 9d. f.o.b.	53s. 9d. f.o.b.
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Welsh, St. Michaels	50s. t.i.b.	50s. t.i.b.
Welsh, Alexandria	44s. f.o.b.	44s. f.o.b.
Welsh, Port Said	46s. 6d.	46s. 6d.
Welsh, Buenos Aires	50s. f.o.b.	50s. f.o.b.
Durham, Antwerp	30s. 6d. t.i.b.	30s. 6d. t.i.b.
Durham, Hamburg	26s. f.o.b.	26s. f.o.b.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	Aug. 5	Aug. 12†
Admiralty, Large	29s.@31s.	29s.@31s.
Steam, Smalls	21s6d@22s6d.	21s6d@22s6d.
Newcastle:		
Best Steams	25s.	**25s.@26s.**
Best Gas	25s.	25s
Best Bunkers	25s.	25s.

†Advances over previous week shown in **heavy type**: declines in *italics*.

North Atlantic

Non-Essential Industries Hot After Meager Tonnage

Production Increases, but Little Coal Left for Spot Market—British and Southern Tonnage Aid—Impending Strike Settlement Loosed Flood of Orders and Inquiries.

NON-ESSENTIAL industries are active bidders in the spot market. Demand is exceedingly strong and receipts are heavier, but quotations are not soaring as there is more of a tendency to observe fair prices. State committees are securing a few cars for needy points, railroads are taking much of the current output and the remaining spot tonnage is exceedingly light. Cargoes of British coal are now arriving. Southern coals, via water from Hampton Roads, are also moving better, filling a few gaps in the market.

Coal houses are being deluged with inquiries and many orders are being placed, for delivery after the settlement of the strike, but the question of price is being left open.

NEW YORK

The arrival of the first cargo of British coal in this harbor during the present strike was the feature of last week's market. This arrived in an Italian vessel and was reported as having been sold to a public utility corporation. It was followed a couple of days later in the week by another vessel which docked in Brooklyn. Other cargoes of foreign coal are expected almost daily.

Offers of British coal are being made to local dealers, and one house received an offer of Scotch coal at about $11, c.i.f., or about $12 alongside in small barges. Quotations for British coal, c.i.f., for late August or September delivery, ranged about as follows: Durham, first class, 42s.; Durham, second class, 40s.; Northumberland, unscreened, 40s., and Admiralty, 49s.

While the demand was strong and coal moving in better shape, there was a tendency to keep prices nearer the Hoover schedules, although no quotations were available as low as those figures. There were 429 cars at the local piers on Aug. 11, and it was estimated that less than 25 per cent of these were available for spot buyers.

The state fuel commission is busy formulating plans for seeing that all public utilities and essentials secure coal. The railroads are heavy buyers.

Demand along the line is much stronger than at Tidewater. Southern coals are coming forward in slightly heavier volume, with quotations around $13, this harbor, in small barges. B. R. & P. coals are quoted $7.75@$8, with similar quotations for Pittsburgh.

UPPER POTOMAC

Virtually all mines in the Upper Potomac region on the West Virginia side of the river between Thomas and Piedmont, are now in operation. On the Maryland side fewer mines are at work owing to the lack of co-operation of Maryland authorities. Production is being steadily increased and is averaging about half of normal. A few mines in the Georges Creek region also are operating. Railroad fuel is moving at about $3.50 a ton but the quotation generally on coal in the various pools is about $6.

PHILADELPHIA

That reserves of consumers are being fast eaten into is shown by an increase of direct inquiries to shipping houses. Many of these concerns have held out almost to the last minute and it is with the greatest reluctance that they make small purchases at the current figures.

Prices have not materially deviated from last week's quotations. Generally, though, when no grade is specified the price has been about $8, with Pool 10 classification taking the top figure.

As yet priority orders have not become effective, although it does seem to have had the effect of automatically giving better shipments to utilities. Usually such concerns having contracts have been in receipt of more coal. While this has been of considerable help, yet it has not been sufficient to permit the larger users of coal to keep out of the spot market, and many of them have recently paid the maximum prices to keep a margin of safety in stocks.

The edge, at least temporarily, seems to have been taken off the foreign coal market. Of course rising prices of coal and freights on the other side has had something to do with it, but no doubt purchasers are also desirous of having some of the coal in hand to make certain that it will meet their requirements.

FAIRMONT

By the end of the first week of August there had been so much improvement that conditions were better than they had been at any time since the beginning of the strike. More mines were at work—200—more men were at work and production was larger. Approximately 5,000 miners are now producing coal. Transportation conditions are also proving to be conducive to a larger output.

CENTRAL PENNSYLVANIA

There are approximately 1,000 more men at work than before troops and state police were sent into the field. A noticeable increase in production is reported. The output has gone from 600 to 700 cars per day.

No important developments marked the progress of the strike last week. A 100 per cent car distribution is reported on all railroads entering the field. On the South Fork branch of the P. R.R., 392 cars were loaded during the first five days of August, with the number slightly on the increase each succeeding week. The first week of July showed 113 cars on the first five days.

The Pennsylvania company is repairing freight cars as fast as they are turned into the shops at Altoona. Coal operators and officers of the Central Pennsylvania Coal Producers' Association attended the conference with Governor Sproul in Philadelphia at the end of the week.

BALTIMORE

With the Maryland coal committee beginning to function the market remains stiff and rather acute in spots. The commission is headed by W. M. Malloy, of the Public Service Commission, but the practical director is O. L. Eaton, of the B. & O., who arrived this week to act as vice-chairman. He found calls from a number of Maryland towns which claimed to be without fuel for industries or hotels, etc., and this was taken care of through some operators who could spare a car or so of coal here and there.

Governor Ritchie appealed by wire to John L. Lewis, president of the United Mine Workers, to attempt to settle the Maryland situation immediately after the Cleveland conference. He received a reply that action would be taken in case the situation following the Cleveland conference warranted such a move for the Maryland field. Despite union statements to the contrary, the B. & O., the Pennsylvania and Western Maryland officials continue to report more than enough cars in all producing territories to move all coal offered.

Prices remain high. Consumers are entirely willing to pay $6@$8 a net ton, f.o.b. mines, for the coal that is offering. At that the coal is cheaper than the English coals now arriving here, which commands $10@$12 at the piers.

West

SALT LAKE CITY

Utah needs no fuel administration, Governor Chas. R. Mabey has told Secretary Hoover. Utah is producing 73 per cent of the normal output of coal.

Domestic consumers are asking for coal. There is, however no rush. There appears to be enough cars and the strike situation is about the same. The soldiers are still in charge.

July production was 374,934 net tons. In July last year the figures were 273,092, but in 1920 they were a round half-million.

KANSAS CITY

The peaceful situation that existed in the Kansas coal field a short time ago has taken wings and the lamb-like demeanor of Howatt followers has changed. Very little coal is being produced in that stall. The long continued strike is causing steam plants to turn to oil and a great many are installing oil burning equipment. The Kansas City, Mo., municipal water plants will change over to oil at once and a great many manufacturing plants are also changing to oil.

Coal is harder to obtain that at any time since the strike and the price is anything the seller asks. Some Kansas mill coal sold for $7 f.o.b. mines this week.

Anthracite

Early Scarcity Is Inevitable Substitute Fuels Are Urged

Household Consumer Fully Awakened to Gravity of Situation—Retailers Besieged With Orders—Stocks Being Rationed—Pea Coal Disappears as Railroads Take Mine Stocks for Steam Substitute.

THE public is now thoroughly aware of the serious aspect of the situation for the winter. Retailers are besieged with orders, but are doing little else than file these for attention at the earliest possible moment. Domestic stocks are being rationed out only to hospitals, hotels and other urgent points of consumption. Even pea coal, which has been in plentiful supply, is disappearing from the market, as mine stocks are being held for the hard-coal burning railroads.

Substitution of other fuels is now being urged in the East, for the first part of the season at least, as it is realized that even if mining is resumed in the near future the needs of the Northwest would take much of the current production well into the time when domestic coal fires are lighted.

NEW YORK

With the naming of a fuel commission to look after the distribution of coal the public is thoroughly aroused to conditions and consumers are realizing the mistake they made in the early spring by not putting away their next winter's coal.

It is possible that coal will be doled out in bags by some retail dealers, whose yards are in the poorer sections, the consumer taking it away himself. This system has been followed in some instances during previous coal shortages. Retail dealers' books are carrying many orders but no one knows when to expect delivery.

A few loaded boats of pea were reported as afloat in the harbor but their number was so negligible as to amount to practically nothing. The companies have nothing to offer to the trade and most independent operators are keeping their supplies for their own use at the mines.

Some river barley was offered here toward the end of the week at $2.50@$2.75.

BALTIMORE

The situation continues to cause much worry. Many consumers will undoubtedly have to face the early weeks of cold weather without hard coal, no matter how soon mining begins. Some dealers are advising consumers to take lump soft coal, or the English coals coming in. Few of the household heating plants are adapted to use soft coal without great trouble.

The State Forestry Division is endeavoring to get rural users of hard coal to take wood, offering to see that supplies are furnished. If this was successful in full it would save a consumption of about 600,000 tons of anthracite. At last the public is awakening to the real dangers of a coal shortage. As the cold weather approaches both consumers and coal men grow nervous. It is far from a healthy situation.

PHILADELPHIA

The appointment of a fuel commission by Governor Sproul seems to have brought home to the consumer the extreme shortage that is likely to prevail. When it is considered that sixty days will bring us into general coal burning weather, the wonder is expressed where the coal is going to come from, even though mining could be resumed at once.

Consumers begin to realize how helpless the dealer is to assist them, even though he does promise to make deliveries when coal is received.

The movement of pea coal into the cellars goes on actively, and shipments from the companies are somewhat light, although they have heavy tonnages on order, in fact it is believed that the amount actually ordered will exceed the tonnage in stock. A good deal of this coal is going to distant territories, who, while they do not ordinarily use much of this size, yet began placing orders for it somewhat earlier than local retailers.

There seems now something more definite than mere rumor upon which to base a decision to have but two sizes of family coal when shipments are resumed. It is declared that the larger companies have already adjusted the screens at the breakers with this idea in view.

In steam coal, which means river barley, the quotations are still very little changed, $2.60@$3, although a small quantity of low-grade material has been moved at $1.85, being coal with a larger percentage of pebbles than usual.

BOSTON

A few last clean-up cargoes of pea are being received, but otherwise shipments are practically nil. Retail dealers are reduced to extremely small reserves of prepared sizes, but coal is still being distributed through usual channels and thus far no dealer of any size has yet thrown up his hands.

The wholesale trade feels that when mining is resumed prepared sizes will be distributed by representatives of the producers, much as in 1918, and that no effort will be made by the administration to supplant the usual avenues of supply. The subject was gone into in great detail during the war, and it would be hard to believe the experience of that period would be thrust aside.

ANTHRACITE FIELDS

The Glen Alden Coal Co. has received permission to employ a few men on some necessary repairs to the Truesdale Colliery. A misunderstanding must have arisen with the mine workers for the men were attacked and a couple of deputy sheriffs were stoned. However, on the next day matters were straightened out.

There seems to be no present prospect of settling the suspension. The whole region is feeling the effects very badly. Bank savings are being withdrawn. Retail sales have fallen below 50 per cent of normal. Many of the men are working on outside jobs.

BUFFALO

One jobber reports some hundreds of carloads still held in storage, which he will sell at a premium of only 75c. a ton. It must be that his company has the hoarding habit in a very marked degree, or this coal would have been gone long ago. Still the consumer appears to be reconciled to the indefinite waiting.

It seems to be the idea that nothing is to be done until the bituminous miners are at work. The indifference of the men and their readiness to remain idle indefinitely at the command of their leaders is still as hard to explain as ever.

South

BIRMINGHAM

The strong demand which has prevailed for some time past is still well sustained and there is a scarcity of all grades. The bulk of the output, as anticipated, has been pretty well sold up for some weeks ahead, with several hundred cars moving daily to Western railroads and to lines operating in the district. The industrial demand and the call from Municipal plants and small utilities in every direction is large in the aggregate.

Prices are generally a matter of election of the seller, and mine run and washed range $4.50@$5.50 mines, with little or no regard to quality. Spot domestic is equally as scarce as commercial coal and dealers generally are manifesting activity such as has not been shown in a long while, but are making little progress in placing orders.

Despite the car shortage and crippled transportation conditions, record production is being maintained, running to 375,000 and 380,000 tons during the last three weeks. With an ample supply of equipment for loading and speedier service this figure could be increased easily 50,000 to 75,000 tons per week. The lines are showing steady improvement in service.

VIRGINIA

Not much more than 50 per cent of potential capacity is being produced. Any increase in production has been limited to the mines on the N. & W. and the Southern, mines on the former road having increased their production to the extent of 15 per cent and on the Southern by 5 per cent.

Chicago and Midwest

Abnormality Is Normal Now in Midwest Region

Conditions So Uncertain for So Long That Nobody Worries About Markets—Kentucky Coal Remains Above $8—Buyers Wait for Strike End.

THE Midwest is getting hardened to upset conditions. Uncertainty in everything to do with the coal trade has calloused coal traders to a point of calmness. Prices remain high and coal is almost impossible to get for open market except from western Kentucky, whose output sold at the end of the week for more than $8 in most cities hereabout. Buyers are now so confident of the end of the strike that they are buying only where it is absolutely essential. Jobbers are declining to sign up with producers for any more coal except on a day-to-day basis.

The machinery of controlling distribution of coal from the Kentucky fields has not got well into its stride. The result is a large part of the output is still going into the open market. Priority orders are growing more numerous every day but even this is uncertain because of conflicting efforts of those supposed to grant priority. Car supply continues to be limited.

A good deal of the coal produced by the eastern Kentucky fields is going to railroads and utilities at the Hoover prices. West Kentucky continues recalcitrant and while its committee wrangles with Washington to get an increase in the Hoover maximum, most of that region's coal sells higher than $8 at the mine.

CHICAGO

A state of uncertainty has prevailed so long on this market that it now is accepted as normal. Hence its continuance during the past week while the strike gave signs of ending at the Cleveland conference, upset nobody. A little coal from Kentucky was traded here every day at prices that wavered around $8@$9 all week, closing Saturday at $8@$8.50. At no time was there any heavy trading nor was the market level. Wild prices were quoted from time to time to unwise buyers, resulting in an occasional sale at $11 or even $12.

Practically no coal other than a small volume from western Kentucky moved through this market except one batch of Pittsburgh No. 8, which was offered on Wednesday first at $9 and finally as low as $7.50 before it was cleaned up on Friday. A scattering few cars of West Virginia high-volatile also appeared and sold at about the same levels. Practically no smokeless or eastern Kentucky figured in the week's business.

A great deal of interest was stirred up by various business organizations who raised their voices over the approaching fuel famine in the city. Dealers ended a canvas showing practically empty yards and a survey of plants showed only a few days' supply left. Chicago is pleading with Washington for freer shipments to this region.

SOUTHERN ILLINOIS

Mules are going down the mines, presumably for the purpose of cleaning up, but it is likely they will stay down. At least, that seems to be the impression among the miners. Several mines are in first-class condition to produce coal in the event of a settlement but others may need several weeks to get in shape. Everybody is optimistic. There is no trouble in the Carterville or Duquoin fields. There is some activity in the Mt. Olive and in the Standard districts toward cleaning up.

The sheriffs of Madison and St. Clair counties have been busy trying to prevent clashes between striking miners and the loaders of coal from the slack piles. Belleville loading has been stopped by the miners. Loading continues at one Collinsville pile, protected by a U. S. District Court injunction.

INDIANAPOLIS

The call for coal in Indiana is increasing but there is no coal. The demand is due to indications of an end to the strike and to the fact that the industrials which have been skimping along on low reserves for weeks, wish to get in on the ground floor. No contracts are being made. Prices are as high as they likely will get.

During the past two weeks there has been a revival of business in some of the staple lines in the state and this is calling for more fuel. Many plants have had to close down during the past week because of lack of coal. Utilities appear to be suffering, but not to the point of shut-downs. Some are burning cobs. The state operation of strip mines has resulted in a total of only eight cars, a disappointment to Governor McCray, who expected a larger production in the eight days the State has had control.

WESTERN KENTUCKY

Although priority orders are controlling the movement, use and destination of coal, and billing is refused by the coal handling roads, except where shipped on such orders, the price question is not being policed by the railroads, with the result that about the lowest quotations heard on western Kentucky fuel are around $7 and ranging upward to $8 and higher. This is a drop from $9@$10 from July 5.

Western Kentucky has never agreed to Hoover prices. For several days past an effort has been made to secure a $4.25 maximum, and press reports from Washington, indicate a favorable consideration, but no definite action. It is claimed that Washington has been considering $3.75 as a mine run maximum. Production is somewhat better. There is a ready demand for all coal that can be produced at $7@$8 a ton, and operators are not showing much inclination to accept $3.50. Coal moving now is for railroad and industrial use principally, and does not represent much domestic fuel.

LOUISVILLE

Regardless of conferences this week of operators, of representatives of Mr. Hoover and of the Kentucky Fuel Commission along with railroad officials, about the only change noted in the general situation is that all coal produced is moving on class 2, priority orders. Prices continue at $7@$8 in both eastern and western Kentucky, although a few producers may be maintaining the Hoover levels. Railroads finally are enforcing priority rulings, but the State and Federal boards are not controlling distribution.

Utilities and railroads are paying the $7@$8 asked, without much argument. Michigan is raising a lot of noise concerning inability to move Kentucky's production direct to Detroit, but Governor Morrow, of Kentucky, argues that Kentucky comes first. Jobbers report that they are not buying any coal or taking any chances on orders that may be countermanded if the strike blows up at Cleveland.

Discussion locally indicates that if any effort is made to refuse cars to mines which can secure priority orders, but who charge over the Hoover price, there may be an effort to secure Federal court injunctions to force equitable car distribution, on the basis that no state or Federal department has the right to endeavor to regulate prices, and that such action through misuse of the powers of the Interstate Commerce Commission are unconstitutional.

ST. LOUIS

St. Louis is almost out of coal. A little is moving in, but the situation is critical. Several small plants are running on short time and some have suspended, and it is estimated that about 5,000 tons of coal per day are being displaced in the St. Louis district by oil burners. Oil transportation is beginning to get serious. A peculiar thing about it is that the oil companies are paying $8@$10 a ton at the mine for the coal and are selling oil to non-essentials.

The domestic trade is easy and patiently waiting, but the dealers are out of coal for small essential plants and railroads are beginning to feel the pinch in a severe way.

The fuel commission has set mine prices on Missouri coal but no retail prices were set. The prices quoted at the mines on Kentucky coal range $7@$10, and Alabama, $5.50@$7, and no other coals are available.

The general impression here is that the strike will be settled within a week, but it will take another week before St. Louis will begin to get any commercial coal and the situation is such this winter that the average supply of coal will not be normal in St. Louis until next spring on account of the depleted stocks.

Eastern Inland

Buyers Reduce Orders, Awaiting Strike's End

Cut in Consumption Necessary With Lowered Spot Demand—Priorities Leave Little Free Coal—Lake Trade Will Be Aided by Issuance of Preferential Orders.

PRIORITIES rule on the bulk of the coal moving. The buyer is not bidding up the market, preferring to await the early resumption of union mining which has been assured. Demand is off, but in many cases this has been accompanied by a curtailment or complete industrial shutdown as buying had lately been largely for day-to-day consumption. Prices are a trifle softer than last week.

The Lake trade has been hard hit by the scarcity and rail congestion, but the latter is clearing slowly and the issuance of priority orders for vessel and cargo coal is designed to remedy the situation.

COLUMBUS

Operators and shippers are marking time, waiting for the results of the Cleveland conference. There is a good deal of optimism shown in producing circles and a general feeling that matters may be straightened out by the conference. The state fuel commission is functioning and only a small amount of coal is available.

Prices are erratic to the extreme. Some free coal is selling around $6.50@$8, and in some cases higher. Shipments authorized by the fuel commission are made generally at Hoover levels. So far no large user has been compelled to close down because of lack of fuel although quite a few are close to the bottom of their bins. Railroads are taking the main bulk of the production.

Quite a few Lake shippers are in the market. Offers of $4@$4.75 have not been taken up and producers are content to await developments. The H. V. docks at Toledo loaded 55,911 tons during the week ended Aug. 9, as compared with 42,101 tons the previous week. The Northwest is clamoring for coal and some priorities to insure shipments to that section are being issued.

BUFFALO

The situation here is just as quiet as ever. Jobbers who have regular understandings with reliable mine owners, are doing a ragged sort of business, with some cars one day and perhaps none the next. Others hold off, with the idea that prices will go down fast as soon as the mining settlement is made.

The more determined of the operators say that mining at former wages merely means another fight next April. It will not answer to go on in this way indefinitely.

The price situation is as unsteady as ever. Now and then a car comes out that was bought at $3, again one sold for $9. Between these extremes a good average is $7.75@$8.50.

The difficulty in getting Lake fuel continues, but the fleet manages to obtain it somehow. With new crops heavy the Lake activity will need to continue.

CLEVELAND

Hope of an early settlement of the strike has caused a peculiar situation in the Cleveland market. Buying is not as strong as it was two weeks ago and consumers who are not forced to take their supplies on a day-to-day basis are delaying in the hope that they will soon be able to place orders for union-mined coal at more reasonable prices.

Industrial plants are steadily losing time through individual fuel shortages. The danger point has been reached by railroads and public utilities, and these industries are most active in seeking tonnage. Priority orders are taking an increasing volume of the non-union output and the Lake situation is being given some attention by the issuance of preferential orders for the movement of bunker coal, as well as the placing of a priority on cargo coal shipments.

Prices show a wide range, but have little significance as rail congestion and priority orders allow but little tonnage to seep through.

EASTERN OHIO

Even though the supply of available coal in the open market continues at a minimum, steam users are purposely procrastinating as to any steps looking toward replenishing their stocks because of renewed hope that mining will be resumed shortly.

Inquiries are not so numerous as several weeks ago, notwithstanding that many large industrial plants as well as railroads and public utilities are nearing the danger point of fuel scarcity. Likewise, confiscations by the railroads are becoming more frequent, evidenced particularly by the inability of consignees to get non-union coal consigned to them from West Virginia and eastern Kentucky. Congestion at Ohio River gateways continues to be the main barrier to a more healthy volume of arrivals. Receipts of bituminous coal at Cleveland during the week ended Aug. 5 slumped considerably, total arrivals being but 626 cars. This registers a decrease of 216 cars under the receipts for the week ended July 29.

Eastern Ohio stripping mines continue to produce between 30,000 and 40,000 tons per week, apparently being unable to attain the former maximum output, which some six weeks ago was averaging a little above 50,000 tons.

Spot prices have varied during the week, quotations on eastern Ohio stripping and West Virginia Panhandle, any grade, ranging $7@$7.50. Eastern Kentucky and West Virginia were quoted $4.50@$8.00, but information in the trade is that these latter quotations are without significance because of impossibility to get this coal through. Considerable shifting as well as delays in Lake shipping are reported because of inability to get bunker coal and in isolated cases as much as $10 has been paid.

DETROIT

With only about 300 cars arriving daily to meet requirements amounting to about 500 cars, exclusive of railroad fuel, Detroit is steadily reducing reserve stocks.

Efforts of the D. T. & I. R.R., controlled by Henry Ford, to arrange an agreement with the L. & N. under which the former might send motive power and train crews to move several hundred loaded coal cars, held back on the Benner Fork division in the vicinity of Corbin, Ky., have been unsuccessful, the management of the L. & N. taking the attitude that it would be an injustice to other parts of the country to permit this exclusive movement of the coal to Michigan.

Word comes from Washington that Michigan's fuel administrator, who presented priority orders aggregating more than 300,000 tons, has been promised the immediate shipment of consignments amounting to 83,750 tons.

So far the various fuel administrators have taken no steps to obtain coal to supply the needs of household consumers, all efforts being for the relief of utilities.

PITTSBURGH

The Pittsburgh Coal Producers' Association, as a body, refused to have anything to do with the Cleveland convention, representation at the convention from western Pennsylvania being merely of a few scattered mines. The evident intention of the district as a whole is to resume operations when feasible on an open-shop basis. The common remark is that in general the districts represented at Cleveland were moved by financial considerations. A similar incentive, it is said, does not obtain with the typical Pittsburgh district operator.

The only important market in the past week has been in Connellsville steam grade, the price for which has ruled steady at a range of $7@$7.50, being a shade stiffer than a week ago, but easier than late in July, when the top price of $8.50 had been reached. Occasionally a little Connellsville by-product coal is bought at $8@$8.50 but there is little demand, consumers considering the price prohibitive. Westmoreland gas coal brings $8.50@$9, being taken chiefly by gas companies.

While reports continue to be made of gains in coal production in the Connellsville region, it seems to be beyond question that the offerings in the open market are lighter than 30 days ago.

NORTHERN PANHANDLE

Although production is not as large as it was before the rail strike, it is being maintained at about 40,000 tons a week. Additional mines have not been able to resume operations, however. Prices are still above the Hoover level but appear to be declining somewhat, the general average being about $6 per ton.

Northwest

Upper Lake Region Is in Desperate Need of Coal

Hopefully Awaits Coal Now on Way from Kentucky—Survey Shows Supply on Hand Is Gone—Propaganda Works Well—Prices Are Climbing.

WITH docks swept almost clean and with supplies everywhere down to a few days' life, the Northwest anxiously awaits the arrival of the first cargoes which the government's new distribution system is going to deliver. Already 530 carloads are ordered for it under the first priority for the Upper Lakes states. These 530 cars are beginning to come out of the Harlan, Hazard and other Kentucky fields for shipment through the Ore & Coal Exchange at Cleveland.

The Northwest needs it. Surveys by sections show the region is in a desperate plight which good propaganda and much activity by politicians have described effectively to the country. Prices are climbing to $8@$9 but there is practically no free coal and contract orders are being filled in small dribs.

DULUTH

Dock operators and dealers on this market are being besieged on all sides for supplies when they have no free coal. What little remains is being held for consumers entitled to priority. They are endeavoring to supply 1,000,000 tons to threshing outfits over the northwest. That, with bunkering coal for the steamers, the railroads and other consumers in the favored class will have to come from the allotment to be furnished the northwest.

A survey taken by a committee of the Duluth Chamber of Commerce showed that fuel supplies of many industrial consumers are nearing exhaustion. The report of the committee set out that seventeen mining companies operating on the Minnesota ranges are short 1,000,000 tons. The hard coal situation at Duluth and over the northwest was claimed in the report to be desperate. Record shipments for the season were made from Duluth and Superior docks during July, the total being 27,969 cars. Last year 26,664 cars were loaded out in June and 13,448 cars in July. Only 109,474 cars of coal were received on this market from the East during July. That included 96,524 tons of bituminous and 11,950 tons of anthracite. Dock receipts from the opening of navigation to July 31 aggregated only 397,310 tons. Compared with the same period last year, anthracite receipts decreased 788,461 tons and bituminous receipts 5,445,174 tons. Shipments of 19,000 tons of bituminous were made by boats from the docks here to Lake Michigan ports during July on railroad account, bringing the tonnage shipped for the season to that quarter up to 219,500 tons.

MINNEAPOLIS

Political propaganda on behalf of the coal requirements of the Northwest may help win priorities and real service for this section. The governor of this state urged the government to take over the coal carrying roads from the non-union fields to the lower Lake Erie ports. Whether a sequence or coincidence, immediately after the governor's statement was made came a Federal promise of concentrating on these coal-carrying roads to get service.

Members of the coal trade insist that regardless of the settlement of the miners' wage situation, the big difficulty will continue to be the failure of the railroads to perform their functions. Senator Kellogg and Governor Preus, both of Minnesota are campaigning for coal. Nothing is being neglected that might possibly serve to bring about fuel deliveries. A coal survey is being made through the state. A great many large users and public service concerns are reported very low on fuel, some with less than three weeks' store.

MILWAUKEE

Milwaukee's coal market is at a complete standstill. Only two cargoes have been received thus far in August, and the docks are about swept clean. Everybody is clamoring for coal, especially public utilities. The state fuel administration is functioning and strenuous efforts are being made to bring about urgency consignments of coal. One priority shipment of forty cars to the Milwaukee Gas Co. was confiscated en route by an eastern railway. A small cargo of soft coal is on the way here from Quebec, and other small steamers plying in the wheat trade to Montreal may bring additional cargoes.

Receipts of coal thus far in August aggregate 7,300 tons of soft coal, making the season's receipts to date 781,360 tons, against 1,604,424 tons during the same period last year. Up to this time last year 547,400 tons of anthracite had been received over the docks. Not a cargo has been received this year.

The price list on hard coal has not been changed as yet, as none is to be had. What the price will be when coal commences to move is a matter of conjecture. An offer of anthracite from Vancouver, B. C., at $18 a ton has been refused. Soft coal prices continue at the 50c. advance noted last week.

New England

Receipts from Hampton Roads Cut by Priorities

High Quotations Rumored for Coal Diverted from New England—Only Slight Interest Shown in Market—Buyers Profess Ability to Await Lower-Cost Coal.

ASIDE from diminished receipts on contract there is practically not a thing doing in this market. Sundry quotations are rumored, as high as $13 having been asked for small lots on cars Boston or Providence, but in most instances there is so little free coal that no one is much interested. Rehandlers are applying coal on orders entered into some weeks or months ago, and at this end thus far there has been no attempted interference.

Buyers have reasonably comfortable reserves and are by no means panicky over conditions. There is talk of replacing anthracite prepared sizes with bituminous for household use, and the public is now being advised to buy soft coal enough for two months.

Fewer transactions are possible at Hampton Roads because priorities have begun to eat into current shipments at the disposal of the usual trade agencies. While machinery for a new distribution of cars went into effect Aug. 7, it is by no means working smoothly, and there is much confusion and prospect of detention charges to worry shippers who are anxious to do their utmost on their own unfulfilled obligations. At the same time it is reliably said that free coal changed hands the last week $10.50 f.o.b. vessel at the Virginia terminals.

As priority cars reach Hampton Roads we begin to get light on the actual working of the Hoover program. Coal that would have come to New England for necessary purposes is already being consigned to railroads other than in this territory, and contrary to situations in 1917 and 1918 when contractors were deprived of coal that it might be sent elsewhere on a lower price, coal is now being enticed away by a much higher figure.

In any case, no emergency coal is yet in sight for New England. Those in the trade are beginning to feel that the output will soon be increased either through some understanding reached with the unions or that the operators will themselves resume operations regardless of union leaders. So long, however, as meetings and conferences are continued such action will be very difficult, for not only do such "negotiations" tend to hold operators back but they also influence mine workers themselves to hold out further in the hope some arrangement can be made on the peak wage basis.

Cincinnati Gateway

Growing Effect of Priorities Reduces Spot Offerings

Prices Are Lower as Free Tonnage Has Moved Out—Lakes Hampered by Priority Orders—Walkout Cripples L. & N. Service.

THE movement of coal through this gateway the past week was a little heavier, despite the confusion of establishing priority plans for the distribution of fuel. Under anticipated priority conditions but little coal was placed for Lake shipment, the L. & N. refusing to set cars for loading for the Lakes, although insistent operators with contract orders besieged the offices in desperation. Harlan and Bell counties are tied up by a walkout of the Big Four brotherhoods employed by the Cumberland Division of the L. & N.

Prices have been depressed by the growing effect of priority orders. There is, however, some coal now coming through, loaded before the issuance of these orders, and delayed by the transportation trouble. This is regarded as the last of the high-priced product.

CINCINNATI

For the week ended Aug. 5 the rail movement into and through Cincinnati was better and showed considerable recovery on the part of the coal roads. Total interchange of cars was 13,481, of which 5,842 were coal loads, a matter of 534 cars increase over the movement of the preceding week for coal. Of this increase the L. & N. contributed 375 cars, a fine record, taking into account handicaps. The C. & O. contributed 156 cars and the N. & W., 3 cars.

Congestion at distributing centers is being gradually overcome regardless of strike conditions and this is freeing some coal loaded before the issuance of priority orders. This has turned into the market some coal which has sold from $7.50@$9, which is regarded as the last of the high-priced product.

It is understood that the fuel committee organization is taking into account production costs and is permitting an additional charge in some cases, notably the New River district, of $1 additional to counter overhead costs, and that a few bituminous producers are advanced $1.25 over Hoover fair prices for the same reason.

HIGH-VOLATILE FIELDS

Logan and Thacker

Logan mines are not getting more than one-tenth of the car supply wanted. The trouble is not local but is due to the difficulty in getting empties back from Western connections. Market conditions are highly conducive to a large production in this territory if the coal could only be moved. Many contract customers have been deprived of a supply; this is especially true of the steel industry.

Transportation conditions are being gradually improved in the Kenova-Thacker field. Mines are now averaging about four days a week. Improvement is due in part to the increased number of shopmen at work on the N. & W. and to a larger flow of empties back from the West. Priority orders are interrupting the usual flow of coal.

Northeastern Kentucky

Unfavorable transportation conditions are still barring many mines from operating at a time when market conditions make it necessary to produce a large tonnage. The first few days of August, however, saw a slight improvement in conditions. Labor is available for a large output if mines can only secure an adequqate supply of cars.

Kanawha

Although mines are still laboring under transportation difficulties, yet the output remains at about 60,000 tons per week, with more than half the mines in the region still in operation and with a prospect that additional mines will resume under more favorable transportation conditions. The market is most urgent and inquiries cannot be taken care of owing to priority orders.

LOW-VOLATILE FIELDS

New River and the Gulf

Although all New River mines are operating, it is only after a fashion, owing to the difficulty experienced in getting cars and in getting coal moved. This is holding production down to a little over 100,000 tons a week. Production is gradually getting back to a normal basis, however, owing to an increase in transportation facilities. The movement to Tidewater has been small. With tonnage still so low prices continue on a rather high level, although government regulations are having a tendency to force a decline.

The Virginian has been handicapped by lack of motive power and production in the Winding Gulf for a time was reduced to a point below 100,000 tons a week, but with a slight improvement in transportation facilities mines are managing to increase the output. Tidewater shipments have been greatly restricted.

Pocahontas and Tug River

With transportation conditions on the N. & W. somewhat improved, it is possible for the Pocahontas field to increase its output, the increase within a week amounting to about 60,000 tons. Shopmen from other roads are now at work on the N. & W. and that is making it possible to use more motive power. Mines are working approximately three days a week. The Tidewater movement has been slow.

All Tug River mines are running, but not on a full-time basis, owing to the difficulty in securing cars. Production is limited to about 62,000 tons per week, with signs pointing to an increase as lines are opened for the movement of coal and as cars are moved into the field more freely from the West.

Coke

UNIONTOWN

Miners in the Connellsville region face the prospect of seeing at least a portion of the union miners returning to work under a patched-up agreement with themselves no nearer their goal than the day they walked out.

Meantime production is increasing steadily as is also the number of dynamite outrages. Labor, mostly negroes from the Southern fields, are arriving daily and these are being distributed at the various plants, apparently carrying out a policy of reorganizing labor forces. The condition of the striking miners in some cases has reached the point of a crisis. At the Palmer tent colony an epidemic of typhoid fever broke out which resulted in a score being sent to the hospital.

The market remains high with no attempt yet made at restrictions of price or diverting of tonnage to priority consumers. Railroads are now the principal buyers and sales are being made at $7@$7.50 for all tonnage offered. The coke market remains a missing quantity.

CONNELLSVILLE

Coke offerings in the open market appear to be somewhat decreased, as compared with a fortnight or a month ago, although in many quarters it is thought that production is a trifle heavier. Demand has decreased, and there is less insistence in such demand as does appear, the prospective buyers being more particular as to price. Blast furnaces disappeared from the market long ago and the miscellaneous consumers are largely out of the market. The demand comes from a relatively small proportion of the foundries that usually take Connellsville coke. Some foundries are evidently curtailing operations or closing entirely, only those with the most pressing business endeavoring to keep in operation.

Ordinary foundry coke is quotable at about $15, a slight easing off. Occasionally a particularly good brand may bring a trifle more, while coke not up to standard is at a discount. So-called "furnace coke" is offered around $14, this being in substance merely an unguaranteed foundry coke, as blast furnaces are not buying coke.

BUFFALO

Jobbers are hardly able to get anything more than a quotation from the beehive districts. A little coke can be had now, though, where there was none formerly. The figures run up to $15 for 72-hr. Connellsville foundry, $13 for 48-hr. furnace and $9@$10 for chestnut size, adding $3.28 for freight to Buffalo.

News Items From Field and Trade

ALABAMA

Forty-nine applicants for mine positions took the semi-annual examination before Chief Mine Inspector C. H. Nesbitt and his board recently. Certificates were issued to eighteen who successfully stood the examination for positions as first-class mine foremen, two to second-class mine foremen and three to men who wished to fill positions as fire bosses.

Roy R. Cox, of Montgomery, has been appointed fuel administrator for Alabama. At a recent meeting of Alabama operators to discuss and take action on the plan of the government for the distribution of coal and restriction of unfair prices a district committee was appointed to maintain the proper co-operation along these lines from the mine owners in this district, composed of **S. L. Yerkes**, chairman; **Geo. F. Peter, Hugh Morrow, A. B. Aldridge** and **Erskine Ramsay.**

The Black Fox Coal & Iron Co. has been incorporated at Gadsden, for the development of about 6,000 acres of coal and ore lands in Jackson and DeKalb counties. It is understood that the company is making an effort to acquire mineral properties in adjoining counties with an acreage of approximately 100,000, and plans to build a railroad a distance of about four miles to strike the Tennessee River, docks to be constructed at the terminus of the line. The capital stock is given as $840,000 and the home office is to be located in Cincinnati. Sheridan W. Baker, Santa Rosa, Cal., is said to be the principal stockholder.

COLORADO

Much criticism has arisen because the new advisory coal committee fixed coal prices that allow 10c. more profit per ton than did the fuel administration during the Garfield regime. George A. Collins, a member of the committee, refused to approve the scale. Other members are James Dalrymple, state coal mine inspector, J. Ralph Young, H. W. Bennett, T. C. Hitchings, D. Harrington, W. D. McDonald and W. E. Russell. Lignite prices recommended are $3.90 for lump, $1.80 for slack and $2.85 for mine run. In Boulder County the scale is $1 higher.

ILLINOIS

The Sangamon County Mining Co. is installing improvements at its mine near Lincoln during the strike. The entire plant is to be electrified with the exception of the steam hoist. The electrification is made possible by the extension of a power line north to Atlanta past the company plant.

Gordon Mason purchased the Morganfield property of the **Producers' Coal Co.**, at commissioner's sale, for $33,500.

The Harrisburg Coal Mining Co., Harrisburg, Ill., has completed the installation of three Krehbiel Co. loading booms at its Blue Bird mine.

The Donk Bros. Coal & Coke Co., with main offices in St. Louis and mines at Thermal and Maryville, have opened a branch office at Old Colony Bldg., Chicago. A. H. Speulda, for sometime sales manager for the Rialto Coal Co., has been put in charge of the new office.

Announcement has been made by the **West Virginia Coal Co.**, St. Louis, of the purchase of the New Marissa mine near Marissa. The newly acquired property is an up to date operation with a daily output of approximately 1,500 tons. With the addition of the mine, the company now controls fourteen mines in Illinois and one in Kentucky.

H. A. Requa, sales manager for the Columbus Mining Co. at Chicago, spent the first week in August finding out by personal observation that the stories of fuel famine now gripping Wisconsin from docks to inland rural communities are eminently true.

F. S. Peabody, chairman of the board of the Peabody Coal Co., has returned to Chicago after a trip to New York and to Eastern mining fields. He said there is no use expecting any anthracite to reach the West this winter. Eastern industries which need it more keenly than Western householders will see to that. He said the last culm bank has been cleaned up and the last anthracite-silted river bottom dredged.

Joseph Harrington, well known as the designer of the Harrington stoker, has joined the Mitchell & Dillon Coal Co., as combustion engineer.

INDIANA

The discontinued branch of the C. & E. I. Railroad, known as the "Coal-Road" in western Indiana, has been bought by a number of business men living along the line and, according to report, will soon be in operation again for the benefit of a number of small industries that have been cut off from railroad service.

KENTUCKY

Better market conditions have resulted in new mining companies beginning to spring up again. Some of these are small companies which will probably operate wagon mines, and others will operate mines which have been practically abandoned. No large new developments are being reported. Among recently chartered companies are the **Togo Mining Co.**, Providence; Thomas O. Long, George W. Williams; Mrs. O. L. Shelton; Lem Kellou; Finnis Williams; Lem King, all of Providence. **New Straight Creek Collieries, Inc.**; Pinville; **M. J. Moss**, Sr., M. J Moss, Jr., A. G. Patterson, **Meadows Harlan Coal Co.**; Pineville, F. M. Meadows, A. D. Meadows and H. L. Martin. **South Side Coal Co.**, Providence, Jeff McConnell, J. T. White and S. K. Holland. **Laurel Gem Coal Co.**, Amber, W. G. Black, R. E. Quinn and Read P. Black.

The Hazard Coal Operators' Association at the meeting in Cincinnati, approved the appointment of **Captain J. T. Hatfield** as a member of the distribution committee. The members said that the Hoover rules would be lived up to with the backing of the organization.

MICHIGAN

Charles F. Dunn, wholesaler in Detroit for some years, has been selected as Wayne County fuel commissioner, following the declining of the position by **Charles A. Dean**, head of the Pittmans & Dean Co. To assist Mr. Dunn the Detroit Board of Commerce has designated an auxiliary committee, which includes **Ford R. Cate**, president of the Michigan Wholesale Coal Dealers' Association; **Ell J. Barkume**, president of Detroit Coal Exchange, **E. W. Brunk**, of the Michigan Central freight department and **J. W. Brennan**, purchasing agent of the Detroit Edison.

MINNESOTA

W. A. Prinsen, secretary of the Northwest Coal Dock Operators' Association, Minneapolis, has been named an assistant Federal fuel administrator, to aid in directing the distribution of coal to the Northwest. He is a well-known traffic expert and will spend a great deal of time in Washington in connection with the work.

Ivan Bowen, of the Minnesota railroad and warehouse commission, has been named State fuel administrator. He has started a canvass of the 2,255 retail coal dealers of the state, to ascertain how much they have on hand, what they have been assured they will get and what their absolute needs to serve through the winter, are.

MISSOURI

The El Dorado Springs Development Co., has been formed at El Dorado Springs, Mo., with a capital of $300,000 and among other things will develop coal and gas leases. The shareholders are A. B. Stricklett, William True, Dr. L. T. Dunaway, C. E. Siders, M. A. O'Connor, Dr. J. W. Love and J. L. Ferguson.

The Mine of the **Liberty Coal Co.**, of Moberly, Mo., has been reopened under agreement with the local union of the United Mine Workers of America and will mine enough coal to keep the plant of the Moberly Light & Power Co. going.

NEW YORK

The Florandin Equipment Co. has been organized by C. H. Florandin with offices at 110 W. 40th St., New York City, to represent the Conveyors' Corporation of America, Chicago, manufacturers of the American steam jet ash conveyor and the American trolley carrier.

The Buffalo Chamber of Commerce has appointed **Charles L. Couch**, president of the Weaver Coal Co., chairman of a special committee to look after coal supply and distribution. A preliminary meeting has been held, at which a sub-committee was set at work on a survey of the supply and needs of consumers. Anthracite will be looked after separately.

W. P. Smith and W. C. Denny, of Buffalo, have begun the organization of a new coal company, to be operated under the name of the **W. P. Smith Coal Corporation.** Mr. Smith was the representative of W. A. Stone & Co., of Uniontown, Pa., until the office was closed. Mr. Denny has been in the coal business in Toronto.

The Virginia Iron, Coal & Coke Co. for the three months ended June 30, 1922, reports gross earnings of $210,782 against $211,095 in the same period last year. Net earnings totaled $95,959, after allowing for all charges, including interest and taxes. After allowing for the regular preferred dividend, the balance was equal to 33c. a share on the $10,000,000 common stock outstanding. The net for the six months, after preferred dividends, is equal to 30c. a share on the common stock, against $5.71 last year.

OHIO

Five automobiles, equipped for mine rescue work have been put into service by the Division of Mines of the Department of Industrial Relations. The cars, equipped with specially constructed bodies are to be stationed at central points in the mining area of the state for instant service and will take the place of the special railroad car which was held at the Ohio State University, in Columbus.

Papers have been filed with the secretary of state increasing the capital of the **Bristol Block Coal Co.**, Logan, from $25,000 to $100,000.

Curtailment of operations of other city departments have been ordered by the Columbus officials in order to secure extra funds for the purpose of coal during the coming winter. It is believed that prices will be high and thus the move is made. Stocks on hand are small and will only last for 30 days, according to an estimate of the Columbus Board of Purchase.

PENNSYLVANIA

Governor Sproul on Aug. 8 announced that he had named a State Fuel Commission to co-operate with the Federal Fuel Commission. There are seven members of the commission who are authorized to name a special committee upon distribution. The commission's duties will consist in trying to avert speculation in coal and to see that there is an equitable distribution among industries and householders. The members of the commission are **William D. B. Alney**, chairman of the Public Service Commission, selected as chairman; **James S. Benn**, a member of the Public Service Commission, who has been in charge of the priority functions of that commission and in that capacity has been in touch with the work at Washington; **William W. Purdy**, president of the Pittsburgh Chamber of Commerce; **Edgar C. Felton**, Haverford, transportation expert; **Hugh A. Dawson**, Scranton; **S. B. Crowell**, Philadelphia, president of the Pennsylvania Retail Coal Merchants' Association, and former **Mayor William J. Stern**, Erie, connected with the Fuel Administration during the late war.

The following bituminous coal companies have been granted state charters recently: **Waynesburg Coal Co.**, Connellsville, capital, $100,000; treasurer, Edward K. Dick, Connellsville. Mining coal and manufacturing coke. Incorporators, L. F. Ruth, Connellsville; Edward K. Dick, Connellsville, and E. E. Morris, Waynesburg. **Porter-Winwood Coal Co.**, Glenshaw, capital, $25,000; treasurer, Edward Winwood, Sr., East Pittsburg. Incorporators: W. H. Porter, Glenshaw; Edward Winwood, Sr., East Pittsburgh, and J. C. Shmidt, Pittsburgh.

The School of Mines of the Pennsylvania State College will give instruction to nearly 1,000 students during the coming year. During the last school year 800 miners and operators were given extension training by the college workers, while nearly 200 other students were in the regular residence courses in mining engineering, mining geology and metallurgical engineering. In order

that the School of Mines, in common with other schools of the college, may take in a larger number of students making application for admission, a building fund campaign for $2,000,000 is now being carried on. It is planned to develop the college into the State University with accommodations for 10,000 students.

UTAH

J. T. and E. L. Rains, A. H. Jenkinson, R. T. Collier, H. M. Dinwoodey, all of Salt Lake City, and **Wm. Stevens,** Cedar City, have been granted permits to mine coal in this state.

The Carbon County R. R. has been organized by promoters of the Columbia Steel Co., recently formed with a capital of $15,000,000. The railroad company will have a capital of $500,000. The line will be 4.79 miles long and will lead to a township near Sunnyside believed to be underlaid with coal and recently purchased from the Utah Coal & Coke Co. **L. F. Rains,** president of the Carbon Coal Co., will be head of the railroad company.

WEST VIRGINIA

It has been necessary to institute suits of ejectment against most of the sixty-two miners occupying houses owned by the **Brady Coal Corporation,** in Monongalia County, in view of the failure of the miners to live up to their agreement to vacate company premises following a compromise reached in connection with eviction suits when the latter came up on appeal before the Circuit Court of Monongalia County recently. A similar compromise was agreed upon between the **Rosedale Coal Co.** and former employees, but the latter are still in company houses and hence ejectment suits will be filed against them. Twenty miners are under order to vacate houses at the Everettville mine of the **New England Fuel & Transportation Co.** The miners, however, have appealed their case. **The Chaplin Collieries Co.** has served notice on 80 of its former employees to vacate.

The Coalburg Colliery Co., of Ronda, on Cabin Creek in the Kanawha County field, has filed in the Court of Common Pleas of Kanawha County application for a mandatory injunction to obtain possession of twenty-two of the company's houses. United Mine Works has filed a demurrer to the application. Judge Alexander, after hearing arguments reserved his opinion pending a settlement of the question as to whether a mandatory injunction would be the correct legal method of eviction or whether the company has other legal remedies.

Samuel Pursglove, Cleveland, extensively interested in the Monongalia field, owner of approximately all of the bonds of the **Morgantown & Wheeling R.R.,** and also of a large portion of the receiver's certificates, has asked that he be permitted to enter as a party plaintiff with the County Court of Monongalia County and the Federal Savings & Trust Co., in order to bring about the sale of this road, which has been in the hands of a receiver for some time. Mr. Purseglove desires to be made a party plaintiff in order to enforce the lien of the bonds and interest coupons and receivers' certificates, purchased and held by Purseglove against the company. It is probable that the effort to have the road sold will be resisted on the ground that Mr. Pursglove is a receiver and therefore an officer of the court.

BRITISH COLUMBIA

The Vancouver Island collieries are working at capacity. For weeks after the United States strike started there was little effect on the business of the operators, but recently the pressure has been felt and the entire output is being taken up. **The Canadian Collieries (D) Ltd.,** producing 3,000 tons a day, is unable to meet the demand. Of this 1,000 tons is being taken by the Canadian Pacific and the Northern Pacific railways. **The Canadian Western Fuel Corporation,** Nanaimo, is furnishing 1,200 tons a day to the Great Northern, Union Pacific, and the Canadian National railways. **The Coalmont Collieries, Ltd.,** Coalmont, (Nicola-Princeton Field) is producing about 800 tons a day and preparations are being made to bring the total to 1,000 tons. Most of this is being taken by the Great Northern, Canadian Pacific and Kettle Valley railways.

NOVA SCOTIA

The banks of soft coal in Cape Breton owned by the **Dominion Coal Co.,** (British Empire Steel Corporation) are being attacked vigorously these days. In the past two weeks fifteen steamers have transported cargoes from these banks at Dominion, New Waterford, Reserve, New Aberdeen, Sydney Mines, and Glace Bay to St. John, Halifax, Boston, Montreal, Quebec, Portland. The banks at Dominion have been reduced 40 per cent in two weeks. Orders are coming in from the United States and Canada and this is the busiest season for the fleet of steamers owned by the Dominion company since the close of the war. The scarcity of anthracite has helped the bituminous coal trade wonderfully. Just as soon as the banks of coal have been sold, the mines in both Nova Scotia and New Brunswick will return to full time. In fact some of the Dominion collieries have already been restored to six days per week.

WASHINGTON, D. C.

Announcement has been made of the appointment of **V. H. Palmer,** of the C. Rice Coal Co., and the Milwaukee Western Fuel Co., who was formerly with the Ore & Coal Exchange, as assistant to **C. E. Tuttle,** in charge of Lake coal for the Federal coal distributing committee. Mr. Palmer came at once to Washington to assume his new duties.

Officials of the U. S. Bureau of Mines in charge of the supervision of mining operations on leased public lands have attended conferences regarding the construction of a railroad from Wamsutter, Wyo., to Craig, Col., for the development of the coal fields in Moffat and Routt counties, in Colorado. This project is of particular interest from the government standpoint, due to the fact that most of the coal mines in this field are being developed under Federal lease.

Traffic News

Deciding the complaint of the **Lehigh Valley Coal Co.,** against the Director General of Railroads, the I. C. C. holds as follows: Rates on unprepared anthracite from mines and culm banks on the Lehigh Valley in the Lehigh and Wyoming regions of Pennsylvania to breakers in the same regions for preparation or re-preparation and re-forwarding by way of that railroad between June 25, 1918, and April 8, 1919, were unreasonable. Rates from the Rahn colliery at Seek, Pa., to other collieries and washeries on the Lehigh & New England R. R. during the same period were unreasonable. Rates on buckwheat No. 3 from collieries and washeries in the Panther Creek Mining district of Pennsylvania to Power House (Hauto), Pa., from Jan. 1 to June 24, 1918, were legal, but the rates from June 25, 1918, to Feb. 28, 1920, were unreasonable because they exceeded 25c. a ton.

The I. C. C. will give a hearing Sept. 6, at Boston, on several fourth-section applications of railroads for the establishment of rates on coal and coke between points in New England, and between points in New England and Eastern points.

Unreasonable rates on coal from various points to Omaha are alleged in a complaint by the **Metropolitan Utilities District,** of Omaha.

The operation of a line of railroad already constructed has been requested in an application to the I. C. C. by the **Ballard & Thompson Railroad,** the line being from Thompson to Sego, Grand County, Utah, to provide service for coal mines in the vicinity.

A hearing in the **"Eastern" coal case,** in which Indiana shippers are seeking a realignment of freight rates on coal from Eastern mines to northeastern Indiana, will be opened before the I. C. C., in Indianapolis, Sept. 11. On Sept. 13 **the Twin City rate case** will be reopened at Indianapolis. A decision on March 15 gave Indiana shippers freight reductions amounting to 25 per cent to Minneapolis and St. Paul, putting them on a parity with Illinois shippers. The new rate to the two Minnesota points automatically increased the rates from the St. Louis territory, St. Louis shippers contend.

The rate on coal shipped from the Middlesboro-Jellico district of Kentucky over the L. & N. to Newport, Latonia, Covington and Andrews, in northern Kentucky, has been fixed at $1.65 a ton in a decision rendered by the State Railroad Commission. The decision reduces the rate from $1.90. Prior to the war the rate was 80c.

The complaint of the **Perry Coal Co.,** will be heard at St. Louis, Sept. 21; that of the **Virginia Coal Operators' Association** at Washington, Sept. 21, and that of the **Megeath Coal Co.,** at Omaha, Sept. 25.

Recent Patents

Coke-Oven Door Lifting Machine. Joseph Becker, Pittsburgh, Pa., assignor to The Koppers Co., Pittsburgh, Pa., 1,411,262. April 4, 1922. Filed Dec. 2, 1918; serial No. 264,965.

Coal-Loading Machine. Joseph F. Joy, Pittsburgh, Pa., assignor to the Joy Machine Co., Pittsburgh, Pa., 1,411,702. April 4, 1922. Filed March 27, 1918; serial No. 224,983.

Yielding Actuating Mechanism for Skip-Hoist Chutes. Robert H. Beaumont, Radnor, Pa., assignor to the R. H. Beaumont Co., Philadelphia, Pa., 1,411,831. April 4, 1922. Filed May 19, 1921; serial No. 470,754.

Miner's Lamp Tool. Herman W. Hoff, Bearcreek, Mont., 1,412,745. April 11, 1922. Filed Nov. 9, 1921; serial No. 513,996.

Coal Breaker. Frank Pardee, Hazleton, Pa., 1,412,793. April 11, 1922. Filed June 12, 1920; serial No. 388,462.

Mining Machine. Morris P. Holmes, Claremont, N. H., assignor to The Jeffrey Mfg. Co., Columbus, Ohio, 1,412,868. April 18, 1922. Filed June 5, 1916; serial No. 101,728.

Switch System for Mine Locomotives. William E. Wolfe, Wilder, Va., 1,413,250. April 18, 1922. Filed April 28, 1920; serial No. 377,324.

Mining Machinery. Stephen E. Odell and Frank L. Clift, Bellingham, Wash., 1,413,289. April 18, 1922. Filed July 25, 1919; serial No. 313,362.

Mine Car. George E. Thackray, Westmont Borough, Pa., 1,414,056. April 25, 1922. Filed Aug. 15, 1921; serial No. 492,338.

Coming Meetings

New York State Coal Merchants' Association will hold its annual meeting at Richfield Springs, N. Y., Sept. 7-9. Executive secretary, G. W. F. Woodside, Arkay Bldg., Albany, N. Y.

Coal and Industrial Exposition under the auspices of the Huntington Chamber of Commerce will be held Sept. 18-23 in the Chamber of Commerce Bldg., Huntington, W. Va. **The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers** will again hold its annual meeting in the same building during the exposition.

National Exposition of Chemical Industries will hold its eighth national exposition at the Grand Central Palace, New York City, Sept. 11-16. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Mining Congress. Twenty-fifth annual convention and exposition of mines and mine equipment will be held at Public Hall, Cleveland, Ohio, Oct. 9-14. Executive offices, the Hollenden Hotel; E. C. Porter, convention manager.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Institute of Mining and Metallurgical Engineers will hold its fall meeting during the week of Sept. 25 at San Francisco, Cal. It is proposed to arrange for a party to leave New York on Sept. 10, stopping at different cities en route. Secretary, F. F. Sharpless, Engineering Societies Building, New York City.

American Chemical Society's annual fall meeting will be held Sept. 4-9 at Pittsburgh, Pa.; divisional meetings will be held at Carnegie Institute of Technology and general meetings at Carnegie Music Hall.

The Rocky Mountain Coal Mining Institute will hold its next meeting at Glenwood Springs, Col., Sept. 7-9. Secretary, F. W. Whiteside, Denver, Col.

National Safety Council. Eleventh annual Safety Congress at Detroit, Mich., Aug. 28 to Sept. 1. Executive secretary, W. H. Cameron, North Michigan Ave., Chicago, Ill.

COAL AGE

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C. E. LESHER, Editor

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Quixotic Sacrifices

AT CLEVELAND the United Mine Workers announced the terms on which they would go back to work. The terms are now well known. The miners did not ask for further conferences. The matter was settled. All that was thenceforth required was for the operators as individuals, or as groups if they preferred, to step up and sign the contract—on the dotted line.

Some persist in referring to the outcome as individual settlements. It is anything but individual settlements—for all it is individual signatures. There is no point in trying to cover over the extent of the defeat suffered by the operators. The only feature to which they can point as a gain is the breaking up of the old Central Competitive Field. Lewis did not get that treasure restored, and, as we have said before, it was, after all, not an essential to him.

Large groups of operators have not signed the Cleveland agreement. Some are trying to effect outright district agreements as such and thereby establish the fact of district contracts, for which they have been contending. To accomplish this they are finding that they are being called on to concede more than even the terms imposed by Lewis at Cleveland. Illinois at this writing is endeavoring to wrest from the union a contract more favorable to the Illinois mine workers than that offered by Lewis last week. They are still pinning their hope on Frank Farrington, who has delivered nothing as yet. It is an admirable emprise on which they are embarked—that of breaking Lewis' hold by re-establishing Farrington to power through their sacrifices. So might a shipwrecked, starving mariner, clinging to a log, resist the friendly wind blowing him toward shore whilst he carved his log to a stately ship that he might ride to port in style.

Guerilla warfare annoys and hinders, it does not overcome an organized enemy.

The President's Message

TO PRESIDENT HARDING the coal industry owes a debt for his message to Congress on Aug. 18, the theme of which was the present disturbed industrial conditions of the country and the major subject of which was coal. Like every student who writes a thesis as a result of his first study of an interesting subject, the President has discoursed at length on coal. He has found it an absorbing if disturbing subject.

Going back to last October, when the administration initiated its efforts to forestall the coal strike by seeking an agreement in advance between the miners and operators to arbitrate their differences—an agreement, by the way, that the operators were then wholly willing to make but which the miners refused—the President carries the narrative down to the present. His remarks on the rail strike are really supplementary because to the government at Washington the early settlement of the rail strike has been considered of first importance because of its influence on the coal strike.

Those Americans who read Mr. Harding's message with even casual care will be impressed with the hopelessness he expresses. After telling of his efforts to get the disputants together this summer he says with respect to his proposal of July 10: "Appraising correctly the hopelessness of the situation I again invited both operators and workers to meet with me, and tendered a means of settlement so justly inspired that it was difficult to see how anyone believing in industrial peace and justice to all concerned could decline it." Yet, he notes, "the mine workers refused to resume work under the arbitration plan" and "a considerable minority [of the bituminous coal operators] declined the proposal." The cause of his despair, as it has been of the despair of the coal industry since the Cleveland meeting early this month is summed up in his highly significant words:

"The simple and significant truth was revealed that, except for such coal as comes from the districts worked by unorganized miners, the country is at the mercy of the United Mine Workers." Merciful heavens! How John L. Lewis must have swelled to bursting with pride in his kingship when the President of the United States admitted so much!

Pointing out that at every stage the government has been a neutral regarding wage scales and working contracts and that there are fundamental evils in our "present system of producing and distribution which make the wage problem difficult," Mr. Harding, believing that the "public interest demands the investigation and the finding of the facts" for the public, asks Congress for authority to create a commission of investigation of the whole coal industry "with provision for its lawful activities and bestowal of authority to reveal every phase of coal production, sale and distribution." In speaking thus he rightfully says that he is speaking in the interest of the mine worker, the mine operator and the public.

Praising the coal operators who have scrupulously held to the maximum prices set by Mr. Hoover, the President glories in the "revelation of business conscience stronger than the temptation to profit by a people's misfortune," and makes "grateful acknowledgment to those who preferred to contribute to national welfare rather than profit by a nation's distress."

It is not because Mr. Harding offers solutions for the problems of the coal industry or sets out to get a commission to assemble facts that we are grateful for his message on coal. It is because to an intelligent public his words will carry the knowledge of a troublesome and difficult problem and conviction that when a chief executive throws up his hands in despair over the strike there is perhaps after all something more than plain hardheadedness on the part of the coal operators to explain the duration of the strike and the loss of the fight to the miners.

Coal and the Tariff

IN THE boom year of 1920 the spot price of bituminous coal rose to unheard-of heights, passing in some isolated instances $20 per ton at the mines. Throughout the greater part of the year prices were high, yet the official figures of the Geological Survey show that the average for all soft coal produced was but $3.74, an increase of $1.25 over the average for 1919. On a normal output of 500,000,000 tons this would mean less than two-thirds of a billion dollars added to the cost of coal one year over the other. This increase was in fact taken in part by the advances in wages to the miners and in part went to the coal operators as profits.

A strenuous effort has been made this year to reduce the wages of coal-mine labor in consonance with commodity prices, the cost of living and wages in other industries. It has signally failed. The President in his message to Congress tells us why—the unconquerable United Mine Workers. Coal will therefore be no cheaper this winter; for many it will be higher than last year. The fight within the industry has resulted in a decision calling for more money from the public. For this the industry will be lambasted from one end of the country to the other, and—here is the point—from one wing of the Capitol to the other. Congressmen and Senators will lay the lash to the coal industry for robbing the people, for depriving it of coal and for profiteering in a commodity that is essential to keep people warm.

At the same time these same Congressmen have passed a tariff bill that adds more to the cost of necessary clothing for warmth—that is to say, for wool—than all the coal industry will exact. Sober-minded citizens are saying that were any set of men outside of Congress to have conceived and carried out the plundering of the people of the country for the benefit and profit of the few—some of whom, it appears, sponsored the bill—that this tariff contemplates, those men would be subject to indictment for conspiracy under the anti-trust law.

Wool, sugar and thousands of articles and commodities necessary to the everyday life of the common people are to suffer tribute to these organized plunderers in Congress. The President is proud of his neutrality in the coal and rail strikes. But where is neutrality between the builders of this unprecedented and unholy tariff and the consumer?

Is This Unionphobia or What?

ABOUT three weeks ago Donk Brothers Coal & Coke Co., of St. Louis, obtained permission from Frank Farrington, president of the United Mine Workers of American in Illinois, and from district officers of the union to proceed with construction of the main shaft at the company's new mine near Edwardsville, Ill. This was entirely according to Hoyle under the terms of the 1920-1922 contract—a contract which the International union was struggling to maintain. With all the necessary preliminaries completed, the company and the contractors started shipment of tools and machinery toward Edwardsville, ordered superintendents and job foremen to that town and placed considerable orders for electrical equipment and material. Work was to start with a rush and be pushed to completion as quickly as possible, thus providing immediate employment at union wages for a good many striking union men—some of them hungry after four months of layoff—and future employment to a good many more as fast as the mine was developed.

It was reasonable to suppose that the men of Edwardsville, fully authorized by their own leaders, would go to work forthwith and gladly. But did they? They did not. Instead they held a local meeting, decided their state and district officers were incompetent to pass upon their case, and proceeded to take the matter into their own hands. They delivered an ultimatum to the mine owners and to their own officials. No construction on that mine should start until the strike in Illinois is over. Construction on other mines in Illinois was proceeding under the contract, but it did not at Edwardsville. So energy expended in getting ready to finish the mine was wasted. Shipments were stopped; orders cancelled. Hungry union men continued hungry.

The whole trouble was that union men refused to obey their chosen leaders. There is no use searching for some devious method of reasoning by which the men reached their peculiar decision. In all probability reason played no part in the case whatever. The International miners' union does not preach reason into its members. It has spent years diligently instructing them in dogmatism and the infallibility of unionism. It has so successfully instilled within them a mental attitude of disregard for authority and the rights of others that today, becoming an irresponsible rabble, the membership sometimes does not hesitate to disregard its own constituted authority. When mine unionism reaches that point its foundations are cracking. The drunkenness of power may bring it down in ruins.

How Much Strength in the Law's Arm?

OUT in Illinois public and private pressure is slowly compelling officers of the law to do something about the Herrin massacre. There have been one or two gestures before. Now we see a circuit court judge issuing a summons for a special grand jury to meet Aug. 28 at Marion, 10 miles from the scene of the June 22 horror, to begin an official investigation. The law has been slow in the Herrin case.

Those who hopefully study the case in its present status are able to perceive certain indications that the call for a special grand jury is not to be merely a gesture. For one thing, the judge declined to permit the county sheriff to serve the summonses. The sheriff may be one of those upon whom painful justice will be meted out when justice finally prevails. For another, it is known that a quiet effort is to be made eventually to take the case out of "bloody" Williamson County, even at the cost of a change in the state constitution, if it becomes evident that a fair and fearless jury cannot be impanelled from among the citizens of that county. And finally, the plea of the state that it has not sufficient funds for a proper prosecution of such an elaborate case may be met with private funds in plenty. Already the Illinois Chamber of Commerce has begun accumulating them and other agencies may do likewise.

It remains highly doubtful whether justice can be done in the "bloody" county. But if it cannot, the sooner the people of the United States find it out the better. It will remain then for the world to learn whether a small community can successfully defy the will of a sovereign nation.



Low-Cost Methods Enable Thin-Seam Mine in Montana To Compete with Thick Coal Found in That State

Semi-Automatic Equipment Eliminates Hoist Engineer and Pumper—Five-Car Tracks Paralleling the Faces Aid the Loading Of Coal—Low Cars Prevent Much Breakage and Save Labor

By C. M. Schloss
Denver, Colo.

THE mining fraternity of the Rocky Mountains, accustomed as it is to operations in thick beds, views dubiously the possibility of economically mining the thinner seams. Most attempts in this direction have been unsuccessful. It is difficult for the thin-seam operator to compete in production cost with his neighbors mining beds ranging in thickness from 5 to 65 ft. It is difficult, but that it is not impossible is proved by the success of the Keene mine of the Bair-Collins Co., four miles west of Roundup, Montana, on the main line of the Chicago, Milwaukee & St. Paul R.R.

Keene, originally a wagon mine, was opened by a slope. When the Bair-Collins Co. became owners in 1920 they immediately sank a shaft and began to develop the mine to produce a daily output of 600 tons, which they do not expect to exceed. The superintendent, Albert Griffin, says, "With an output of only 600 tons a day we can keep down our investment in equipment and the consequent interest and depreciation on that equipment; we can keep our workings concentrated and our expense for supervising bosses low. With us, a production of 600 tons a day is the point where the economic law of diminishing returns begins to act."

The 34-in. coal bed lies from 80 to 130 ft. below the surface on a uniform pitch dipping 4 per cent slightly north of east. Immediately superimposed on the coal is an 8-in. layer of drawslate and a thick stratum of sandstone; the floor being entirely of the latter material. The excellent roof and floor and the light overburden make possible wide rooms and entries with narrow pillars. Squeezes are rare. A few props are used, more as a precautionary measure than because they are actually needed. The operation is on the lower half of the Roundup bed which is here split by 11 ft. of rock.

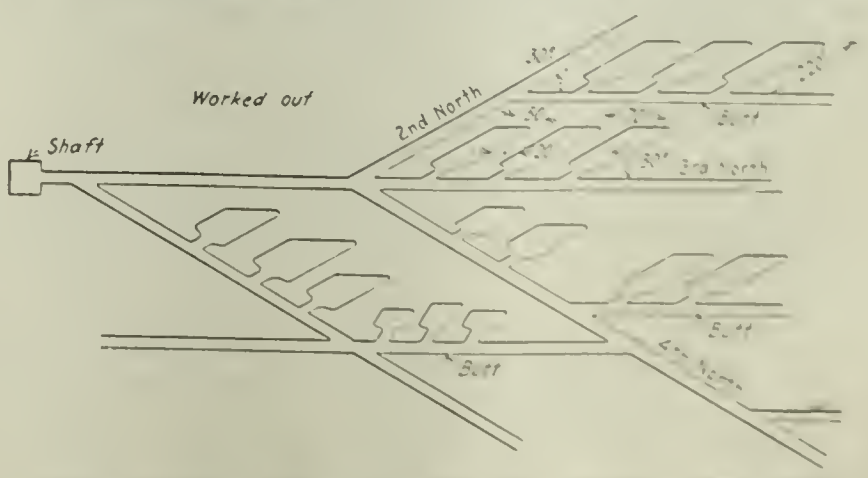


FIG. 1—BUTTS AND MAIN ENTRIES CROSS AT 30 DEG.

Keene mine has a layout plan that seems to have been pushed over from the vertical. All the right angles of the ordinary mine are 30 or 150 deg. The arrangement makes the faces abnormally long and unusually easy to approach with a curved rail. In consequence no difficulty is met in placing a line of five cars at the face at one time for the men to load. This saves double shoveling or worse.

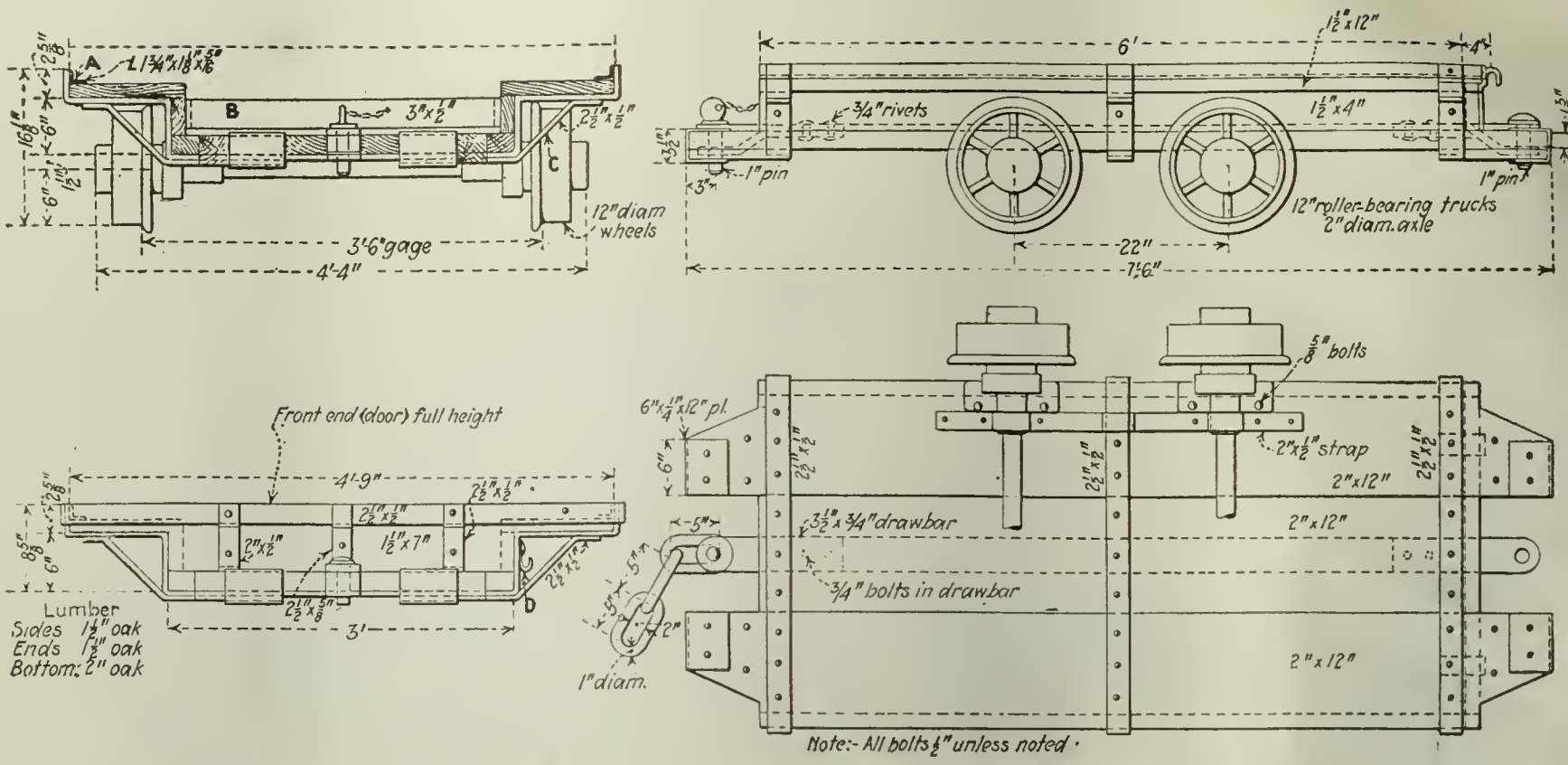


FIG. 2. CAR WHICH NOT ONLY CAN GO INTO LOW PLACES BUT, WHEN THERE, CAN BE EASILY LOADED FROM THE SIDE

At *A* will be noted a small angle iron which runs all along the side of the car. Its function is to prevent the wood from being "chewed away" by the loading of coal and to lock the coal in place after it is built up on the side of the car. The back of the car is made low as at *B* so as to make it easy to load at this point. The top of the board *B* is 13½ in. above the rail, and the top of the angle *A*, 16⅛ in. Note also the heavy brace *C* which supports the flare of the car which is in this instance merely a level shelf. *D* is a check hook on the front band of the car, well protected by the angle brace.

From the shaft bottom the mine spreads out in a fan-tail as shown by the map, permitting easy grades into the rooms. Main entries are driven 30 ft. wide and over the haulage roads they are brushed to a height of 5 ft. for a width of 12 ft. Rock shot down from the roof is gobbed on both sides of the track forming walls to protect the entries from squeezes, or heavings of the floor, should they occur.

Cross-entries are brushed to a height of 4 ft. 6 in. Rooms are driven at an angle of 30 deg. with the butt entries and are 50 ft. wide, on a grade of 1¦ per cent in favor of the loads. The room faces parallel the butt entries.

A track is laid in each room paralleling the inclined face and at a short distance from it. A curved section connects this standing road with the track laid along the rib. The face track is thrown over as the room advances. By this means five cars can be spotted along the face at one time and filled with coal as they stand. This saves much extra shoveling. When the only track in the room parallels the rib and when under those circumstances more than one car is spotted at a time much effort is wasted in reshoveling such coal as is not lying convenient to the cars.

Steel ties are used in the rooms so as to keep the track as near the floor as possible. To increase the height in rooms the 8-in. layer of drawslate above the coal is removed but no other brushing done. The room centers are 70 ft. apart and a 20-ft. pillar is left between rooms.

The illustration of the Keene car is worthy of attention. The wagon is unusually and purposely low, for two valid reasons, the first being obvious—the restricted height of the working places—and the second one, not so readily recognized—a reduction of the height to which large lumps must be lifted. Lowering this lift decreases the work of the loaders.

"We have made it easy for the men to load large lump coal," says the superintendent "and showed them that it is less laborious than breaking the lumps up before loading; 54 per cent of our product is lump." The car is built essentially on labor-saving lines for it weighs only 1,200 lb. and is equipped with roller-bearing wheels.

The mine buys alternating current from the Montana Power Co. transforming it down to 440 volts for the two alternating-current cutting machines used at this mine and for uses other than those met by the 50-kw. motor-generator set.

Up to the present, mules have hauled all the coal from the room necks to the bottom; but a combination trolley-and-storage-battery locomotive, which can be charged from the trolley, is about to go into service. At night, when little work is being done, it will be used throughout the entire mine for the hauling of coal. During the day it will handle merely main-line movements, the mules gathering the cars from the rooms and hauling them to partings, ready for the locomotive. The Bair-Collins Co. believes that operating costs can be greatly reduced by semi-automatic machinery without the large investment necessary to purchase fully automatic equipment. One example of this is the main hoist with push-button control, operated by the weighman upon a signal

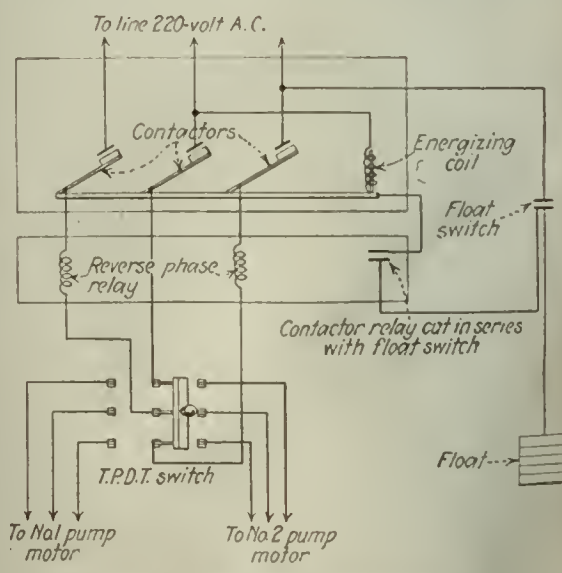


FIG. 3. WIRING DIAGRAM OF PUMP CONTROL

The contactor relay is closed when the float-switch contacts come together and connects the third phase through an energizing coil to the second phase. This lifts the core of the coil causing the contactors for all three phases to connect each with the conductor of its phase and thus sets alternating current flowing through whichever motor happens to be thrown into line.

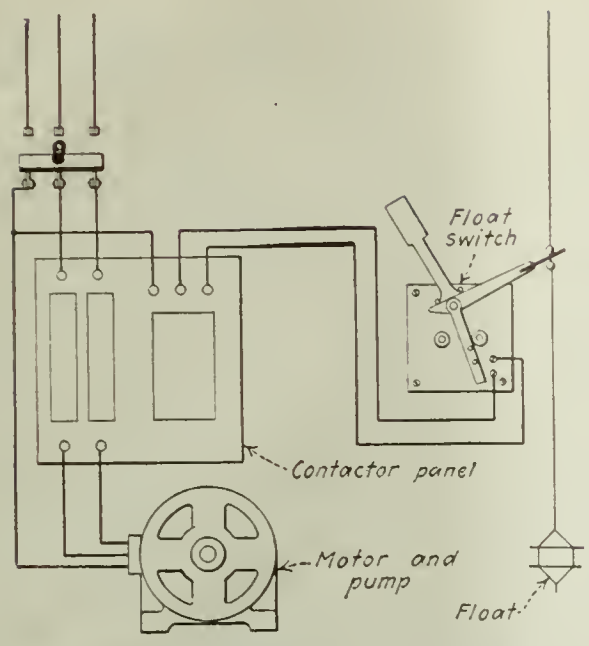


FIG. 4—CONNECTIONS FOR PUMP CONTROL

When the water in the sump gets low the float-switch handle is pulled down so as to shut off the power, and the motor ceases to run. When the water is high enough to need pumping, the handle of the float-switch is lifted and the current re-established starting the motor.

from the bottom, thus eliminating hoisting engineers. The weighman touches the button, the contactor panels connect the motor to the line, accelerate it, decelerate it, and a limit-switch and electric brake stop it when the cage has reached its dumping position in the long-radius dumping guides. A second example is the centrifugal pump at the shaft-bottom, which dewaters the mine. A float in the sump is connected by a system of levers to the motor starter; when the level of the water rises to a predetermined point the float closes the starter and the pump becomes operative; vice versa, when the water drops to a second point the motor and pump are stopped by the same means.

The shaker-screen is started or stopped by a push button operated by the weighman; it can be stopped by a remote-control button below, operated by the yardman under the tipple. He cannot, however, start the screens himself, but must signal the weighman to start when the latter is ready, using an 110-volt electric vibrating bell for the signal. The automatic idea is incorporated in the induction motor-generator set supplying direct current for the locomotive. This has features which make it practically automatic.

TABLE I—ANALYSIS OF COAL FROM KEENE MINE

	As Received Per Cent	Air-Dried Coal Per Cent	Dry Coal Per Cent
Moisture	10.28	7.60	.....
Volatile matter	29 70	30.59	33.11
Fixed carbon	52 73	54.31	58.78
Ash	7 29	7.50	8.11
	100 00	100 00	100.00
Sulphur	0 31	0.32	0.35
B.t.u. per pound	11,840	12,200	13,200

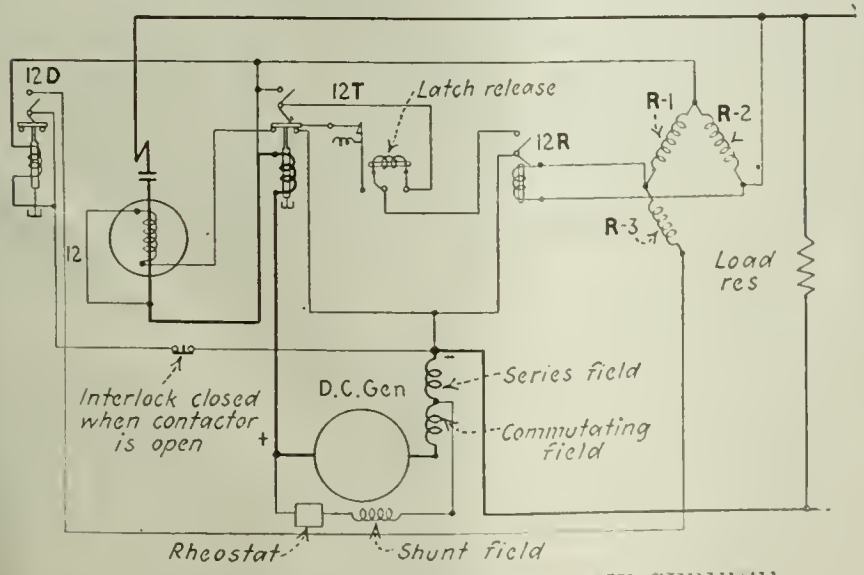


FIG. 5—WIRING OF DIRECT-CURRENT SERVICE-RESTORING CONTACTOR

This contactor opens on overload, makes no attempt to reclose so long as the load circuit continues to have a resistance so low that it cannot limit the current to the overload rating of the generator and closes immediately when the resistance of the load circuit rises to a value that will limit the load to the overload rating of the machine, unless indeed it is purposely delayed by the time-element relay 12D. Note that 12T = overload relay; 12 = contactor; R-1, R-2 and R-3 = resistances; 12R = relay.

Keene coal is classed as sub-bituminous and its analysis is as in Table I.

At the Keene mine the superintendent keeps a daily cost sheet which enables him at the close of the day's work to analyze the expenditures for the day and cut down thereafter any item which is excessive, before it has been magnified twenty to thirty times as it would be if the excessive cost were not made manifest before it reaches the monthly cost sheet. A copy of this daily sheet appears as Fig. 6 in this article. It is simple and short, but effective—a moneysaver.

One can check off on the fingers of one hand the reasons for the financial success of this property: (1) Small investment and overhead, (2) small supervision expense, (3) an economical system of mining, (4) reduction in "non-productive" or company men, and (5) most important of all, good management.

Daily Cost Operation

No. 1 MINE

Track Layers
Drivers
Timbermen
Machine Men
Mch Yardage
Pumpmen
Nippers
Cagers
Rockmen
Brattice Men
Repairs
Material
Rail
Propa
Ties
Wiring
Labor
Total

TONS

Coal Rooms	1 19½		
Coal Entry	1 24½		
Coal Solid	1 38½		
Total			

No. 2 TIPPLE

Hstg Engineer
Weighman
Car Dropper
Labor
Power
Repairs
Labor
Total

No. 3

Blacksmith
Mechanic
Watchman
Misc. Exp. and Labor
Total

No. 1		
No. 2		
No. 3		
Total		

Tons Hoisted ____ Average Total ____

Contract Loaders	
Outside Company Men	
Inside Company Men	
Total	

Tons Shipped

Lump		
Egg Nut		
Slack		
Total		

Tons on Track

Lump		
Egg Nut		
Slack		
Total		

FIG. 6—DAILY COST SHEET OF KEENE MINE

No one who runs his mine a whole month or even two weeks without a reckoning can in competitive times feel safe that he will end the year with a balance in his favor. A daily cost sheet warns him and warns his superintendent and foreman whither he is drifting. When a man totals his cost daily and compares it day by day he is competing with himself to lower his expenses, and the inevitable result is economy and more economy. What is otherwise a task becomes a game. Every night comes the question "What's the score today?"

"IT'S AGAINST THE RULES to smoke in this mine, but t' 'ell with th' rules. I got to smoke."

He smoked—and went up in it.

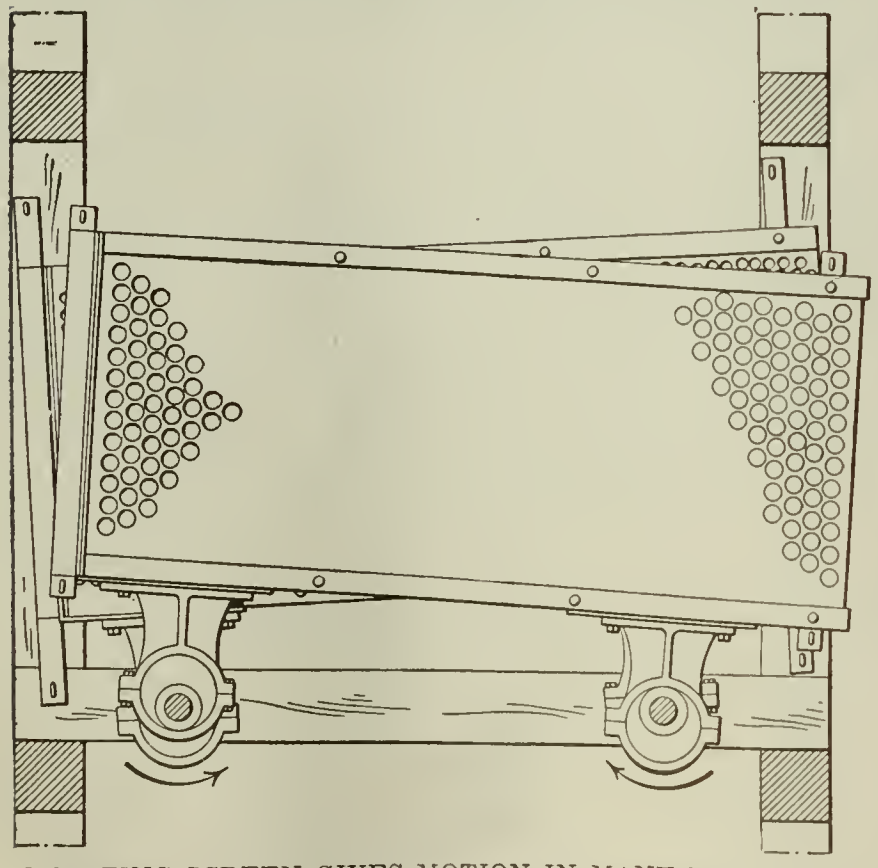
DON'T WORRY ABOUT WHO WILL LOSE THE COAL STRIKE. You'll find out when you price a ton of coal next fall—*Wall Street Journal.*

A Screen That Imitates the Effective Way In Which a Hand Sieve Is Manipulated

FOR many years the reciprocating or shaking screen has been used almost exclusively in sizing coal both anthracite and bituminous. True, the revolving screen has been employed to some extent, but as it was extravagant in its consumption of power and degraded the coal excessively, the shaking screen with spring-board or rod suspension and with elastic wooden or rigid steel connecting rods was generally adopted.

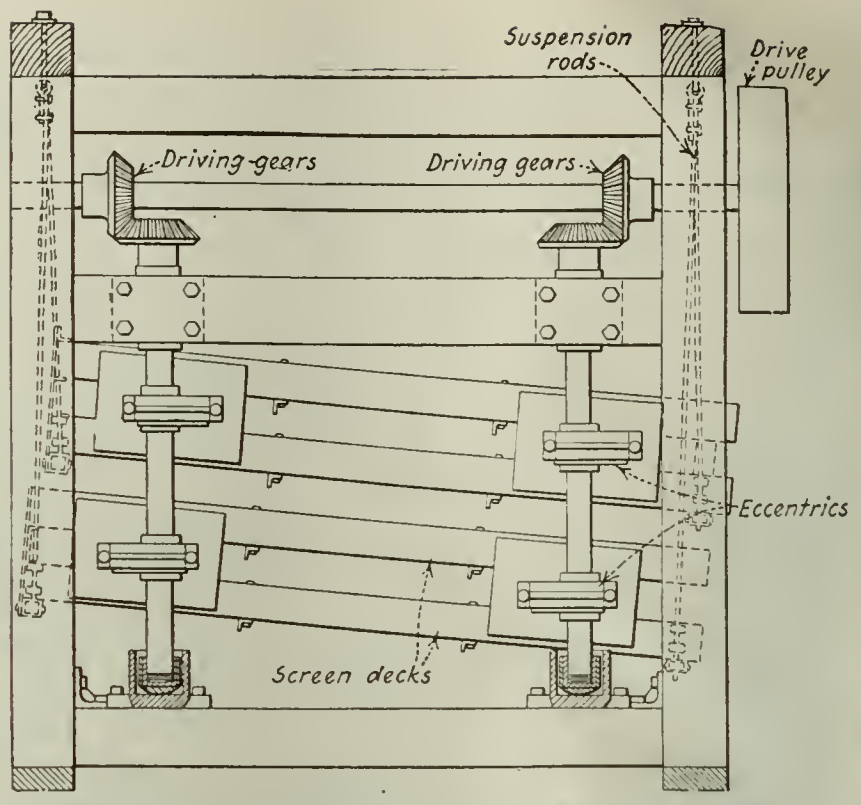
Recently, however, H. W. Falker of Ashland, Pa., through the Tamaqua Manufacturing Works, of Tamaqua, Pa., has introduced a type of shaking screen that differs more or less radically from any that have preceded it. This new device is known as the Economy Gyrating Screen. As may be seen in the accompanying illustration, the screen or screens, for there may be almost any number, are mounted on a suitable inclination and hung by rods provided at the top with a joint permitting movement in two directions. As a matter of fact this latter usually takes the form of an eyebolt or its equivalent, connecting with an eyed rod. On one side of each screen deck or set of decks near either end, an eccentric strap is rigidly attached. These encircle eccentrics upon two vertical shafts. The two eccentrics actuating a single screen or deck are set at 180 deg. from each other and the shafts revolve in opposite directions. The screen deck as a whole is thus given a peculiar half gyratory half oscillating motion and "shakes" as much sidewise as it does endwise. Building the machine with decks to the number of two or some multiple of two permits balancing of the screens to a large degree.

It will be apparent from the above description and the accompanying drawings that one point upon each screen surface will have a simple reciprocating motion



GYRATING SCREEN GIVES MOTION IN MANY DIRECTIONS

Like a man working a puzzle who tries first one way of moving, then another, this screen does not try to move the coal in one direction only, till violence of motion and the pounding of other pieces of coal drives the lumps loose with accompanying degradation. Instead of finding that the lodged pieces are obdurate and immovable as in a screen with but one direction of motion it changes the orientation of its movement perpetually, and finds before a full revolution is accomplished a direction in which the piece that will not slip through the screen will roll peacefully over it.



ELEVATION OF FOUR-DECK GYRATING SCREEN

Here will be seen the method of suspension, the location of the four eccentrics and driving gears and the two footings in which the eccentric shafts turn.

equal in amount to the throw of the eccentrics. All other points on the screen will have not only this oscillatory movement but a side shake as well, the amplitude of which will vary from zero at the center to a maximum at the ends.

As a result of its construction several advantages are claimed for this machine as compared with the ordinary shaker. Among these might be mentioned: The material treated spreads itself evenly over the screen area; the efficiency of the screen is greatly increased; far less tendency is present for the holes to wear elliptical; little unbalanced "shake" is transmitted to the building in which the screen is housed or by which it is supported.

Cherokee-Crawford Field of Kansas Has Prospective Rival in Linn County Coal

By C. M. Young*
Lawrence, Kan.

THROUGHOUT all but the first years of the history of coal production in Kansas the principal output has come from near the bottom of the Cherokee shales, which outcrop in the southeastern corner of the state. By far the larger part of the output comes from Cherokee and Crawford Counties, but coal is also mined from the same horizon in Leavenworth County, though the Leavenworth or Bevier coal has never been definitely correlated with the Weir-Pittsburg coal of the southeast part of the state.

At the present time somewhat more than half of the known available acreage of the Weir-Pittsburg bed has been mined out. At the general rate of production of recent years about 50 per cent of the remainder of the coal will be exhausted in 10 years. The date of final exhaustion cannot be predicted.

Though the Weir-Pittsburg bed has been quite throughly prospected in the southeast corner of the state, the remainder of the coal area of the state has not been thoroughly tested. It is known that the occurrence of coal is a possibility over an area extending from

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Doniphan County, the extreme northeast County of the state to Montgomery County, on the south line of the state about 70 miles from the Missouri border. The boundary of the coal district is very uncertain, but the strike of the coal-measure rocks indicates roughly such a line as is suggested. Coal has been mined in a small way at Troy, near the center of Doniphan Country, and quite recently some large areas of coal land have been acquired by prominent coal producers south of Coffeyville, which is near the south line of Montgomery County where coal may be found in the lower coal measures. There is a larger area, extending considerably farther west in which the upper coal measures occur and may produce coal, as they do in Osage County.

Because of the importance of Kansas coal to the district which it naturally supplies, future developments are of interest. The probable scene of greatest activity in the future is Linn County, which lies half way between Kansas City and the southern line of the state, and roughly 70 miles south of Kansas City. This is sometimes known as the Pleasanton district.

Coal was found in this district at about the same time as in the south part of the state, and was worked extensively in 1903 and 1904. Work was nearly abandoned about 1908 to 1910, though work at one mine, the Thurwell, later called the American Eagle, and now the King Coal Co. mine, was never entirely abandoned.

The extent of the Pleasanton district is not definitely known. The coal being mined there is apparently the same as that being worked on a small scale at Worland, just across the state line in Missouri, which is the Mulberry coal of the Missouri State Geological Survey. The coal outcrops at various places and has been worked to some extent on the outcrop by stripping. It is known that the coal is found at Prescott, about 8 miles south of Pleasanton, and that it is found to the northeast as far north as 8 miles north of Worland. The extent to the west is doubtful, as the field has not been thoroughly explored in this direction. One report is that the coal outcrops in the hills just west of Pleasanton, being upturned there. Another report is that this is not the same coal but that the coal being mined at Pleasanton persists to the west, though growing thinner. The geological conditions indicate that the latter view is the correct one, and that this bed is not upturned, though the extent to the west and the thickness are not known.

At the present time coal has not been traced to the south beyond Prescott. About 3 miles south of La Cygne, which is about 12 miles to the north and a little west of Pleasanton, the Kaw Valley Coal and Mining Co. is operating a seam from 3 ft. to 3 ft. 4 in. thick with a good top. About one half mile west of La Cygne the coal is being mined at a depth of about 140 ft., the thickness of the coal being 3 ft. and the top being good. This same coal is being mined at a short distance to the east of La Cygne, and again 5 miles east of La Cygne, where it has a thickness of 3 ft. with a good top. It occurs at a depth of only 50 ft. Another bed of 3-ft. coal has been found by drilling over an area of about 1,100 acres in the area just mentioned.

At Boicourt, about half way between Pleasanton and La Cygne, coal has been found at a depth of about 70 ft. This has a poor "soapstone" top. Whether this is the same coal found at La Cygne is not known, but the character of the top and the facts that the coal with a good top is found at a depth of 50 ft. 5 miles east of La Cygne and that this Boicourt coal is at a depth of 70 ft., give some indication that the latter coal occurs at a lower horizon than the former.

It is also reported that records of drilling show four seams of coal at Fontana, which is near the south edge of Miami County, and about 6 miles northwest of La Cygne, and 18 miles north and a little west of Pleasanton. It is said that there are two 3-ft., one 4-ft., and one 5-ft. bed, the last occurring at a depth of about 480 ft. with a limestone top. None of these beds has been exploited, and the report of their existence is based on the rather uncertain evidence of boreholes sunk with churndrills.

There is however sufficient probability behind these reports to justify prospecting, and to make it likely that extensive developments may follow if the coal proves to be of good quality. It is possible that this coal may be the same as the lower Rich Hill coal which has been quite extensively mined near Rich Hill in Bates County, Missouri. If so it occupies approximately the same horizon as the Weir-Pittsburg coal of southeast Kansas, and the Bevier or Leavenworth coal of the northern part of the state.



PLANT OF PLEASANTON COAL AND MINING CO.

The biggest mine in Linn County. It can produce about 250 tons per day. The coal of this county runs from 27 to 36 in. in thickness, but this constitutes "sizable" coal for the state of Kansas.

As has been stated already coal mining in this district has been almost abandoned for some years, but rather recently has been revived. At the present time, early summer of 1922, the mines of this district are being operated non-union though not to their full capacity, most of the mines of the remainder of the states being closed because of the strike.

The earlier mines were operated by stripping, where they were located near the outcrop and by a few shaft mines where the cover was heavier. The shaft mines were worked on the longwall system, most of them by hand mining, though in one case a longwall machine was tried, and in another case a compressed air-puncher. Difficulties were encountered in working the coal by longwall, although this seemed at first to nearly all observers the proper method to be employed in this seam. Unfortunately the character of the top is such that it will not stand well at the face, though this method might be applied if operations were continuous.

Quite recently one of the operators has been trying the longwall method using a machine with a 3-ft. bar. Though the coal was propped and spragged after cutting and props were placed less than 12 in. from the face the roof would sometimes break. The next time the

cutting was made the roof would not bring sufficient weight on the coal for it to fall without shooting. The next cut would sometimes give another break of perhaps 6 ft. This experience has convinced the operator that the longwall method cannot be satisfactorily applied at his mine, and it is being converted to the room-and-pillar system. Similar experiences have convinced most other operators that the method cannot be successful, at least so long as operations are intermittent.

In general the coal of this district varies from about 27 in. to about 3 ft. in thickness. In most places the roof will stand well in the entries, though there are some places where it occasionally falls. Most of the mines are dry, though some of them are troubled with surface water. There is little gas, but in some places a small quantity comes from the top.

Up to the present most of the mines have been opened on a small scale, most of them having an output of only 50 to 100 tons per day. The largest of these smaller mines, that of the Pleasanton Coal & Mining Co., can produce possibly 250 tons per day. The Douglas mine, about 6 miles east of Pleasanton, has been planned for an output of about 1,000 tons per day, but it is still in the development stage.

The illustration shows the tipple of the Pleasanton Coal & Mining Co., which though simple is one of the most elaborate in the district. Most of the tipples are provided only with gravity screens, and make only two sizes, lump and mine run.

A few notes on the operations of the Pleasanton Coal & Mining Co. will give an idea of the plan followed at the mines of this district. Entries are driven from 16 to 20 ft. wide, and gobbed on one side. The entry pillar is 12 ft. wide. Entries are brushed to a height of 5½ ft. above the rail. Rooms are propped where necessary, with props 32 to 34 in. long. Three holes are drilled per room, and about 6 in. of black powder used per hole. The powder used has been FF and FFF; in future the latter will be used.

Though these operations, which are in a way pioneering operations, are on a very small scale, it seems probable that work will be continuous in this district and that it will increase in importance. This field is much nearer to Kansas City, which is a natural market for it, than the field in the southeast corner of the state. Railroad connections are satisfactory, the district being traversed by both the St. Louis & San Francisco, and the Missouri Pacific.

I am indebted for much of the information given in this paper to James A. Sherwood, chief mine inspector of Kansas, whose wide experience gives weight to his opinion that the future of this district will be important.

As to the character of the coal, it may be said that in general the coals of the Kansas field decrease somewhat in value from the Weir-Pittsburg bed upward, and the coal of Linn County, so far as known, is not quite equal to the Cherokee coal. Two samples cut at the face by Mr. Sherwood which I was enabled to examine, show an average heat value of 12,123 B.t.u., which is only a little below the average value of Cherokee coal. However this determination of the heat value of the coal in the Linn County field is the result of analyses of only two samples. This is too small a number to form the basis of any definite opinion as to quality of the fuel.

Dabney Mine Before Coal Strike Stored Coal to Maintain Steady Output

IT IS indeed unfortunate that the producers of coal took such an optimistic view prior to April 1 that they stored little or no coal in anticipation of the strike. The buyer and retailer for the most part put in stocks almost to capacity and seemed to sense the coming storm. But the coal producer, realizing that storage would require larger equipment than he possessed would not venture his money or was awakened too late to the possibilities that the protracted shutdown offered.

It has been stated and is generally realized as a fact that a steady run pays better than one that is discontinuous and that it is better to run at a small loss than to shut down entirely. For both these reasons it would have seemed well to have done, like some West Virginia mines, put coal in storage when orders were insufficient or cars were not available. The fear that coal would be produced cheaper after the strike than it was before held back union mines, but it had no effect on those in non-union regions which had already made the reductions anticipated at union mines.

Not all coals are of a nature favorable to storage,



COAL THAT EITHER SHOULD NOT HAVE BEEN STORED OR SHOULD HAVE BEEN STORED IN A DIFFERENT MANNER

In another part of West Virginia from that in which Dabney mine is located an attempt was made to store thousands of tons of coal running high in sulphur with the result shown above. Before the dangerous condition was discovered practically the entire pile had reached the temperature at which combustion was assured. Consequently the whole mass fired and little could be saved. Fortunately for the owner the coal was insured.

Dabney Mine Tipple

Note the 20,000 tons of coal surrounding the tipple building and the steam shovel at work in the rear. The coal was stored so that the mine might be kept working for the benefit of the men employed when orders or cars were scarce. Dabney's loaders averaged nearly 18 tons per man per day, the mine employing only 35 to 45 men for that service.





Shovels on Stock Pile

The smaller shovel, which is placed on a caterpillar tractor truck and so can travel anywhere, sweeps the coal from the farther side of the pile within reach of the larger shovel. The steam shovel without moving the track cannot load up all the coal from the piles which it has made, for the coal deposited by the shovel rolls over and gets beyond reach.

and probably only those bituminous coals may be stored that are low in sulphur as, for instance, the Eagle seam of the Kanawha Group that is mined at the Dabney mine of the Thurmond Coal Co. This operation is located on Rum Creek, five miles west of Logan. The coal attains a thickness of 5½ ft., and has as an average less than 0.6 per cent of sulphur. It is clean except for a 4-in. cap of dirty coal near the roof which is of slate. The nature of this coal commends it as suitable for storing, and advantage is taken of that fact at the Dabney mine.

The present output is only about 600 tons in eight hours. However, since January, 1921, it has been operating at two-thirds capacity or 400-tons per day, without losing many working days. During all this time there were other mines in the field working part time. The Dabney mine was enabled to operate continuously solely because coal was stored on the surface when the demand fell off. On both ends of the tipple on either side of the track mine-run coal was piled to a depth of 25 ft. and to a width of 60 ft. The dump extended for a total length of 600-ft. In the process of storing coal was loaded in the ordinary manner into railroad cars; these were dropped down the track and unloaded by means of a steam shovel having a 1½-yd. bucket on a 48-ft. boom. In this manner as much as 20,000 tons of coal was strewn over the yard at one time, only to be loaded out again when orders have to be filled which in aggregate exceed the tonnage that the mine is able to supply from its daily output.

In order to load the coal from the piles a smaller shovel, weighing 30 tons and having a ¾-yd. bucket, is utilized to sweep the coal within reach of the larger shovel. This is necessary because the large shovel is mounted on a railroad truck which travels on the same track as the cars that it loads and, consequently, the limit of reach of the shovel is equivalent only to the length of the boom. The main shovel is manned by three men, an engineer, a fireman, and a helper. The latter drops the cars, trims them when loaded, and removes lumber and other debris such as may find its way to an exposed coal pile. Only two men, the engineer and the fireman, are needed on the small shovel. As many as twenty-one railroad cars have been loaded out by these five men in eight hours, although the average loading during the months of May and June was ten cars per day.

Coal was not stored at the Dabney mine with a view of making money; an "even break" was all that was desired. The venture was made only to keep the miners employed, possibly not at full time but to an extent that would insure a living. It might be said that the present output of 600-tons is loaded out by 35 to 45 loaders; the average output per loader is 17.8 tons per shift. It is obvious that having such good men, something had to be done to keep them on the job. It is true that the loaders in this mine, who have this large tonnage record, are not required to lay their own track or set their own timbers, but the time occupied in these duties would not subtract many tons from the average output per loader even if he were asked to perform these tasks.

Book Reviews

Fuel and Refractory Materials

AFTER many years W. B. Davidson has essayed to bring A. Humboldt Sexton's masterly book on "Fuel and Refractory Materials" up to the minute, and the revised work has been published for American circulation by D. Van Nostrand Co. In its 382 interesting and authoritative pages, measuring 5½x8½ in., will be found articles on combustion, heating power of fuels, and solid prepared fuels such as coke. This book is doubtless regarded as entirely up to date, but what book really is? You will look in vain for the Piette or the Roberts oven. The treatment of coal washing in this volume is so inadequate that it almost would have been better if the author had left it out. The Robinson and the Luhrig washer are the only two to be found. Reference to other washers is made in a short paragraph which includes a word or so on the froth flotation process and nothing as to table washing, the Chance system and the air washer. The author admits the incompleteness of this section, and it need not be proved.

Articles follow on liquid fuel and gaseous fuel (including gas producers). One rarely sees so long an array of these devices as the author has assembled. Byproducts and low-temperature carbonization follow. These subjects are treated in a manner neither up to date nor adequate. The subjects following are furnaces for metallurgical processes, smoke and its prevention, pyrometry, calorimetry and testing fuels.

The closing chapter, being on refractory bricks, blocks and tiles, justifies the last part of the title "refractory materials."

The book is a substantial contribution to the literature of fuels. Its failure to treat washing adequately is not a fault and it cannot be held blamable in that it does not treat complete combustion in a detailed manner. It was not the original purpose to give either any specific attention. Its failure to mention the most modern practice is a common fault of all books and the little attention paid to foreign development, American and other, is a fault not peculiar to this book or to British books alone.

It must be remembered that the first edition was written for steel makers by the past president of the West of Scotland Iron & Steel Institute, and consequently what is said in it and in the second edition about combustion, coking and washing coal naturally is what our playwrights would term an "aside" and our lawyers an "obiter dictum." It is not of the main substance of the book.

What a Visitor to Non-Union Mines Found

FORECASTING the present attempt to organize the non-union coal fields of Pennsylvania, the Bureau of Industrial Research recently issued a pamphlet by Powers Hapgood entitled "In Non-Union Mines." Powers Hapgood is described as a member of the United Mine Workers of America and as one who left Harvard in 1920 to work in the coal mines of Montana and Colorado. This booklet is his diary of wanderings in 1921 through the non-union coal fields of central Pennsylvania, in and about Johnstown in Cambria and Somerset counties.

The chronicle itself is the story of a man who worked a few days in this mine and then moved on to another, doing various sorts of mining under a variety of conditions. He tells in minutest detail the things a miner does from how and when he lights his carbide lamp, when he goes underground, to how the fireboss' alarm clock woke him early in the morning. An itinerant, a few days at each mine, he was put to work at odd jobs, here cleaning up rooms, there loading pillar coal.

Being a "human" document it must needs have a touch of suffering, so we are told of the poor mine rat found "torn and bleeding in the middle of the track," where a shot had caught him. "We felt sorry for him. Down in the darkness one appreciates all forms of life."

Everyone who at any time in his life has plied pick and shovel knows that such labor is unusually arduous. There is little added to our knowledge of the coal industry by this recital, which withal bears every evidence of being a true narrative of what the Harvard man encountered on his travels. We would suggest, however, that he study his Pennsylvania mining law somewhat more carefully.

One can but wonder, however, what would have been recorded had the Bureau of Industrial Research delegated someone from, say, Yale to make a similar trip through the union fields of Pennsylvania. Instead of company police to hail him on arrival in camp he would have been met by walking delegates of the union inquiring why he had chosen to visit the town. And had he made the trip in 1921 instead of a job available at every place at which he chose to drop from the train, such as the Harvard man found, he would have visited mine after mine that recognized the scale that the Harvard man favors but not working at that or any scale, and upon inquiry he would have learned that the mines had been closed by the unequal competition of the mining plants visited by the man from Harvard. The union is such a good thing that many union men are working in mines where the union is unrecognized.

Colliery Fireman's Pocket Book

HARDLY a month passes without an elementary textbook on mining appearing in Great Britain, and they are all good books, painstakingly written, prepared for beginners but carrying the reader well forward in the subject discussed. Some—in fact most—seem anxious to tell too much for the particular class of men to which they are directed. This colliery fireman's manual, for instance, might be entitled "Colliery Superintendent's Pocket Book," and it would less belie its name than it does now, not but what everything can be understood by all who understand English as "she is spoke" in the British mines.

The book comprises 230 pages, contains 88 illustrations and diagrams, measures 5x8 in., and is published by Thomas Wall & Sons, Ltd., of Wigan, England, the firm that issues "The Science and Art of Mining." It is written by Thomas Bryson, who is a lecturer in mining and has been an examiner for the certification of mine firemen.

Much about mine gases and ventilation, coal dust and safety lamps, supporting of roof and sides, explosives and blasting, may suit the fireman, but methods of working, haulage and haulage appliances, mine drainage, surface and leveling are hardly firemen's subjects.

Coal-Mining Costs

A. T. SHURICK has compiled a book bearing the engaging title "Coal-Mining Costs." We are sorry to find that he has failed in almost all cases to credit the sources of his information except in a general statement of the varied types of authorities. Gracefully and truthfully he avers that "the technical press has been drawn upon liberally." Apparently it is not necessary to name the papers drawn on or the authors who contributed the original articles. Such anonymity needs but one revision. The name of the author of the book should have shared the fate of the other names and the book should have appeared without that record.

Truth to say, the authors thus shorn of their glory have done quite well. They prepared these data partly that the mining world might be grateful and recognizant, and the service, if ill requited, has been well done. The book contains many things that the reader will want. Some parts are deficient, some difficult to apply owing to changing labor prices and material costs, but the work is valuable even if it demands some knowledge of past wage and material scales and some good judgment in its use. It could not be otherwise than of value, containing as it does a cross-section of the work of the best engineers of the country. The volume contains 515 pages, measures 5¾x9¼ in. and is issued by the McGraw-Hill Book Co.

Enlisting the Turntable in Mechanical Coal Loading

Turntable Is Located on Room Track Opposite a Line of Crosscuts Which Intersect Five Consecutive Rooms and Give a Storage Road for Cars Near the Loading Machine

By E. N. Zern*
Pittsburgh, Pa.

IT IS generally conceded that before mechanical loading can be successfully applied to coal mines some method of co-ordinating the processes of loading and transportation must be found. For twenty years experiments with various types of equipment have been made for the purpose of finding some means of displacing labor in the work of transferring coal from the mine floor to the car.

During this period machines have been evolved that have developed and maintained capacities of a ton per minute. It is true that in the testing of these devices weaknesses in design and structure have been revealed, but where the principle of operation has been proved correct parts can be strengthened without difficulty.

The validity of the statement that coal-loading equipment, practical from the standpoint of mechanical construction, is today available, will hardly be questioned. On the other hand the assertion that a practical loading machine has been taken into a mine and successfully operated would be generally disputed—and with good reason. This adverse opinion admittedly must be correct for it is based on the failures which litter a score of years. The cause of this distrust is therefore of lively interest to all mining men, and, stated briefly may be said to lie in the neglect of the mine management to so arrange haulage facilities that a loader may be worked at something near its possibilities.

The failure to realize this essential point is astonishing to those who, within recent years, have witnessed loaders being placed in mines where not a single preparation for their reception was made in advance of their introduction. The inevitable result, of course, was failure, and coincident with failure the condemnation of all such "ornery contraptions." Many, perhaps all, these disappointments might have been averted had one of the lessons of the late war been applied.

What quality of military leadership would a general possess who would urge on his troops without first making sure that transportation in the rear was well arranged so that supplies and reinforcements could be immediately brought to hand? The success of a mine is no less dependent upon proper transportation facilities than is the success of an army. To bring the analogy up to the present day, it is just as reasonable to expect satisfactory results from a radio receiving set that is

*Editor of "Mining Catalog," Pittsburgh, Pa.

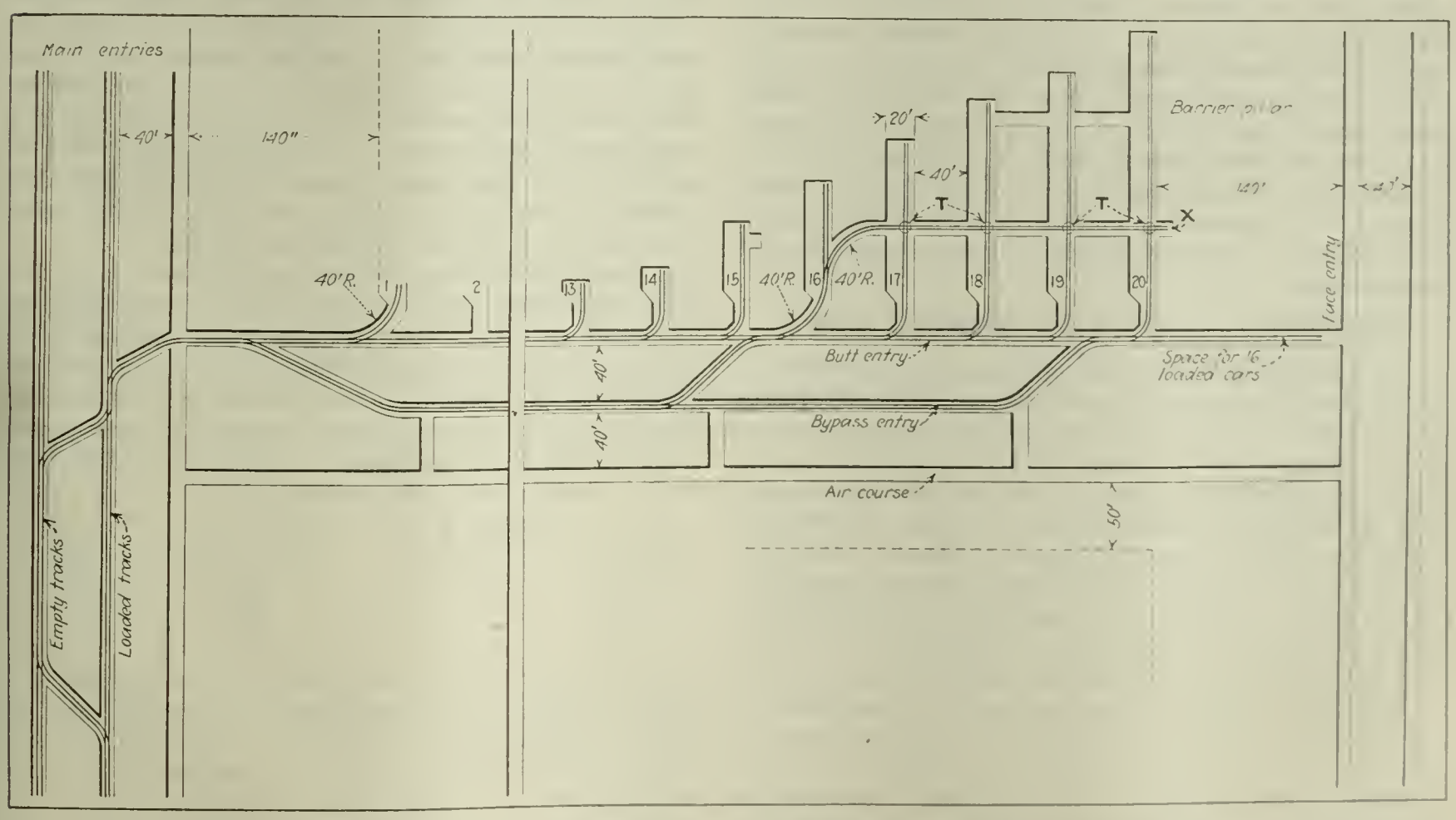


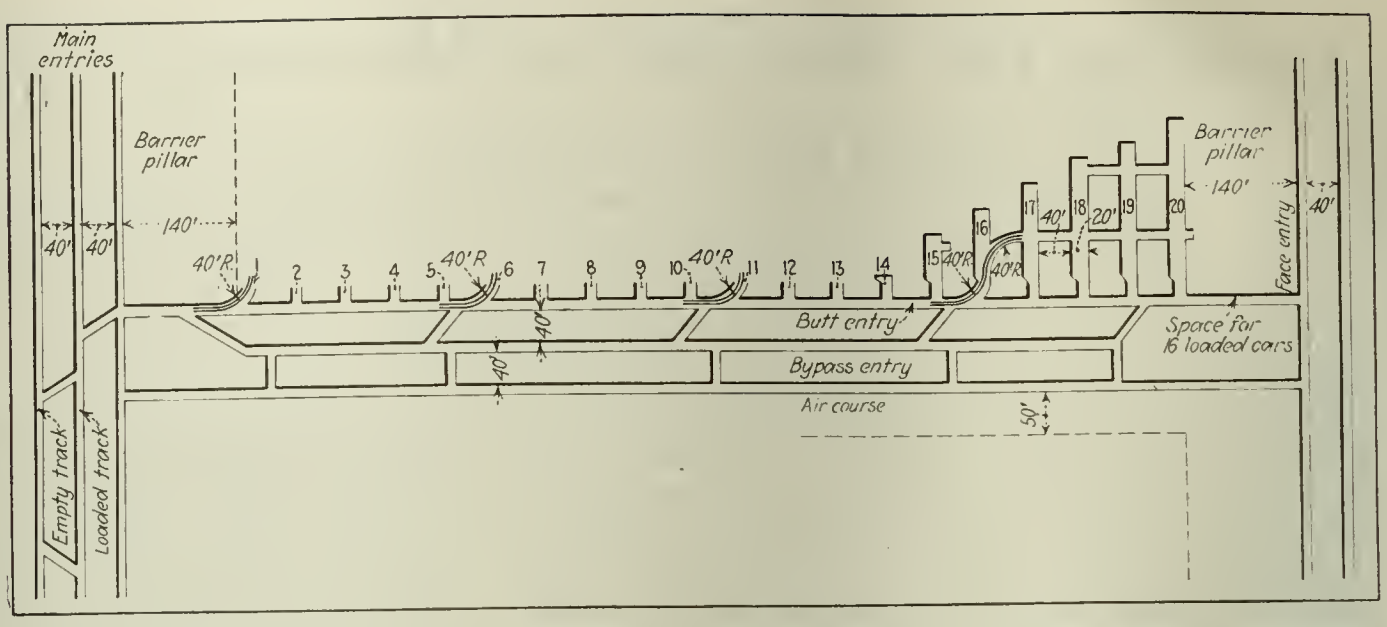
FIG. 1—METHOD OF WORKING SUITED TO MECHANICAL COAL LOADING

Among unusual features are the turntables T, the car holst X, the line of crosscuts intersecting four or five rooms, a few curved room necks and crosscuts and the bypass entry. Otherwise it is hard to realize that this is not a room-and-pillar design for a mine operated without the use of machines for loading. Groups of five rooms are formed, and each has a loading machine and a locomotive apportioned to it. The turntables are moved up as often as the five-room crosscuts are completed. In order to meet the difficulty arising from the instability of having five crosscuts in a row, each five-room section can have its crosscuts in a different line from those in the adjacent five, thus staggering them.

FIG. 2.

Method of Working

This shows twenty rooms to a panel. These may be made 300 ft. long, but with conditions as here laid down little reason can be found for not making the rooms 600 ft. long. Every fifth room has a curved neck and crosscuts fitted to receive rails turned to a radius of 40 ft.



without the range of a broadcasting station as it is to look for favorable returns from a loading machine that lacks the benefits of adequate haulage.

So much for the location of the difficulty; the important question is what is to be done about it? The problem resolves itself into two parts, first, to evolve a system of haulage usable in connection with mechanical loading or conveying in longwall workings, and, second, to evolve a system usable with room-and-pillar workings. The first problem mentioned is fairly easy of solution, but as so little of American mining is done by this method, most attention naturally will be given to devising haulages that are applicable to room-and-pillar development.

In our search for a solution we are obliged to face five unalterable conditions: (1) The room-and-pillar method of working is here to stay (at least, for a long time) and no radical changes in working methods should be attempted, (2) the haulage system should be such as will insure the rapid and unrestricted movement of loaded and empty cars, (3) abundant storage room must be provided for trips both loaded and empty, (4) trackage arrangements must be such that cars can be loaded at different parts of the entry without interference in the movement of trips, (5) the method must be practicable, conducive to large output and economical in operation.

Turntable Is a Simple and Effective Device

The method of haulage herein described is suited to all the usual procedure characterizing the panel system of working and also fulfills the five conditions just outlined. Room work is begun at the last necks on the entry, and pillars are drawn on the retreat although the advance method of working may be used. In the plan of entries, Fig. 2, twenty rooms are shown. These, for purposes of operation, are divided into groups of five rooms each. Four rooms of each group, (see Fig. 1) are provided with a turntable. Possibly this is the one and only peculiar feature of the entire plan.

The use of turntables may appear like a reversion to the obsolete. Such a feeling can, perhaps, be best explained by borrowing an expression from the same country as has furnished the idea, "Such things are not done with us." A little investigation of turntables, however, reveals the fact that they are not as formidable as they might appear. In reality they are extremely simple devices and can be supplied by several manufacturers fitted with either ball or roller bearings; they are capable of carrying as great a weight as ten tons, are not over 6 in. high, weigh about 1,200 lb., and sell at a price varying from $150 to $175. It will be noted from the description which follows that rotation on the turntable is restricted to the empty wagon, for the loaded wagon and the locomotive merely cross it. They are easy to operate, are strongly built and compact, so that moving them ahead from one to the next line of crosscuts, as is intended, offers no unusual difficulty.

For the purpose of explanation we will assume that the coal being worked is 6 ft. thick, that the rooms are 300 ft. long and are driven on 60-ft. centers, 20 ft. of which is ascribed to room width and 40 ft. to the width of the pillar. The length of room, though assumed as being 300 ft., in view of the ability of the modern locomotive justifiably might be extended to twice this distance, thus effecting many economies. An undercut of 6½ ft. in this coal will produce about 32 tons, or 16 carloads if these are figured at 2 tons each. All cutting is to be done on the night shift, except that in starting room work on group No. 4 (the last group) rooms Nos. 18, 19 and 20 may be started at the same time and cut as frequently as possible. After these are driven in a sufficient distance, room No. 17 is started, then No. 16, and so on. As the rooms advance their faces should be brought in step as is customary with this system even when operating without mechanical loaders.

A strict adherence to system is a *sine qua non.* After rooms are under way on the entire entry, the order in which they are loaded out becomes a matter of the greatest importance, as the success of the method depends upon this detail. It has already been stated that there are four groups, each containing five rooms. Loading is done simultaneously in each of the following rooms, reading across the column:

Group No. 1	Group No. 2	Group No. 3	Group No. 4
1	6	11	16
2	7	12	17
3	8	13	18
4	9	14	19
5	10	15	20

It is apparent that full working will be attained only after a certain period of time has elapsed, but the grouping is correct, no matter at what stage the work may be. Thus, when one-half the number of rooms is working, the last two columns in the table indicate the proper order of loading; when three-fourths of the number are working, the last three columns indicate the order and when all rooms are being driven all columns apply.

It should be stated here that this grouping is based on sixteen-car trips for each room, as well as upon other data already given on the coal bed, such as widths of

room and pillar, undercut, etc. If 3- or 4-ton capacity cars were to be used, there would be allowable one to two room variations in the order given. Changes in dimensions can be calculated in advance of laying out the work, but these will not affect the method. We will now follow the actual operations which take place in coal loading and removal.

Let us suppose that the gathering locomotive has pushed sixteen empty cars into room No. 16 and from here to the storage crosscut. Curves of 40-ft. radius are provided in this room and also in rooms Nos. 1, 6, and 11, which likewise lead to storage cross-cuts. The first car is placed on the turntable, T, in room No. 20 (see Fig. 1), rotated into proper position, and then drawn to the face by a winch attached to the loading machine. In order to minimize labor in pushing, all cars either should have roller bearings or be fitted with an easy-running type of plain bearing. After the car is loaded it is promptly withdrawn by the locomotive and as soon as the loaded car has passed the turntable, the process of supplying an empty is repeated.

After several empties have been taken from storage, the remainder can be drawn close up to the turntable by a small room-hoist located at point X, or the same service may be performed by the winch on the loader or a crab on the locomotive, with the help of a sheave or snatch block, placed between the rails. The loads from room No. 20 are stored on trackage provided on the entry, and thence may be pulled out to the main entry, either by way of the butt or by the bypass entry.

No Time Need Be Lost

The empty cars for room No. 15 are placed as described above, the procedure of moving both empties and loads being also similar. The sixteen empty cars needed for room No. 15 are pushed in by the locomotive belonging to this group of rooms and halted on the entry, a few feet from the switch points at this room. While the locomotive is cutting loose, passing through the motor chute at room No. 10, and proceeding thence to the front of the trip, an empty car may be detached and drawn to the room face by the winch on the loader. This car, and all others subsequently loaded from this room, will be placed on the butt-entry tracks between rooms Nos. 16 and 19. An inspection of the plans will show that this position of the loaded cars does not interfere with the passing of trips to and from the group beyond—in short, there is no interference either with the movement of cars within a group of rooms or with those in any other group. Also it will be noted that the loads from either group can be taken to the main entry by means of the bypass at any time desired.

The procedure for room No. 20 is as already given. By the time room No. 10 is ready for loading, the crosscut entry which serves the third group of rooms may possibly be connected up so that empties for room No. 15 can be stored on it by passing them through room No. 11. If, however, the storage crosscut is not available, sufficient room will be found on the butt entry between rooms Nos. 10 and 15 to accommodate both loaded and empty cars. The procedure in either case for room No. 15 is similar to that already explained, the loads being placed, as before, between rooms Nos. 16 and 19. The method of supplying cars to room No. 10 is the same as described in the previous paragraph for room No. 15, the loads, however, being stored on the butt entry between rooms Nos. 10 and 13.

For the purpose of showing the ready adaptability of the track arrangement, it may be assumed that loading is taking place in the mid-group rooms. The empty cars for room No. 18 are stored on the track in the storage crosscut, on both sides of the room, and the loads are placed on the butt-entry storage beyond room No. 20. The empty cars for room No. 13 are placed to the left of the room switch, as heretofore described, and the loads are split, six being placed on the butt-entry track between rooms Nos. 16 and 18 and ten between rooms Nos. 13 and 15. This leaves a way open at all times for empties passing to the fourth group of rooms.

Each group of rooms is to have its own locomotive, loading machine and undercutting machine, and its own working force, which, counting all machine operators, a timberman and a trackman, makes a total of eight men. A few foremen, drillers and shotfirers will take care of the needs of the four groups, the grand total for the entry not exceeding 36 men.

As all rooms are driven on sights, standardized lengths of track can be used in the crosscuts between all turntables. The use of steel ties will make it easy to assemble and dissemble such sections.

In driving a crosscut it is possible to reap the benefit of machine loading by placing a turntable in the room track at the position it will ultimately occupy when all crosscuts in the line are completed. As the crosscut advances into the rib, a temporary set of rails leading from the turntable will enable the car to follow the machine.

One of the striking advantages of this proposed system lies in keeping the empty cars close to the loader at all times. This is particularly emphasized if the rooms be driven to a length of, say 600 ft. The empty cars will be, as always, within 100 ft. of the loader. The loaded wagons are relatively far away from their storage, but it is not necessary to take each car out of the room when loaded. The motorman, by merely coupling up the loads and pulling the train past the turntable, so that an empty car may be released, can cut down to two, three or four the number of trips from the room to the loaded-car storage.

An objection may be raised against the weakening effect on the roof of the continuous line of crosscuts running across five rooms. Any possible injury from this source could be brought within limits by placing the crosscuts in one group 10 to 20 ft. beyond the line in an adjacent group, or, in other words, the crosscuts can be staggered by groups.

The inevitable question will arise, what tonnage can be expected with such a system? The oft-repeated capacity figure given for loading machines, "one ton per minute," is no doubt realized where coal is loaded on the outside from a storage pile, but when applied to underground coal piles it breeds mischief. But such a capacity is not necessary for success. A few minutes with figures will show that in the case here assumed, sixteen wagons, or 32 tons, are presumed to be loaded from one room, which figures multiplied by five rooms makes 80 wagons, or 160 tons, from the group. The loading time for each wagon in an 8-hr. day is, therefore, 6 min. Considering the nearness and abundance of empty cars in each case, this time allowance per wagon appears to be reasonable. The four groups on the entry will produce 640 tons with a total working force of about 36 men, making an average of 18 tons of coal per man per day.

Safety Man Car Which Will Not Run Away On a Steep Incline When Rope Is Severed

MEN familiar with mines seldom object to riding on a man hoist or plane any more than they hesitate about doing any one of a hundred other dangerous things. They have been educated to danger and believe that their calling demands that they take a chance. Many, if not most, mines are literally covered with signs cautioning safety, yet because mining men have been educated to danger they continue to face an obvious risk. Therefore as men will jump on board the cars traveling up or down a plane regardless of the danger and notices forbidding such action it becomes necessary to provide means to assure safety and preserve the life that the average mine worker so freely jeopardizes.

The accompanying illustrations show a man car for use on slopes and inclines. The principle upon which the operation of this car is based is that of friction. Two extra ropes are laid throughout the entire length of the incline. At the top these are attached securely to a concrete foundation; at the bottom sufficient tension is applied to make them operative at a given load in the car. Within the mechanism of the car these ropes are guided around a V-grooved pulley provided with a brakeway upon which pressure may be applied either by means of a governor or through the medium of a handwheel.

In operation, therefore, the grooved wheel may be either tight or loose, depending upon whether or not the brake is applied. Any desired degree of tightness may, of course, be obtained. The proper tension to be applied to the lower end of the ropes is determined from dynamometer tests made when the car is fully loaded.

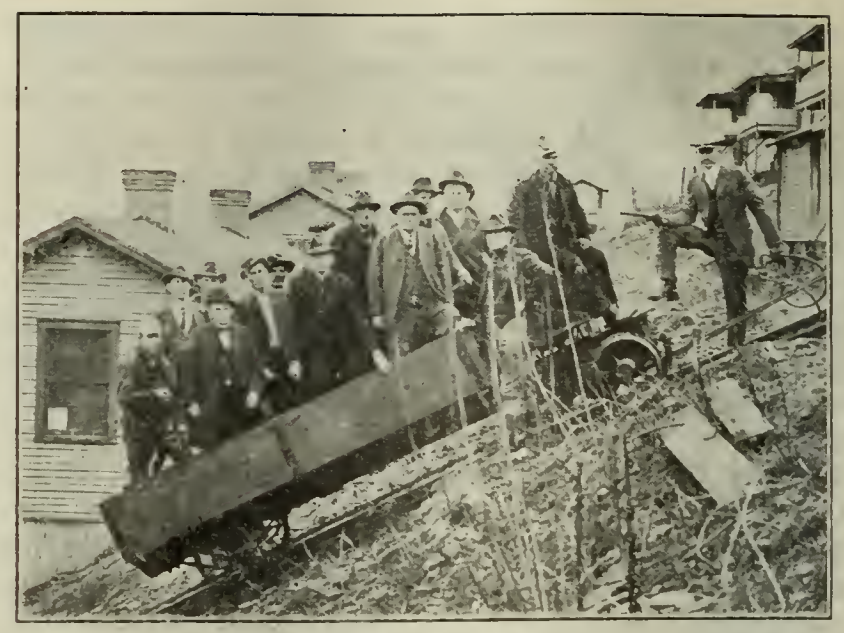


FIG. 1. SAFETY MAN CAR ON AMHERSTDALE PLANE

Grade varies from 25 to 38 deg. In the illustration the hoisting rope is shown disconnected and the car with its load of human freight is being held by the brakes, which cause the car to become firmly hitched to the two ropes visible in the part of the plane above the car.

In construction the mechanism is solid and substantial. The sheave wheel is a steel casting and in addition to the brake carries a ratchet, which, in conjunction with a pawl, provides an extra assurance of safety. A governor of the flyball type furnishes automatic actuation of the brake band.

The accompanying photographs show the making of tests on a car of this kind on the plane of the Amherst Coal Co., at Amherstdale, W. Va. This plane is 850 ft. long, and the grade varies from 25 deg. at the bottom to 38 deg. at the top or just below the knuckle. In his report to the chief of the Department of Mines J. F. White, a state mine inspector, says: "First a short manila-rope hitching was made from the hoisting cable

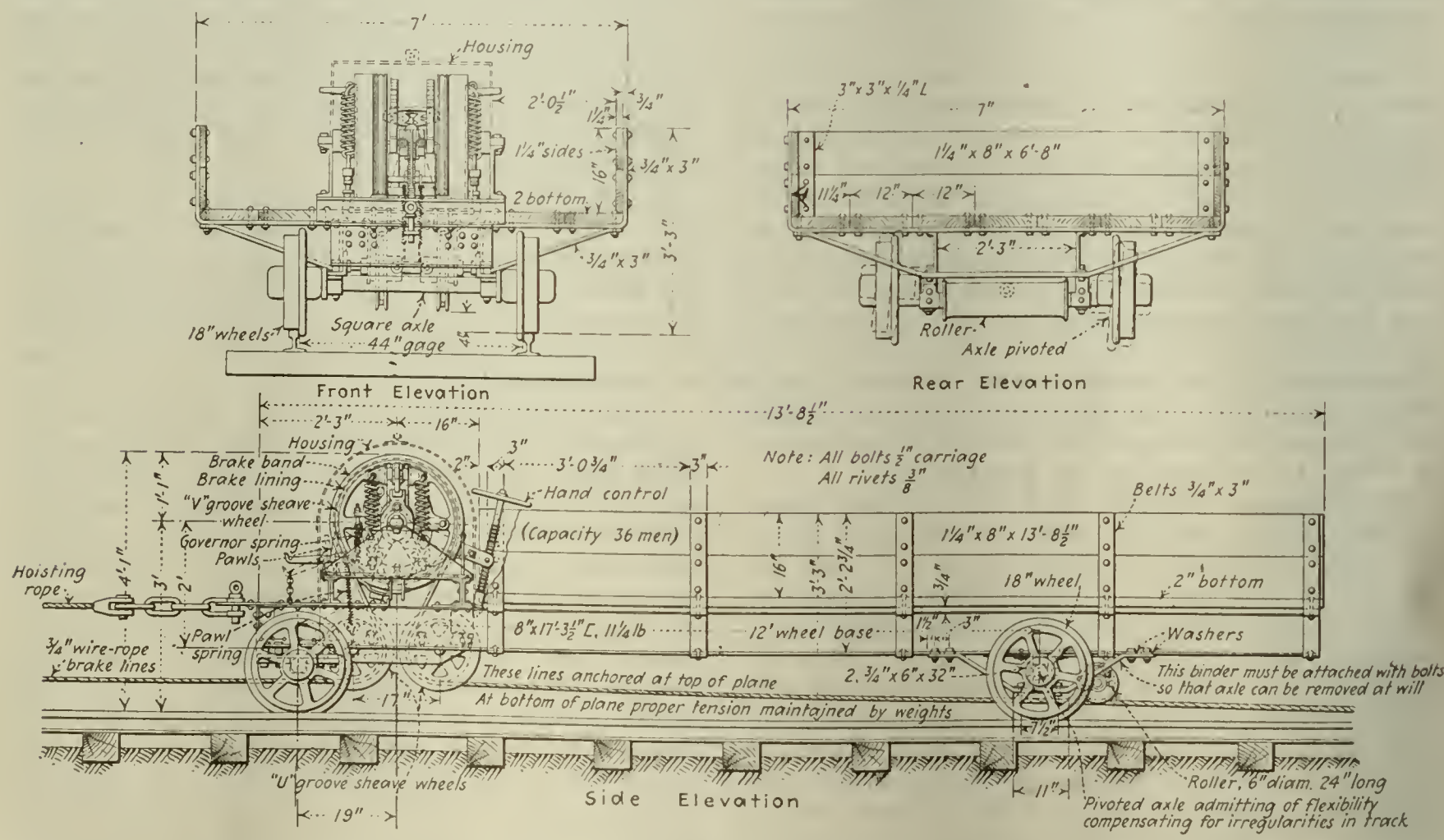


FIG. 2. MAN CAR DESIGNED TO ACCOMMODATE THIRTY-SIX MEN ON STEEP PLANE

It will be noted that the ropes travel around three pulleys much as in the arrangement that is sometimes used in lowering cars from rooms in mines where steep pitches are encountered. The brake can be put into operation either by a governor or the operation of a hand wheel. Where the hoisting rope was cut with two men in the car the latter traveled down the hill only about 3 in.

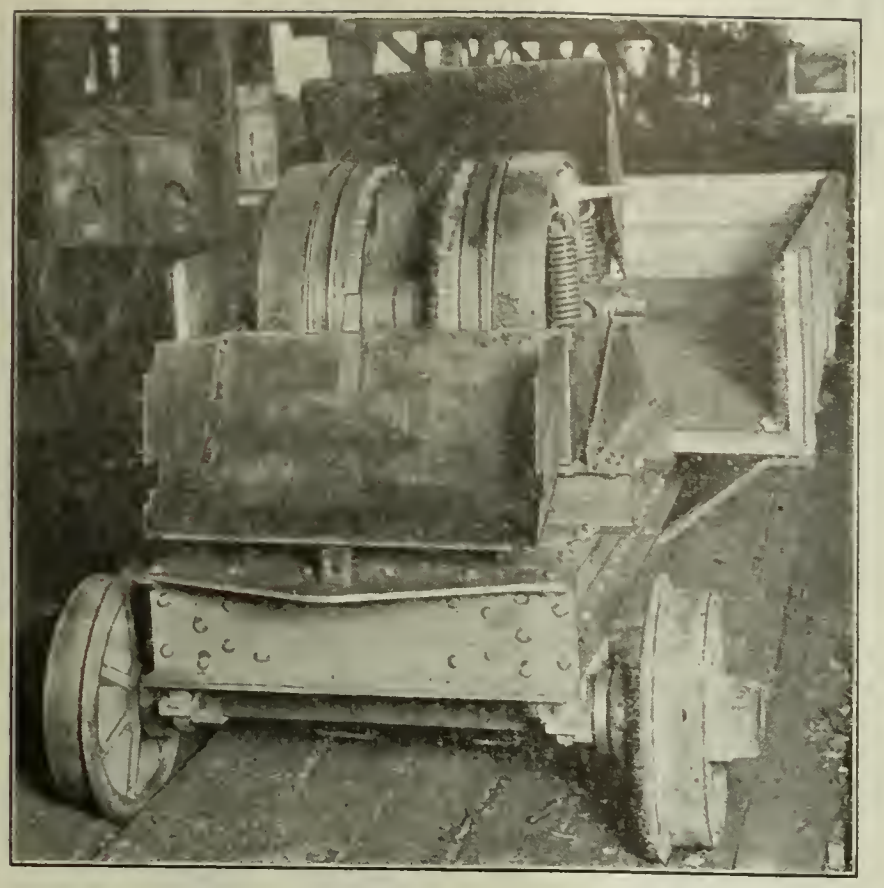


FIG. 3. FRONT VIEW OF CAR WITH HOOD OPEN

Capacity to haul men is obtained by making the car overhang the track. Details of the braking mechanism are revealed by the lifting of the hood.

to the car. This was provided so that the rope could readily be severed. The car was hoisted about two-thirds of the way up the plane, at which point the rope was cut. It traveled back down the hill not more than 3 in. The car contained two occupants, one of whom cut the line. It did not seem to make any appreciable movement when the rope was severed.

"As a second test men were stationed on the incline at approximately 100-ft. intervals. The car was hoisted to the top of the plane, the hoisting rope was disconnected, and with one man operating the hand brake the car descended the hill, stopped at the different points and picked up the entire party, bringing them to the bottom of the plane.

"The next demonstration was conducted entirely at the top of the hill. Two thousand three hundred pounds of dead weight was loaded onto the car, after which it was turned loose over the knuckle. This was accomplished in the following manner: A short manila-rope hitching was made as before, this being severed with a knife as the car came onto the steep grade. The car with its load started down the hill but stopped automatically 25 ft. 7 in. from the top at a point where I would say the pitch was 35 deg."

After the above-described tests the Amherst Coal Co. was given permission to carry as many men per trip on this car as it would hold. The dimensions of this particular car are shown in the accompanying line drawing. It will be observed that these dimensions are greater than those of the ordinary mine wagon, but the size of the car need by no means be limited to the measurements given.

The fact that this car is much heavier than the ordinary mine wagon used for hoisting men on planes and inclines brings up the question of rope stress and cost of operation. Computations based upon assumed conditions closely paralleling those existing at Amherstdale show that although the maximum rope stress resulting from the use of the new man car is almost three times that encountered with the ordinary mine car, yet because the new car holds many more men than the old and consequently makes fewer trips, the power consumed and the cost of operation are appreciably less.

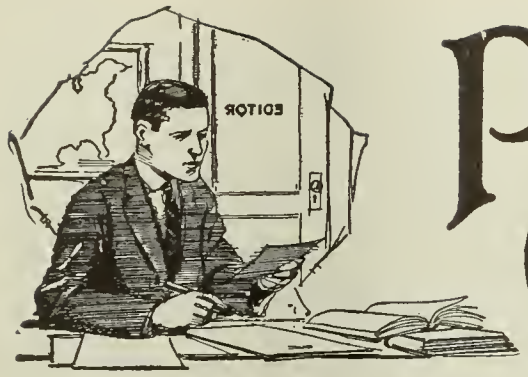
This device, known, after its inventor, as the Prockter safety car, is being built by the Safety Appliance Co., of Huntington, W. Va.



FIG. 4

After the Third Test

Loaded with 2,300 lb. of dead weight, the car was turned loose on the grade down which it traveled at a high rate of speed until the action of the governor brought it to rest at the point shown, about 26 ft. below the top of the plane. A man has climbed into the safety car and with a plummet string shows the inclination of the track to the horizontal, the angle being roughly 35 deg.



Problems of Operating Men

Edited by James T. Beard



Overcoming Difficulties in Working Low Coal

Low Hard Roof Debars Both Trolley and Reel Locomotive — Storage-Battery Locomotive Employed —Scheme to Increase Hauling Capacity of Locomotive

READING the interesting article entitled "How Locomotives May be Made to Gather More Cars," by F. C. Cornet, *Coal Age*, June 1, p. 921, has struck a responsive chord in my mental cogitations. The subject is one to which I have devoted much thought, in general as well as in specific instances.

In the planning of mining operations, time and again, I have tried to work out some scheme that would reduce the innumerable trips that a gathering locomotive must generally make to the working face where a single car is set in and loaded at a time.

Recently I was confronted with a situation that required driving the rooms up an 8 per cent pitch. The coal was low and the state mining laws forbade the installation of trolley wires, unless they were guarded by boards or hung in trenches channeled in the roof. Both of these measures were impracticable, the former because of the small headroom and the latter owing to the expense of cutting the hard roof, which was a tough sandstone.

Storage-Battery Locomotive for Use in Low Coal

These conditions automatically eliminated the use of both trolley and reel locomotives from further consideration, in that mine. The proposition resolved itself, therefore, into selecting a low type of storage-battery locomotive, which was adopted forthwith.

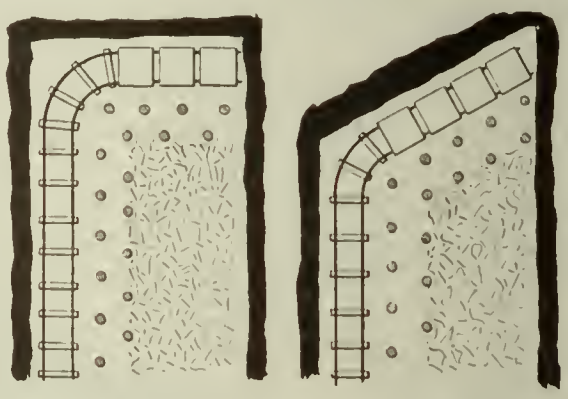
Here again, however, difficulties confronted us, both natural and artificial, so to speak. First, the 8 per cent grade made it necessary to drive the rooms across the pitch, or at such an angle with the entry that would enable the locomotive to handle the cars to and from the faces of the rooms.

Second, a single track being laid against the rib, in each room, the management rightly decided that it would work an overburden on the men if the locomotive was to set in more than one car at a time, in each room. This would increase greatly the number of trips the machine would have to make in gathering and placing cars at the faces of the rooms. Investigation showed that it would be impossible to get sufficient battery capacity, even with two sets of cells in the locomotive.

After carefully studying the problem, it appeared to me that the only possible solution was to adopt the plan described in the article of Mr. Cornet, to which I have referred. That was to drive wide rooms that would permit of setting in two or three cars along each face at a time, by curving the track at the head of the room and extending it along the face, as shown on the left in the accompanying figure.

If the roof conditions would not permit driving such wide rooms the necessary length of track along the face could be secured by cutting the face at an angle with the axis of the room, as shown on the right in the same figure.

It will interest the readers of *Coal Age* to know that a similar method is being employed at the Keene mine of the Bair-Collins Co., located four miles west of Roundup, Montana, on the main line of the Chicago, Milwaukee & St. Paul R. R.



TRACK EXTENDED ALONG FACE TO INCREASE CAPACITY OF LOCOMOTIVE

This mine has an output of only 500 or 600 tons a day. It is working a seam of sub-bituminous coal that pitches 4 per cent to the northeast and lies at a depth of 130 ft. below the surface. The seam, which is but 34 in. thick, is overlaid with an 8-in. drawslate, above which is from 8 to 9 ft. of sandstone.

In working, the drawslate is taken down and gobbed. Under the strong sandstone roof and light cover, it is possible to drive wide openings with narrow pillars between them. The entries are 30 ft. wide and brushed to 4 ft. 6 in., in the butts and 5 ft., on the main roads, for a width of 12 ft. The rooms are driven 50 ft. wide, at an angle of 30 deg. with the entry, which makes a 1¾ per cent grade in favor of the loaded cars. The face of the coal is cut parallel to the entry, for the full width of the room.

The curved section of track, at the head of the room, is advanced with the face. In this arrangement, it is possible to place from four to five cars at a time along the face. The cars each have a capacity of 2,300 lb. and are loaded over the sides, being very low. At present, the cars are pushed to the mouth of each room, by the men; but a gathering locomotive is being installed, which will greatly simplify the work.

CHARLES M. SCHLOSS.

Denver, Colo.

Unsafe Roof Conditions Often Develop Suddenly

Conditions in roof strata vary widely— Danger may develop in a short time after examination.

ONE writer, discussing the question of how a fireboss may prove that he examined a place, when his marks made at the face and on the side of the coal have been destroyed by a roof fall before the miner enters for work, says such a fall could hardly destroy both marks.

Another writer claims that if the face was driven in the solid coal and had been properly examined by the fireboss that morning, it could hardly happen that a fall of roof would occur in the short time that would elapse before the men entered for work.

Now, it is clear to my mind that men who will make such statements as these have always worked under good roof. Either that, or they have had little or no experience in the work of firebossing. They do not realize that conditions may and often do exist that make both of these occurrences possible.

From my own experience, I recall several instances where places driven in the solid coal, as well as others where pillars were being drawn, caved badly shortly after those places were examined by mine officials and mine inspectors.

Instances Recalled Where Roof Has Caved Suddenly

Even now, I could name at least a dozen places that caved in between the early examination made by the fireboss and the time for the men to enter for work. Many of these places still showed the marks made by the firebosses on the face of the coal, the sides and often on the roof and timbers. At times, it would happen that the marks were destroyed by the fall.

By way of illustration, let me assume that this fall occurred in the first pair of entries examined by the fireboss and found safe for work, and

perhaps he may have eight or ten more entries to examine if his territory is large.

No one will deny that four hours may pass between the time the first pair of entries were examined and the men entered their places for work. Nor can any one fail to realize what might happen in that time. All practical miners will agree that it don't take hours for roof conditions to change or a place to cave.

Many miners have left their places and run for their lives, without stopping to pick up tools or dinner pails; and these men will tell you that it takes but a few minutes for a roof that they supposed was safe to give signs of imminent danger.

Proving a Fireboss' Work

Now, a word in reference to a fireboss proving that he made his examination and marked the place as required by law, the same morning when those marks had been destroyed by a fall that occurred between the time of his examination and the entrance of the men for work.

As has already been mentioned by other writers, any fireboss who performs his work carefully should have the confidence of his employers and all who are associated with him. His marks in adjoining places should be evidence that he had examined the place where the fall occurred.

It should be remembered that the marks of a fireboss do not prevent a fall taking place but a short time after the examination. If it was possible for a fireboss to look into the strata and know its real condition, there would be fewer accidents from falls of roof in our mines.

Joffre, Pa. Mine Foreman.

Seal Panels in Pittsburgh Seam When Abandoned

What experience teaches—Peculiar features met in working the Pittsburgh seam—Panels must be sealed as soon as worked out and abandoned.

THE discussion of how best to deal with the problem of safeguarding abandoned areas, in mines, has been both interesting and instructive. In reading the several letters that have appeared on the subject, one cannot but feel that the variance of conditions, in different localities, must determine the question of sealing off or ventilating areas that are worked out and abandoned.

Speaking from experience in the Pittsburgh district to which my remarks must be confined, I must say that it is almost impossible and quite impracticable to properly ventilate the abandoned panels that characterize the working of coal seams in this locality.

When all the coal in a panel has been extracted and the pillars and stumps robbed, it is found to be practically impossible to circulate the air over and around the falls that have taken place within the territory. The whole area has caved badly and any one familiar with the working of the Pittsburgh seam will realize the truth of my statement.

The little air that would seep or creep through the labyrinth of falls that occur within the area of an abandoned panel, in this seam, would be just sufficient to render more dangerous whatever gas might be given off on the falls. It would have no effect to sweep away these gases or dilute them to an extent that would render them harmless.

Sealing Common Practice in the Pittsburgh District

In the most modern mines in this district, it is the common practice to seal off these panels, at both ends, by building solid 9-in. brick walls in the openings, as soon as the extraction of coal is complete in that area. At each end, there is left in a seal an opening of sufficient size to permit a man to crawl through and make a regular examination of the panel. These openings are closed with tightly fitting double doors.

The examination of abandoned panels has shown that they fill up with blackdamp, which prevents spontaneous combustion taking place and helps to render inexplosive the firedamp mixture that would become very dangerous if diluted with air, but, in its present condition, is harmless with reference to explosion.

In closing, let me endorse the statement emphasized by Ostel Bullock, in a recent letter, to the effect that the success of any plan depends on the manner in which the work is carried on.

August Carmazi,
Avella, Pa. Mine Foreman.

Difficulties in Superintending

Things the superintendent must know —His numerous perplexities — His life a burden.

IT was interesting to read the remarks of S. D. Hainley on "Ideals in Superintendency," *Coal Age*, June 8, p. 967. Evidently, Mr. Hainley knows a little of what a mine superintendent must endure.

One cannot think of a single subject that the superintendent of a mine is not expected to understand and be able to explain, from the growing of parsnips to telling the size and shape of the moon.

To my mind, these things are only preliminary to his duties in opening up a mine. He may be a college graduate and have a fund of information, but that will not make him a successful superintendent of a coal mine.

The Superintendent Beset

The superintendent of a large mine has a thousand and one things to occupy his thoughts that the public know little or nothing about. It would be useless, if not impossible, to enumerate the numerous difficulties and perplexities that are the inheritance of the man who fills the office of superintendent.

If a piece of machinery breaks down and is thrown out of commission for a brief period, for the reason that a small repair part that should have been kept on hand in the supply room is found lacking, the superintendent must explain the cause of the accident and why the repairs are not quickly made.

Again, he is liable to be called out of a comfortable bed, at any hour of the night, because the fireman cannot get water into the boiler; or the main pump has lost its water and the pumpman is unable to start the pump, being a new man; or the fireboss, making his early rounds has found a fire in a heading, caused by a shot the night previous; or there is trouble with the generator in the powerhouse; or the fan is running hot; and other things too numerous to mention.

Domestic Troubles

Worst of all are the many domestic difficulties brought to the superintendent for solution. For example, Anglo Poncelo's boarders got drunk and are throwing both Anglo and his wife out of the house and, "Would the superintendent please come down at once?"

Mrs. Sudisky, burning a lot of rubbish, has started a fire in the flue of her chimney and it is feared that the house might take fire. In the emergency, Mrs. Sudisky runs right to the superintendent with her troubles, finding him at his breakfast.

She had hardly finished her tale of woe and gone, when in rushes Mrs. O'Flanagan: "If yer don't sthop those kids of Mike Rafferty's from putting out their tongues at me as I go by, bedad me and me man will git out and take our boarders all with us."

Then, Mrs. Murphy is on hand at the office to greet the superintendent with the information that the two Rofalsky boys broke a pane of glass in her front window. While she is talking, in walks John Labio and tells the superintendent that Mike Melisky is moving out and could he, himself, move in. "Mike has built a pighouse and I have bought it and want to move in today." "Not in the pighouse, I hope," remarks the superintendent blandly.

The Pit Committee

Answering a 'phone call from the tipple, telling of a broken horn at the dump, the superintendent orders another horn from the supplyhouse and hastens out, only to be met by the pit committee, who bring a complaint from the men about the scales, which they want tested and a new tare put on the cars.

To meet the demands of the company ball team, the children's playground and the welfare organization, the purse of the mine superintendent is always empty. He is lucky if he can keep out of politics in the town, but in ninety-nine times in a hundred that is out of the question.

Should there be two churches in the place and the superintendent attends one of them regularly, he must be sure that none of its members hold too many of the good jobs in the mine; or he

will be accused of favoritism. Having a son, if he gives him a fairly good job, it is reported around that the boy "gets his money for nothing." Indeed, a volume could be filled regarding matters that perplex and worry a superintendent, until his life is a burden oftentimes. THOMAS HOGARTH.

Indiana, Pa.

Gaining the Confidence of Men

Confidence the first essential in getting results—Men will work for bosses whom they trust.

SPEAKING of getting results in the work of mining coal, I find that different writers, in *Coal Age*, have different ways of treating their men. My experience as a mine foreman has taught me that there is only one way to deal with men and that is to treat them as you would like to be treated if in their place.

The first thing that a mine foreman must do if he hopes to succeed, is to gain the full confidence of the men in his charge. Gaining the confidence of one's men is, indeed, the first essential in getting results. Today, the boss who fails to gain the confidence of his men will not be able to handle them successfully in the interest of the company.

KIND TREATMENT WINS WHERE OTHER METHODS FAIL

It is frequently the case that the failure of a boss along this line means much to the company who employs him. In other words, in order to get work done, numerous concessions must often be made and favors granted, by a boss who has failed to win over his men; and these add materially to the cost of operation. Where a foreman deals squarely and kindly with his men, it is not necessary for him to throw away his company's money to get work done.

When I was assistant foreman, it was part of my duties to fire the shots, see that the timbers were properly set and look after many other details of the work. Of the twenty-five men in my charge, there was not a man but that would willingly do anything I asked.

My rounds were made every thirty minutes and, such was the confidence of the men, they would wait for my advice as to where to drill a hole, how to point it, and what weight of powder to use. This information was always given thoughtfully and carefully.

FAMILIAR WITH HIS MEN

Observing the roof in a place, I would say, "Jack, you need a timber here," and the man would jump for his ax at once. If there was slate to be moved there was never any trouble to get a man for the job, knowing that he would be paid what was promised and would make good money at the work.

It was pleasing, one day, to overhear a new man asking an old miner why he had set so many timbers in his place, which was more than the rules of the mine required. The reply was, "Well, George, my boss told me to set them while I had time between cars. He said it would make my place safer and the work easier for drawing back the pillars and he knows."

In closing, let me say that men will work for a boss in whom they have confidence. When a company has confidence in its manager, the manager confidence in the superintendent, the superintendent confidence in the mine foreman, and the foreman has gained the confidence of his men trouble will end and harmony prevail.

Thorpe, W. Va. G. W. BREEDEN.

Inquiries Of General Interest

Method of Working to Reduce Danger from Sudden Outbursts of Gas

Outbursts More Frequent in Disturbed Areas—Occurrences Often Give Little Warning—Numerous Attempts to Drain Gas Prove Futile—Pillar-and-Stall Method Safest

BELIEVING that the danger from sudden outbursts of gas, in mines, can be greatly reduced by adopting measures for their prevention, I am taking the liberty of asking the opinion of the editor of *Coal Age* and its practical readers, on this subject. I am particularly anxious to know what is generally regarded as the safest method of working to employ in working coal subject to these conditions.

In this district, there have occurred a number of outbursts of gas that have thrown down much coal, and many of them have given little warning of their coming. In a few instances, miners have been caught and buried under tons of fine coal broken down by the pressure of the gas in the formation.

The coal we are working is soft and friable, with occasional harder faces. While the surface is practically level, the seam has a pitch of about 20 deg.; and we are now working under about 1,500 ft. of cover. Shotfiring is strictly prohibited in the mine.

On previous occasions, it has been estimated that outbursts of gas have reached 1,000,000 cu.ft., in four hours, and that as much as 800 tons of coal have been displaced by the pressure of the escaping gas. Frequent attempts have been made to drain off the gas, by keeping boreholes ahead of the working faces; but the flow of gas from these holes appears to be little more than in ordinary workings.

In view of these facts, the plan has been suggested of shooting the coal with permissible explosives, after the men have left the mine. Electric firing would be employed, all shots being connected in series and fired from the outside of the mine.

The purpose of this plan is to invite the occurrence of an outburst at a time when the men are not in the mine. It is thought that the shock of blasting would have the effect to precipitate an outburst that might be imminent. The question arises, however, regarding the danger of fires being started in the mine if the coal is blasted in this manner.

I would like to ask if there is danger to be feared from fires being started from blasting with permissible powder. Has the practice been followed, in any mines in the United States, of firing all the shots from the surface when no one is in the mine? What, if any, danger may be anticipated in employing that method of firing?

It is understood, of course, that a thorough inspection of the mine would be made by the firebosses, after the shots have been fired from the surface and before the men are again permitted to enter the mine for work. I shall appreciate very much what information may be given or any suggestions offered that will minimize the danger from the source I have mentioned.

——, B. C., Canada. MINE MANAGER.

The mining of coal, in districts where the formations have been much disturbed, is always more or less hazardous. Probably no danger to which a miner is exposed presents a more difficult problem for solution than that due to the imminence of sudden outbursts of gas to which this correspondent has referred.

The subject is one that has long baffled the ingenuity and experience of many of the most practical mining men in the Northwest, where the phenomenon has been most developed. After an experience of eight years, in the development of the Morrisey mine, in British Columbia, the Crows Nest Pass Coal Co., was compelled, in 1909, to abandon its further working.

Probably the safest method is that known as the "pillar-and-stall method," in which narrow openings or stalls, 8 or 10 ft. in width, are driven up in the first working. These stalls are separated by pillars of somewhat greater width, which are then drawn back after the usual manner.

The disturbed condition of the strata, geologically, affords every opportunity

for movement and slipping in the formations. This is undoubtedly accompanied with the working of the gas confined in the strata, and the action increases as the mine workings are developed. Such movement and settlement of large rock masses causes an ominous pounding, which the miners term "bumps."

In an interesting article on the "Outburst of Gas in Crowsnest Field," *Coal Age*, Vol. 14, p. 443, Mining Engineer James Ashworth, draws attention to the analyses of gases from that field, as showing the presence of gases of the higher hydrocarbon series. Mr. Ashworth there expresses the belief that some of these gases are in the liquid form in the coal; and that, on the pressure being relieved, they volatilize and break down the coal in the finest dust. The conditions, however, outreach our present knowledge of the subject, which renders our conclusions mere speculations at the best.

In regard to firing the shots in a mine electrically, from the surface, it can be stated that as far as permissible explosives are concerned, their use practically eliminates the danger of fire being started in the mine by blasting. While this practice of firing is by no means universal, there are instances where it has been followed. At one time, the Stag Canon Fuel Co., at Dawson, New Mexico, used this method of shooting the mine when no one was underground, the firing of the shots being accomplished by means of an electric battery at the surface.

Examination Questions Answered

Miscellaneous Examination Questions

(Answered by Request)

QUESTION—*To what extent does the pressure in a boiler exceed that in the cylinder of an engine? A boiler pressure of 60 lb. per sq.in. would be how much in the cylinder of the engine, and where is the difference employed?*

ANSWER—The steam-cylinder pressure is always less than the pressure indicated by the gage on the boiler. The amount by which the boiler pressure exceeds that in the cylinder depends primarily on the distance the engine is located from the boiler, the size of the steam pipe conducting the steam to the engine, kind of valves and type of engine. For an ordinary slide-valve engine located but a short distance from the boiler and with fairly good pipe connection between the two, it is customary to assume a cylinder pressure 2 or 3 lb. less than the gage pressure in the boiler. This, of course, has reference to the full cylinder pressure before the cutoff valve closes. The mean effective pressure in the cylinder is considerably less than this initial pressure depending on the point at which the engine cuts off steam, amount of clearance and other data.

QUESTION—*What kind and size of hoisting engine would you install to hoist 1,200 tons of coal from a shaft 400 ft. deep in 8 hr. with a steam pressure of 70 lb. per sq.in. the weight of coal in each car being 3,000 lb. and allowing 20 per cent for resistance of engines, ropes and pulleys, and making due allowance for the time consumed in caging the coal?*

ANSWER—Assuming a double-compartment hoist in which the two cars and cages balance each other, and adding 20 per cent to the weight of coal hoisted each trip, to allow for frictional resistances, gives for the load on the engine 3,000 × 1.20 = 3,600 lb. Hoisting 3,000 lb. of coal each trip will require (1,200 × 2,000) ÷ 3,000 = 800 hoists, in a day of 8 hr. or 8 × 60 = 480 min. Again, assuming a speed of hoisting of 20 ft. per sec. and allowing, say 13 sec. per hoist, for caging the coal and starting and stopping each trip, gives 400 ÷ 20 + 13 = 33 sec. as the time required for making a single hoist. The total time of hoisting is, therefore, (800 × 33) ÷ 60 = 440 min. This will allow 480 — 440 = 40 min. for unavoidable delays each day.

To hoist a load of 3,600 lb., at a speed of 20 × 60 = 1,200 ft. per min., will require (1,200 × 3,600) ÷ 33,000 = 130.9 effective horse power. Then, assuming a ¾ cutoff, giving a mean effective pressure of, say 60 lb. per sq.in. in the steam cylinder, and taking the ratio of length of stroke to diameter of cylinder as 1.5, the engine making, say 450 strokes per minute and having an efficiency of 90 per cent, the required diameter of the cylinder is

$$d = 80\sqrt[3]{\frac{130.9}{0.90(60 \times 1.5 \times 450}} =$$

say 12 *in.*

The length of stroke is then 1.5 × 12 = 18 in. and the size of engine required is 12 × 18 in.

QUESTION—*It is required to raise 800 loaded mine cars, in 8 hr., in a two-compartment shaft, 400 yd. deep. Give the general dimensions of the engine, drum, diameter of rope, etc., necessary to properly perform the work. Assume the weight of the coal to be 3¼ tons, the weight of the cars 1½ tons, the weight of the cage 1¼ tons and the steam pressure 90 lb. per sq.in.*

ANSWER—The load on the rope when the cage is at the bottom of the shaft is: coal, 3¼ tons; cars, 1½ tons; cage, 1¼ tons; total, 6 tons; to which must be added, say 500 lb. (¼ ton) for friction. In estimating the size of rope required, allowance must be made for the weight of the rope itself, based on the weight of a 1-in. rope (1.58 lb. per ft.), the weight increasing with the square of the diameter of the rope. The breaking strain of a 1-in., cast steel, 6-strand, 19-wire hoisting rope is 39 tons. Then, using a factor of safety of 8, in this deep shaft (1,200 ft.), the diameter of the required rope will be given by the formula

$$d = \sqrt{\frac{8 \times 6\frac{1}{4} \times 2{,}000}{39 - 1.58/2{,}000\ (8 \times 1{,}200)}} =$$

1.26, say 1¼ *in.*

The weight of this rope is $1.58(1\frac{1}{4})^2$ = 2.45 lb. per ft. and the total weight of the rope hanging in the shaft is 1,200 × 2.45 = 2,940, say 3,000 lb.

The next step is to compute the unbalanced load on the engine. In a double-compartment shaft, the two cages and two cars balance each other, which makes the unbalanced load on the engine: coal, 3¼ × 2,000 = 6,500 lb.; rope, 3,000 lb.; friction, 500 lb.; total, 10,000 lb.

In order to avoid an undue bending strain on the rope, the minimum diameter of drum, for a 1¼ in. rope of 6 strands, 19 wires, should be 50 times the diameter of the rope; or 50 × 1¼ = say 60 in. or 5 ft.. When hoisting at a speed of 2,400 ft. per min., a 5-ft. drum must run a speed of 2,400 ÷ (3.1416 × 5) = 152.8 r.p.m. A direct-connected engine will therefore make 2 × 152.8 = 305.6 strokes per min.

Now, assuming a maximum speed of hoisting, for this depth of shaft say 40 ft. per sec. (2,400 ft. per min.), gives for the time of making a single hoist, allowing, say 13 sec. for caging the coal, 1,200 ÷ 40 + 13 = 33 sec. But, in order to hoist 800 cars in 8 hr., the total time consumed in hoisting is (800 × 33) ÷ 60 = 440 min. This allows 8 × 60 — 440 = 40 min., for unavoidable delays in a day of 8-hr.

Again, hoisting a load of 10,000 lb., at a speed of 2,400 ft. per min., assuming the efficiency of the engine is 90 per cent, gives for the indicated horsepower of the engine (10,000 × 2,400) ÷ (0.90 × 33,000) = 808 hp. Then, assuming a direct connected slide-valve engine, cutting off steam at ⅝ stroke, the mean effective steam pressure in the cylinder, corresponding to 90 lb. gage pressure, is, say 70 lb. per sq.in.; and assuming the ratio of length of stroke to diameter of cylinder as 1.5, the diameter of steam cylinder required is

$$d = \sqrt[3]{\frac{808}{70 \times 1.5 \times 305.6}} = \text{say } 24.\ in.$$

The length of stroke is then 1.5 × 24 = 36 in. There will be, therefore, required for this hoist a direct-connected 24 x 36 in. slide-valve engine, running at a speed of 152.8 r.p.m. and winding on a 5-ft. drum.

Draft Legislation for President's Plan for Coal Agency; Hoover Price Raised to $4.50

By Paul Wooton
Washington Correspondent of *Coal Age*

Washington, D. C., Aug. 22.—Legislation intended to carry into effect the President's plan for a national coal agency, which is "to purchase, sell and distribute coal which is carried in interstate shipment," is being drafted in the Department of Justice. Two or three alternative propositions are being formulated, all of which will be submitted to the President's coal committee for criticism and suggestion before they are sent to the Congressional committees.

Secretary Hoover stated this morning that he anticipated that the Governor of Ohio would have no difficulty in arranging price matters with Ohio operators at the conference called to meet in Columbus to-morrow.

On the recommendation of the Governor of Tennessee the maximum price for coal being produced in that State has been increased to $4.50. This action was taken when the Governor certified that increased wage and production costs justified the higher maximum. Since the $4.50 price had been granted in West Virginia and Kentucky as well, it also was extended to Virginia.

The Fuel Distributor states that everything possible is being done to speed up the Lake movement and that the volume of coal moving to the Northwest has been increased materially by the new production from Ohio. Arrangements are being perfected to supply Michigan with a considerable tonnage of emergency coal. The State fund of $1,000,000 should be made available, the Fuel Distributor has advised the Michigan authorities, in the form of a bank deposit, so as to facilitate certification for the handling of coal orders.

Requests have been received from Missouri and Kansas asking that Service Order No. 23 be extended to the territory west of the Mississippi River. It is stated that the price of coal is being boosted in those states by competitive bidding, particularly on the part of railroads. Fuel Distributor Spencer, however, is of the opinion that the situation can be corrected through co-operation with the railroads operating in those states.

Advices reaching Washington are to the effect that all operators are on the point of signing the Cleveland agreement. It is fully expected here that all coal mines in the union field will be producing by next week.

A TRUCE, with the contestants retaining their arms and preparing for a resumption of hostilities on a larger scale, describes the situation in the coal industry. It is an opinion in Washington almost unanimously held that all the operators eventually will accept the Cleveland agreement. So far as government officials are concerned, they will have little patience with any other course. Their position is that the public's need of coal is more important at this time than any issue involved in the strike. The viewpoint of government officials and members of the Congressional bodies is important not so much from any law the government can invoke as from the fact that they are assured complete publicity for their opinions on this subject and in that way can crystallize public opinion.

The public does not recognize that this is a fight between an arrogant labor union and mine owners who want to manage their own property. On the other hand there is acute public consciousness that it is going to be difficult at best to get enough coal. There was public support for the operators' position early in the strike, based on the belief that it would mean cheaper coal if the operators were to win. Now it is recognized that for the operators to hold out longer would simply mean additional shortage and higher prices. The argument that it would result in lower prices at some future time is too vague to be impressive as winter approaches.

Despite these facts there are some who would like to see no further signatures affixed to the Cleveland agreement. If they have the courage to hold out, it is argued, and offer to take back their men at the 1920 wage scale, but without signing the Cleveland contract, it will not be long until the leaders cannot hold their men and a hole will have been kicked in the bottom of Mr. Lewis' boat. In some cases it might be possible, it is said, for separate contracts to be made with the men. Such a contract need differ only slightly from that adopted at Cleveland to keep the Cleveland settlement from becoming a national one.

The men might give their leaders trouble were they to be held out of employment for technical reasons after nearly five months without work. Since only 40,000,000 tons of production are represented by the Cleveland agreement today, there could be no large amount of strike benefits paid were the remainder of the operators to stand pat. Mr. Lewis has staked everything on the operators giving in before the men. It may be said, however, that those favoring such a course are in the minority. Even among the operators the majority seem to favor the resumption of work at the earliest possible time.

If the entire Central Competitive Field can get under way within ten days, it is believed that the situation can be tided over so that industry can be kept going. It is realized that the country's coal reserves are about gone. Widespread stoppage of industry will show itself soon unless capacity production is attained quickly. The ability of the country to produce coal is well known, therefore hoarding would soon cease. Such reserves as remain will be used up first with the knowledge that better prices are more likely to be obtained the longer purchases can be deferred.

The non-union fields are in a position to produce a record tonnage. Not only have many new mines been opened but it is predicted that all non-union operators will be paying the 1920 wage scale before Labor Day. All of this is on the assumption that normal transportation facilities will be available.

The suggestion has been made that since there will not be enough anthracite to go around, such supplies as become available should be allotted in a way that each community will know how much of that kind of coal is to be available. The average domestic consumer, secure in the knowledge that the strike is settled, is likely to heave a sigh of relief and expect to obtain his full quota of anthracite. Even those who realize that there must be extensive substitution will expect his neighbor to do the substituting and as a result a real attempt to obtain fuel for the winter may be delayed too long.

Secretary Hoover is outspoken in his praise of the large percentage of coal operators who have continued to sell coal at the agreed price when they could have had $8 or $10 for the asking. At the same time he deprecates in no uncertain terms what he refers to as "bootlegging in coal." He points out the impossibility of continuing such an arrangement indefinitely, especially when it must apply to a large number of additional districts.

To Restrict Prices at Reopening Mines

THAT the mines reopening in the union fields will be subjected to price restraint is foreshadowed in the following message from Secretary Hoover to Governor Davis, of Ohio:

As you will note from the President's message, the proposed federal legislation for price restraint even if passed must probably be limited to interstate movement of coal. But if we are to have proper protection of the public on mine prices for intrastate production and margins made on resale of coal wholesale and retail

it must be accomplished through agencies established by state governors. Moreover we need immediate action pending any legislation.

I am informed that coal mines now opening under the Cleveland agreement in Ohio are demanding from $7 to $10 a ton for coal. In the meantime the public utilities of Ohio are asking us for priority orders against Southern fields where the price is $3.50. You will recognize that in this situation if we are to give priorities as requested it would not be just either to the operators or to persons in great need of coal in other states in view of the additional supplies in Ohio.

I have had some communication with operators in Ohio who are anxious to do the fair thing by the public and I believe would welcome from you some sort of voluntary arrangement for establishing fair prices in Ohio. If you will inspect the prices made under the Garfield scale you will find that in the Pittsburg No. 8, district in your state, for instance, the average price for run-of-mine was about $2.50. The recent signed wage scale is a large increase over the basis in use at the time the Garfield prices were fixed. The situation warrants a generous handling from the point of view of the operators because they must have considerable margins to overcome the cost of reopening mines, but even generous treatment of the operator will be an enormous saving to the public over prices now being quoted from Ohio mines.

I cannot too strongly urged that if the people of Ohio and surrounding states are to be protected there should be secured a voluntary arrangement, with the necessary committees to enforce it under the direction of your fuel committee, by which some fair maximum price is fixed and similar voluntary arrangement and enforcement is set up in respect to wholesale and retail handling of coal. The Federal Fuel Distributor would gladly co-operate in making available such pressure as exists under priorities.

Governor Morrow of Kentucky after an examination of the situation in his state, where production costs are higher than in Ohio, because of short car supply, decided that $4.50 a ton for run-of-mine would be a fair price. There is no question that price levels in Kentucky, for instance, can be materially reduced as quickly as production becomes more regular and conditions more normal.

Governor Davis Asks Secretary Hoover To Name Ohio Coal Profiteers

IN ANSWER to a telegram of Mr. Hoover's on Saturday, Aug. 19, which said he had been informed that some Ohio operators, under the Cleveland agreement, were asking $7 to $10 a ton for coal, and that "coal operators would welcome some sort of a voluntary arrangement for establishing a fair price for coal in Ohio," Governor Davis asked Secretary of Commerce Hoover on Aug. 21 to make known the names of Ohio coal operators who are profiteering, if he knows who they are, that "they may be dealt with as they deserve."

"The serious nature of your Saturday's telegram, both in its charges and in the grave effects on the Ohio public of a situation such as you outline, compels me to ask you for more specific information," the Governor's telegraphic reply to Mr. Hoover declared.

"If there are coal operators in Ohio who are so utterly calloused to every principle of fair play in dealing with the public as to seek to extort exorbitant prices such as you point out, the people of Ohio want, and I believe they have a right, to know who these concerns or individuals are. I request, therefore, that you make public the names of these operators that they may be dealt with as they deserve."

Middle West Keen for Coal as Negotiations Progress Toward End of Mine Strike

THE Middle West looked on anxiously as negotiations progressed in Chicago and Terre Haute late last week for the end of the mines' strike in those states. The facts are that practically every user of coal is seriously worried and some, including many a necessary industrial concern, are suffering for want of fuel. The strain through the past summer has been too much for the country. It didn't turn out to be a case of the non-union mines supplying all the summer needs of the land—thanks to transportation that did not transport. And while coal users are strong for an immediate resumption of mining, the miners of the region, especially those in southern Illinois, have been giving vent to their exultant cockiness by halting coal trains from Kentucky and compelling crews to set out cars of coal for them to destroy. This bit of tactics supplanted sniping at train crews, which was the order of the day in the week of the Lewis Cleveland conference.

In St. Louis and surrounding Missouri territory the coal famine is as painful as anywhere. Some industrials have closed down, public utilities are up against it for fuel, the Terminal Railroad is working from day to day on one day's supply, and the new state fuel committee which determined that 50 cars a day were necessary for only the essentials of the St. Louis region, could buy and deliver only 15 or 20 cars. When Kentucky shipments consigned to St. Louis were set out and dumped in southern Illinois by miners, E. J. Wallace, of the fuel committee, protested to Governor Small. Adjutant General Carlos Black, of the state guard, at once notified the sheriffs of the counties involved that if they could not stop that sort of thing, state toops would appear on the scene to do it for them.

In Wisconsin, public utilities have been wrought up by the recent announcement of the state railroad commission that no matter how necessary the industry, it would not get a coal priority order issued to it unless it had coal under contract. The railroad commission is handling the question of priority in that state to relieve the fuel commission. The railroad commission has sent out questionnaires to all big fuel consumers asking for stocks on hand as of July 31 and estimates of fuel needs for the next few weeks. Unless these are returned at once, the commission says, those who fail cannot get priority orders. On the whole, with stocks dwindled down to next to nothing, Wisconsin is in a bad way.

Illinois manufacturers are scraping the bottoms of their coal bins, the Illinois Manufacturers' Association announced in Chicago Friday after completing a survey of its members. Out of 499 replies received by the association, coal supplies on hand average but 18 days and that average was based on figures which in some instances were a week old, so that the actual average supply at the time the report was issued was good for little if any over a week's further run. The total tonnage for the 499 manufacturers was but 351,023. The best supplied plant was good for 40 days. More than 100 were out of coal and running on only what they could get from day to day. They all protested at having to pay $10 and $11 for "dirt" and for low-grade fuel which often contained 25 per cent ash and as little heating value as 9,000 B.t.u. and which was bought last winter for $1.50 and $1.60.

Confusion has arisen in many quarters over the priority plan. In Kentucky it is working better, probably, than anywhere else, and even there men with priorities cannot get the coal allowed them and when they do get it they often pay the top price of $8 or so instead of the Hoover level. In Missouri the commission has had exactly the same difficulty. In Indiana very little coal has been mined by the state's martial law scheme. In the northern states, where not a ton is coming out of the ground, about all the state committees could do was holler and in Illinois everything is at loose ends because, after appointing R. L. Medill as state food administrator, Governor Small did not name a committee to serve with Mr. Medill and there were no funds for the committee's work. Mr. Medill has set up an office in Chicago with volunteer aids and is receiving requests for coal priorities. But he doesn't know what to do with them when he gets them. So he merely forwards them to Washington, hoping they will do somebody some good. The Governor does not complete the fuel organization because he doesn't know yet what it will have to do or what its powers may be. He is waiting for developments.

After all this the difficulty which coal consumers—even those with government priority ratings—have been having in getting coal because strike-crippled railroads cannot haul it out of the fields, because railroads have confiscated fuel in transit and because unscrupulous jobbers have worked all sorts of tricks on them, and it is easy to see why the people of the Middle West want the strike settled at once and coal mined on any old terms. The pressure they have been bringing to bear upon the operators was calculated to hurry proceedings.

COAL AGE INDEX

The indexes to "Coal Age" are furnished free to all who ask for them. The index for the first half of 1921 is now ready for distribution, and a copy can be had by addressing a postcard to the subscription department of "Coal Age."

Watkins Deprecates Compulsory Arbitration

A TELEGRAM to President Harding under date of Aug. 14 has been made public by T. H. Watkins, president of the Pennsylvania Coal & Coke Corporation, who attended the Cleveland conference in company with two of the large central Pennsylvania producers—F. E. Herriman, president of the Clearfield Bituminous Coal Corporation, and D. C. Morgan, president of the Pittsburgh & Shawmut R.R. and the Allegheny River Coal Mining Co. According to Mr. Watkins within 24 hours after his telegram was dispatched, the Central Competitive Field conference, one of the chief causes of the quarrel, was disrupted, and machinery established for the immediate resumption of mining and an exhaustive public investigation in the industry prior to April 1 next. The miners' policy committee with the operators present agreed unanimously on the principle set forth in the telegram, which reads as follows:

It is my judgment that a prompt settlement of the coal strike now hinges upon the issue of compulsory arbitration as against compulsory inquiry applicable to the fixation of a scale of wage to become effective April 1, 1923, when the contemplated provisional wage scales will expire.

It is admitted by both parties to this dispute that a method must be found not only to procure a prompt resumption of mining but to prevent a recurrence of this deplorable crisis.

It appears to be the opinion of many operators that the only effective way to guarantee the peaceful negotiation of the wage scales to become effective April 1 next is to secure from the United Mine Workers at this time a commitment to submit their case to arbitration and to bind themselves now to accept the award of arbitrators on April 1 next.

An agreement to accept arbitration for April 1 next cannot be secured from the United Mine Workers willingly, in my judgment. An agreement wrung from an unwilling party is dangerous and not conducive to the future peace and harmony which is earnestly sought by all parties concerned. The whole principle of compulsory arbitration is at variance with the traditions and spirit of American industry if not with the Constitution, just as the present national strikes which deprive the public of the necessities of life are in violation of every elemental principle of civilization and fair play.

The question of compulsory arbitration in future disputes was exhaustively studied by the Roosevelt Anthracite Strike Commission of 1902, of which I had the honor to be a member. The seven members of this commission unanimously reported to President Roosevelt as follows:

"In order to secure the public against long-continued controversy and to make a coal famine or a famine in any other direction practically impossible we deem it essential that there should be some authority to conduct just such investigations as that you called upon us to make.

"There are some who have urged the commission to recommend the adoption of compulsory arbitration, so-called, as the means of securing this desired result, but we cannot see our way to recommend any such drastic measures. We do not believe that in the United States such a system would meet with general approval or with success. Apart from the apparent lack of constitutional power to enact laws providing for compulsory arbitration our industries are too vast and too complicated for the practical application of such a system.

"The public has the right when controversies cause it serious loss and suffering to know all the facts and so be able to fix the responsibility. In order to do this power must be given the authorized representatives of the people to act for them by conducting a thorough investigation into all the matters involved in the controversy.

"The chief benefit to be derived from the suggestion herein made lies in placing the real facts and the responsibility for such condition authoritatively before the people, that public opinion may crystallize and make its power felt."

After twenty years of subsequent experience in the coal industry I have had no occasion to doubt the wisdom of this award, and on the other hand have had ample evidence of the turmoil, the ill-feeling and the breach of faith that are the aftermath of compulsory awards.

The proposal for compulsory inquiry advocated by the Roosevelt commission of 1902 leaves both parties free to negotiate willingly on the basis of the recommendations of an impartial commission which has had access to all the facts and whose published report has crystallized public opinion, which in the last analysis is the only compelling force in this country or any other democratic society.

It is my judgment that the limited conference to which I am not a party, now in session in Cleveland, should disband and that the operators from all districts here represented should immediately assemble and call on the national scale committee of the United Mine Workers to meet them and any other operators, and to negotiate an agreement containing both a provisional wage scale effective until April 1, 1923, together with a provision for the appointment of a commission of inquiry composed of not more than seven impartial citizens of commanding public reputation for character and ability to make an exhaustice study of the whole industry and to transmit to you and the public prior to April 1 next its recommendations for the stabilization of the industry and the methods and bases of the coming wage scales.

If such an agreement can be consummated there is every reason to hope that reason and good faith can be restored in the coal industry, and that neither the operators nor the mine workers will wish to deviate materially from the recommendations of this commission or dare again to throttle the nation by depriving it of fuel. When the public, the miners and the operators are all fully apprised of the facts and the true conditions within the industry there will be no occasion for the exercise of force or compulsion in reaching future agreements. Should any wilful group, however, violate these principles after the public has been fully informed of the facts and advised as to the proper procedure within the industry, then the government, with the unanimous support of its citizens, can take such steps as are requisite to the public welfare.

The convictions expressed in this telegram are concurred in by other operators representing large and important interests who are now here with me.

I have good reason to believe that these views are concurred in by the United Mine Workers and that an endorsement by the majority of operators and the administration of the principle of compulsory inquiry as laid down by the Roosevelt Anthracite Strike Commission would result in a speedy and sound settlement of the coal strike.

Keeney Says Friendly Operators May Clean Up Mines Preparatory to Resumption

FEELING absolutely confident that, whatever settlement might be effected at Cleveland, northern West Virginia operators as a whole would fall into line, C. F. Keeney, president of District 17, let it be known while the Cleveland parley was in session that operators who had been friendly to the union and had made no effort to operate their mines on an open-shop basis or on any other basis, since April 1, might begin the work of cleaning up the mines preparatory to operation. The statement made by Keeney was as follows:

"Operators who have been favorable to the United Mine Workers since this suspension began, April 1, 1922, have permission to clean up their mines, provided they pay the former scale with the check-off dues and assessments, with the understanding that they will not try to dump any coal until the settlement is effected between the operators and the United Mine Workers of America. This does not, however, apply to the operators who have been unfair with the United Mine Workers of America since this suspension took place and have attempted to operate their mines on an open-shop basis. If after the mines have been cleaned up for the operators who have been favorable a contract has not been reached we will ask our men to again cease work until further notice from the United Mine Workers of America."

As for the operators listed as unfair most of them are now operating their mines so that refusal of permission meant nothing in their case.

Miller Calls Special Session of Legislature To Name Fuel Administrator

GOVERNOR MILLER issued a proclamation Aug. 21 calling the New York State Legislature into extraordinary session for Monday, Aug. 28. The primary object of the call is to create a fuel administrator, clothed with sufficient authority to regulate equitable distribution and fair prices of fuel in this State during the coming winter.

A few weeks ago Governor Miller, without any particular authority of law, named a state fuel commission consisting of a number of representative people, of which Eugene H. Outerbridge was made chairman. Mr. Outerbridge has been forced to resign because of ill health, however. Prof. Charles E. Lucke, of Columbia University, will take Mr. Outerbridge's place.

This commission has been making an informal survey of fuel on hand in the state, the sources of supply and the means of distribution, and it is upon the basis of the report of this informal commission to the Governor that the Legislature will be asked to clothe officially a state fuel administrator with legal authority over distribution and price fixing.

Quiet in Utah; One Guard Troop Withdrawn

THERE is little change in the strike situation in Utah. All is quiet on the surface. One troop of the National Guard has been sent home, but at the request of the community from which it was drawn and because it was feared the crops were in danger of going unharvested. The withdrawal of the troop gave the public the impression that the strike was collapsing. A correspondent of *Coal Age* inquired of a state official if it was the intention to recall all the members of the Guard, and he replied "Very far from it!"

Borah and Winslow Coal-Commission Bills Reported Favorably; Early Passage Forecast

THE Senate Committee on Education and Labor and the House Committee on Interstate and Foreign Commerce both ordered favorable reports on Aug. 22 on bills to create a fact-finding commission to investigate the coal industry. The Senate committee adopted the Borah bill with modifications and the House committee adopted the Winslow bill, which was introduced only Monday.

Efforts will be made to speed action on each measure in the respective houses where each is pending. The Borah bill, which was introduced several weeks ago, provides, as modified, for a commission of five members to be named by the President without restriction as to personnel. As originally drawn this bill provided a commission of three—one from the coal operators, one from the union miners and the third from the general public. The salary to be paid was reduced to $7,500 a year today from the original figure of $8,000. The committee modified the provision calling for a report on the "necessity" of nationalization of the mines to read the "wisdom" of such a step. The time for submission of a report was reduced from nine months to five. The commission would report on a standardized day's work as well as a standardized cost of living.

The Winslow bill, introduced in the House by the Massachusetts member, who is chairman of the Interstate Commerce Committee, was agreed upon by the committee only after six hours' debate Monday and Tuesday. The House bill was drafted after Representative Winslow had had a conference with President Harding. Some of its provisions were rephrased but there was no material change made in sense from the original text, which is as follows:

"That for the purpose of securing information in connection with questions relative to interstate commerce in coal and other questions and problems arising out of and connected with the coal industry, there is hereby established a Governmental agency to be known as 'The United States Coal Commission,' to be composed of not more than nine members to be appointed by the President of the United States. No member of the United States Senate or of the House of Representatives or person who has any interest in or is connected with the coal industry shall be eligible to serve on said commission. Each member of said commission shall receive a salary of $10,000 a year. Said commission shall cease to exist one year after the taking effect of this act.

"It shall be the duty of said commission to investigate and ascertain facts in the coal industry as to ownership of coal mines, prices of coal, wages, wage contracts, conditions of employment, distribution, waste of coal, profits realized by owners or operators of coal mines or by other persons or corporations having to do with the production, distribution or sale of coal, and any other material facts in connection with the coal industry generally and the organizations and persons connected with it. Said commission shall report to the President and to Congress its findings of fact and such recommendations as to methods and measures as in its judgment will promote continuity of production and efficiency in mining and distribution and maintain the uninterrupted movement of coal in interstate commerce and safeguard the interests of the workers, operators and the general public. Said commission shall submit its first report not later than Jan. 1, 1923.

"The said commission shall have power to administer oaths, subpoena and examine witnesses and to compel the production of any book, paper, document or other evidence, and to take the deposition of any person before any person having power to administer oaths. In the case of a deposition, the testimony shall be reduced to writing by the person taking the deposition or under his direction.

"No person shall be excused from so attending and testifying and deposing or from producing any book, paper, document or other evidence on the ground that the testimony or evidence, documentary or otherwise, may tend to incriminate him or subject him to a penalty or forfeiture; but no testimony, deposition or evidence taken under this act shall be elsewhere used in any prosecution of any person who has so testified, deposed or produced any such book, document or other evidence. But no person shall be exempt from prosecution and punishment for perjury committed in so testifying, and this act shall not be construed as exempting any person from attending and testifying elsewhere or as denying the right to compel the production of any book, document or other evidence elsewhere in any action or prosecution.

"Any member of the commission or agent of the commission duly authorized in writing shall at all reasonable times for the purposes of examination have access to and the right to copy any book, account, record, document, correspondence or paper relating to any matter which the commission is authorized by this act to investigate.

"Any person who shall willfully refuse to attend and testify or depose, or to produce or permit access to any book, account, record, document, correspondence or paper as herein provided for, or who shall testify or depose falsely in any material particular, shall upon conviction be punished by a fine of not more than $5,000 or by imprisonment for not more than one year, or by both such fine and imprisonment.

"The commission may appoint, remove and fix the compensation of such employees, make such expenditure and make such rules and regulations as may be necessary for the efficient administration of this act. The necessary expenses of the commission shall be allowed and paid upon the presentation of itemized vouchers therefore, approved by the chairman of the commission.

"There is hereby authorized to be appropriated out of any money in the treasury not otherwise appropriated, the sum of $500,000, or so much thereof as may be necessary, to be available until expended, for carrying out the provisions of this act."

It is the administration's plan, it was revealed at the White House on Tuesday, to constitute the fact-finding commission, if Congress should authorize one, entirely of representatives of the public. To attempt partisan representation on the commission would be difficult, it was pointed out, because of the different elements within the industry which would have to be taken into consideration. Particular reference was made to the desire for separate representation on the part of the anthracite industry, the collective bargaining fields and the non-union fields. The chief desire at this time is to create a commission in the interest of the American public, particularly since the coal operators and mine workers are creating their own machinery for a study of the situation.

The following telegram was sent by A. M. Ogle, president of the National Coal Association, from New York, Aug. 16, to President Harding:

"The strike in the bituminous coal fields emphatically has demonstrated the immediate need of a non-partisan tribunal that will thoroughly investigate, in the interest of all parties, every phase of the industry and make public at an early date its findings with such recommendations as it may deem proper and advisable. Coal mining is an involved and intricate industry and great confusion exists concerning it not only in the public mind but within the industry itself.

"The immediate resumption of mining may be most important in the minds of many but if we are to avoid further conflict in the mining industry, beginning April, 1923, resulting in inconvenience to the consuming public and in interference with industrial progress, all the essential facts must be investigated promptly and given full consideration in order that a proper solution may be determined. Accordingly we urge upon you the advisability of appointing such a commission without delay and I can assure you the fullest co-operation and support in such action."

Wage Increases in Non-Union Fields Cause Price Advance of $1

ACTING upon recommendations set forth in a telegraphic communication from Governor E. F. Morgan, of West Virginia, the Federal Fuel Distributor on Aug. 19 instructed district fuel committees that the recommended fair price for coal from all West Virginia districts has been raised to $4.50 per ton. The previous fair price prevailing in most West Virginia districts was $3.50 per ton. Governor Morgan's telegram was as follows:

"Recent wage agreements between operators and United Mine Workers providing for resumpting of work on the scale effective when the strike was declared make imperative a new wage scale in the non-union districts—Logan, New River, Pocahontas and Williamson—of West Virginia. Production from these districts has prevented fuel famine and suffering during the nation-wide strike and I respectfully suggest that the price of $4.50 per ton fixed in western Kentucky be approved for West Virginia to enable West Virginia to meet scale fixed in new agreements and accelerate coal production."

This with similar increases in price to $4.50 in Tennessee and Virginia on Aug. 21 bring all except Alabama to a new and higher level. Wage advances in the non-union fields to the 1920 level are becoming general. They will absorb from 75c. to the full dollar the advance in prices recommended by the several governors and accepted by Washington.

In answer to many inquiries as to the application of the brokerage commission of 8 per cent in addition to the Hoover fair prices for coal, it has been ruled by Secretary Hoover that where orders are placed by the Federal Fuel Distributor through district committees, with selling agents or wholesalers representing mines, a commission not to exceed 8 per cent of the Hoover fair price for the district in which the mines are located may be added for their service, making the f.o.b. price to the purchaser the Hoover fair price plus a commission of not to exceed 8 per cent. Not more than one commission can be added on any shipment in any circumstances.

With reference to prices and price agreements Secretary Hoover on Aug. 18, 1922, wrote to Senator Borah, saying:

The situation has now reached a point where even if production is resumed, there must be more authority for the effective control of distribution and possibly of prices pending readjustment of the situation. It is difficult to determine at what stage the initiation of wide legislative measures with all their legal and administrative difficulty and expense would be justified, owing to the unknown contingency of resumption of production. For instance, if the President's arbitration proposal had been accepted and production begun, and had the rail strike not supervened, prices and distribution would have quickly readjusted themselves naturally.

Even assuming production is now resumed, the almost total exhaustion of stocks, the limitations upon transportation not only as a consequence of strike but also with the usual fall peak in commodity movement, the necessity to accumulate large supplies at upper lake ports before transportation freezes, the necessity to make a forced drive of anthracite into the hands of householders, have all accumulated until it seems to me we must have something more than present authority to control distribution and to stiffen the voluntary agencies engaged in the situation. Whether price control will be necessary, and how far necessary, can only be judged from day to day.

You are aware of the legal complexities. I am advised that the federal authority in the matter outside of war does not extend beyond the control of coal moving in interstate commerce, or for the maintenance of interstate commerce. Therefore any effective organization for control of price must depend upon the state authorities erecting such complementary machinery as will protect their citizens on coal produced and consumed within their own boundaries, and against undue margins on the resale of coal, whether imported into the state or produced within it. I am advised that the Federal government can set up legislation that would provide for the movement of coal at fair prices over the boundaries to consuming states. From that point forward the responsibility must rest with the state.

You are aware that this tangled legal position was the reason why I undertook, on May 15 last, to set up a voluntary plan with coal producers for the restraint of prices. It is worth examining these results as bearing upon the need for legislation. At that time prices were agreed upon based on the Garfield scale and ranged from $2.20 to $3.75 for coal at the mine wherever such voluntary arrangements could be made. This became effective among operators producing about 85 per cent of the current coal and served to restrain the rise in price until about the middle of July, despite the fact that a minority of operators who had refused to agree were securing as much as $10 a ton for coal. After July 15 one or two districts withdrew from the arrangement, and individual operators began to break away in some other districts, although a majority of the production has held to its undertaking right down to the present moment and operators have denied themselves literally millions that they could have obtained if it were not for their desire to maintain themselves and their industry in public repute. I enclose for example a statement showing the coal sold under the fair price in the smokeless fields as compared with the profiteer coal from those districts.

The approaching exhaustion of stocks and the rail strike in the latter part of July started a buying panic and it became necessary for the Interstate Commerce Commission to establish priorities in favor of public utilities and essential industries with respect to movement of the available coal. Mr. Spencer was appointed Fuel Distributor to co-operate in the distribution of coal under these priorities and the necessary administrative machinery in various districts was erected by which holders of priority orders could be directed to those operators who co-operated in protecting the public on prices. This plan was effective in restoring the situation so far as operators were holding to their agreement or where there was a car shortage and therefore preference could be given in choosing the coal operator to buy from. It was not effective, however, where there were ample supplies of cars.

Parallel with this organization, the Governors of the different states were appealed to to set up local organizations that would restrain speculation within their boundaries and that would secure just distribution of such coal as we could direct to them for purposes of their citizens. The states have acted with varying efficiency in the matter, but certainly the responsibility rests upon their shoulders for failure in these particulars. I enclose a memorandum showing this extension of organization.

Through these arrangements approximately 70 per cent of the coal is moving from the mines today on the fair price basis but such a voluntary organization cannot be extended over the entire production with the resumption of mining, and in any event the agreements with non-union mines expire with the strike. Moreover, some of the fair price coal is subsequently used for speculation.

Your statement as to the rise in prices is literally correct. These instances mostly represent coal resales at speculative prices from stocks where state organizations have not been effective and where coal has been drawn from the minority of coal operators who have refused to co-operate in the voluntary restraint of prices. Even the $6 25 average price you mention means an average of a lot of decent men selling fair price coal with a minority of bootleggers selling it up to $12. Most of the co-operation coal which moves on the fair prices does not appear in the markets because it moves on priority orders directly from the producer to the consumer. Contracts have of course been to some extent superseded by priority orders.

Shipments from Pocahontas field, West Virginia, showing entire product and amount thereof sold during June, July and to Aug. 15 at or below, and above the fair price:

June—At and below fair price	1,981,776 tons
July—At and below fair price	1,225,930 tons
Over fair price	50,370 tons
To Aug. 15—At and below fair price	708,215 tons
Over fair price	25,185 tons

Fair Price Withheld in Pennsylvania

The establishment of a fair price for soft coal in Pennsylvania is being withheld by the Fuel Commission in the hope that production will increase to a degree that will warrant the action.

With less than 20 per cent now being dug, the commission feels that to establish a price at this time would stop production, the very thing that both national and state bodies are opposing.

Operators say that it would stop production, and the thing that the people are now interested in is coal for the winter. The supply is now very low, and the Fuel Commission points out that many industries will suffer during the winter. Many of the operators have agreed to recognize the price established.

Interstate Commerce Commission Cancels War Time Assigned-Car Rule

THE Interstate Commerce Commission has canceled the assigned-car rule promulgated by the Railroad Administration during the war. This order does away with assigned cars entirely except those assigned under Service Order No. 23. The announcement in this connection follows:

"The Commission considers that the application of the so-called 'railroad assigned car rule' as carried in paragraph 8 of Supplement of U. S. Railroad Administration Car Service Circular No. 31 is inconsistent with the plan of priorities prescribed in Service Order No. 23 as amended by the Commission as necessary to meet a national emergency, and that rule should not be invoked by railroad carriers subject to the provisions of that Service Order as against the priorities therein required, during the continuance of the order and emergency declared by the Commission. Carriers must meet their needs for fuel in some way which is consistent with the Service Order and not in conflict therewith.

"The whole subject of the propriety of the rule mentioned is before the Commission in a formal proceeding, and this announcement is not to be taken as prejudging or prejudicing the decision to be made in that case, in which the record has not yet been completed."

Accepting Cleveland Agreement, Illinois Operators In Part Sign as Individuals

By E. W. Davidson
Western Editor of *Coal Age*

ILLINOIS made peace with the miners late Tuesday afternoon in Chicago, on the exact basis laid down at John L. Lewis' conference with operators in Cleveland. No arbitration is provided for. Illinois did not sign solidly as a state, however. After a final fight among the operators, President Frank Farrington for the union accepted the signatures of the Fifth and Ninth District Operators' Association as a unit, the Illinois Operators' Association as a unit except the Peabody Coal Co. and the Old Ben Coal Corporation, both of which signed individually, and of all the members of the Central Illinois Association as individuals. The agreements, all identical, were signed late in the afternoon and before dark mine-plant whistles all over Illinois were sounding the three joyous blasts which meant work the next day—work the first time since April 1—and a complete union victory.

Of the eighty million tons represented, about twenty million tons signed individually, led by the Peabody interests and the Old Ben Corporation, which made a mighty fight on Tuesday, the last of five perspiring, hot-worded days of conference. They argued that group signing of any contract with the miners would expose the operators again to indictments such as they suffered after the 1919 contract was made.

Thus the fight in Illinois ended with defeat of the operators who were holding out so solidly for arbitration. That issue was lost in the struggle early at Chicago. During the five hard days Farrington spent a lot of time trying to get a contract at the old wages for nineteen months and finally everybody quit struggling to overdo the Lewis plan and went back to it in its entirety, signed both collectively and individually and rushed plans for getting coal out of the ground.

The momentous Chicago conference, full of possibilities for unexpected things because both Farrington and the operators were dead against signing a Lewis-made agreement, convened Friday morning at 10 o'clock. Wise operators went into that session predicting under their breaths that not quite all the surrendering was going to be done by their side. Indiana eyes and Indiana ears were trained on the meeting, for the Indiana men had already met John Hessler, Hoosier state union president, over in Terre Haute and had adjourned until Monday in order to see what Illinois would do beginning at the zero hour of 10 Friday.

Little enough was done. A process of taking plenty of time to this serious business was adopted. At the request of Farrington, the conference adjourned from 10 until noon and then from noon until Saturday morning in order to give Farrington a chance to get his scale committee together and talk to them, he said.

The operators had met on Thursday and had announced that it was to be arbitration or nothing so far as they were concerned. Farrington, hearing of this, said it would have to be nothing, then, for he could sign no agreement that varied from the detested one prescribed by the Lewis meeting in Cleveland.

However, he and his scale committee took occasion to pay their respects to Lewis and the plan they said he compelled them to abide by. He said Lewis had "deserted Illinois miners" in the sectional scheme decided upon. They passed a resolution unanimously approving of the stand Farrington had taken at Cleveland against the Lewis nation-wide program of contract making. Farrington's stand there against Lewis had been that he would not sign any national agreement because no operators of his state were there and therefore the document, so far as Illinois was concerned, meant exactly nothing.

That was about all that happened in formal session Friday. After the noon adjournment both sides took themselves into shirt-sleeve sessions here and there and began the struggle to find a way to make a deal in Illinois that would meet three conditions: (1) Come near enough to Lewis' plan so that the International could not prove it to be in violation; (2) embarass Lewis to the utmost degree possible under the conditions; (3) embarrass the Illinois operators as little as possible.

Saturday morning the conference got away to a good start. It organized for its future meetings, both sides stated their case—the miners for the Cleveland plan though they condemned it, and the operators for arbitration—and then the conferees went into executive session behind doors that were by no means soundproof against some of the positive, full-blast articulation which ensued.

Farrington, speaking the miners' piece, recited the terms framed at Cleveland, repeating that the union in Illinois is compelled to come to an agreement with the operators only on those terms. W. K. Kavanaugh, of St. Louis, president of the 5th and 9th District Operators' Association, stated the operators' case, declaring for arbitration —"the American way" of settling industrial disputes—and renewing the operators' peace offer of Aug. 4 calling for a return to work of miners at the old scale while a non-partisan commission decided what the scale and working conditions should be after March 31, 1923. Farrington replied that arbitration would spell, for the union, the loss of most of the ground it has gained in recent years, and therefore could not be considered.

Long debate followed in which some sulphurous language was touched off. It ended at noon with the decision to take the matter out of the hands of the big and unwieldly conference for the time being and lay it in the hands of a committee of six to produce a plan of agreement and then to reassemble the conference. The committee of six consisted of the three operators' association presidents, W. K. Kavanaugh of the 5th and 9th, Rice Miller of the Illinois Operators, and Harry C. Adams of the Central Illinois Operators, and three union officials, President Frank Farrington, Vice-president Harry Fishwick and Secretary Walter Nesbit.

The one outstanding and vital declaration of the day by Farrington was that he absolutely would not sign any agreements with individual mine owners. All Illinois mines would go back to work together or none would go, he declared. This firm position by Farrington meant a good deal to the closely knit factions of operators who were making the fight for the state. It meant Farrington would do some of their own work for them by holding wobbly operators in line for a general state settlement whether they wanted to stay in line or not.

Saturday night the Congress Hotel, where the committee of six was working, was full of operators from all over the state who were hanging around the conference keen for the first chance to sign the dotted line and wire their mine superintendents to blow the whistle. More than one of them said flatly that they would have signed with Farrington just as fast as they could shove a pen had he let them. Moreover, they added, they were pulling strong for a quick decision. The idea of the conference stewing along in Chicago for a week or more trying to make an agreement was highly distasteful.

Nothing, however, came out of the committee of six all day and all evening Saturday.

Sunday morning the subcommittee settled down to it again and wrangled all day and well into the evening. The only thing that leaked out was that Farrington was proposing and the operators counterproposing all sorts of shifts and changes in a settlement of the Cleveland type but that nothing definite was determined.

The hope of Farrington seemed to be to obtain a contract to run nineteen months to April, 1924, at the old wages, instead of running only to next April, as Lewis

wished. In order to induce the operators to sign for such an extension Farrington offered various small concessions in the old working agreement, some of them calculated to give the mine owners greater leeway in hiring and firing miners. But the general sentiment was that Farrington didn't have enough to offer, no matter how willing he was to concede small inches. It appeared to be his plan to get an agreement which would put him in the position of obtaining more for the men of Illinois than Lewis had procured for the men of the whole country.

Monday morning the six went into their room and shut the door with the usual determined slam. All morning the session continued. At noon the operators of Illinois—some forty of them—assembled to hear what had been accomplished. The noon assembly had been arranged Saturday, when it was supposed that the dotted line would be ready for signatures. But it wasn't—much to the disappointment of everybody concerned. Farrington had come out of the morning session with a smile and a covert statement that the operators had conceded enough so that he thought an agreement would soon be made with no specific arbitration clause. The noon meeting broke up in thirty minutes with nothing accomplished beyond a rather indefinite report of progress to the operators by the three representatives on the subcommittee of six.

At 3 o'clock the six again slammed the door behind them. By this time tension in the committee had grown severe and nerves were rasping. For an hour the committee talked sharply back and forth. Then the door flew open and out tramped Farrington clamping on his hat. "If I can't get a chance to talk in this meeting, I'm through," said he.

It appears the controversy had grown quite heated. However, before he got far away he was pacified by an operator committeeman and so the subcommittee merely adjourned until evening to cool off. That night if anything was decided by the committee that fact did not leak out. But a level best effort was made because a separate meeting of the miners' whole scale committee was slated for Tuesday morning at 10, an operators' meeting at 11 and the reconvening of the joint conference at 12, and if no final report was ready for that noon session nobody knew how serious a crash might ensue.

The Tuesday struggle became hopelessly tied up during the middle of the day when, with arbitration and the nineteen months proposition both scrapped, there remained only a battle among operators as to whether they would sign in a group or individually, and whether the miners would sign them both ways. When the committee of six could not pull the operators together, Farrington got permission of his men to sign them both ways. The final general conference was called, the two-way plan was agreed upon and the agreement was signed, thus ending the strike in Illinois.

Big Association Groups Slow to Accept Cleveland Pact

PROGRESS, slow but apparently sure, is being made over the country in the resumption of mining in the union coal fields that have been on strike since April 1. In addition to the substantial increments to output furnished by the three large producers in central Pennsylvania, the Pennsylvania Coal & Coke Corporation, Clearfield Bituminous Coal Corporation and Allegheny River Mining Co., a number of the smaller operators have signed up and started their mines.

Meanwhile approximately 200 association coal operators of the central Pennsylvania field met at Clearfield on Aug. 17 and rejected the Cleveland agreement as a working plan and arranged with the United Mine Workers' leaders for a joint conference in Altoona on Aug. 21.

Following a meeting in Cumberland, Md., on Aug. 18, at which representatives of coal companies and individuals operating coal mines decided to refuse to recognize the miners' union, Maryland operators in the Georges Creek region, on Saturday, Aug. 19, posted notices at the mine openings that they would reopen on the 1920 wage scale.

At a meeting last week of the Southern Ohio Coal Exchange action was taken leaving the question of signing the Cleveland scale to the individual operators. The meeting was long and a good deal of opposition to the scale developed.

The central fuel committee at Washington was advised on Aug. 19 by George T. Poor, chairman of the Ohio Fuel Committee, that the production of coal in Ohio is expected to be practically on a normal basis by the first of this week with an anticipated possible output of 5,000 cars per day.

Numerous breaks from a policy of non-acceptance of the Cleveland agreement are reported in the ranks of the Pittsburgh coal producers. The majority of the association is holding out for a settlement with the men without the "check-off."

There will be no capitulation to the union on the part of Connellsville operators according to all reports from the field this week. Union officials have made it clear that any individual operator would be supplied with workmen if he accepted the Lewis terms. Operators have indicated that union membership will not bar them from employment here but it also has been made clear that there will be no recognition of the union.

The first material break in the ranks of operators in northern West Virginia came when fifty coal companies operating in that part of the state signed an agreement with the United Mine Workers on Aug. 17 to operate on a union basis under conditions prescribed in the Cleveland agreement. Among the larger concerns which signed the contract was the Consolidation Coal Co. The agreement was entered into after a meeting of the Northern West Virginia Association at which it was decided to take no association action. Despite this action most of the mines now operating in this field are on an open-shop basis.

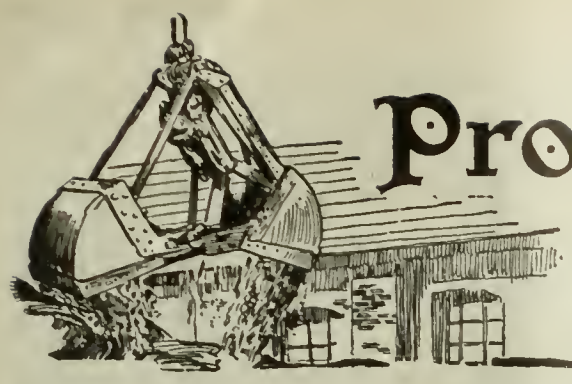
As this issue of *Coal Age* goes to press on Tuesday night no announcement has been received from the meeting of Indiana operators at Terre Haute, where acceptance of the Cleveland agreement has been hanging fire for several days pending the outcome of the Illinois conference described elsewhere in this issue.

Ogle Disavows Attempt to Deliver Illinois And Indiana at Cleveland

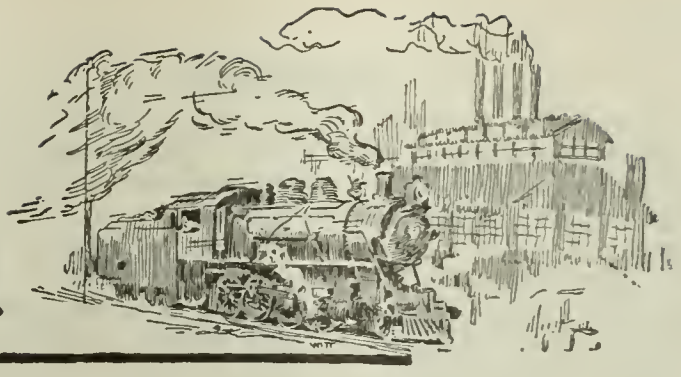
PERSISTENT reports from Illinois that A. M. Ogle, president of the National Coal Association, had exceeded his authority and had misrepresented his constituents when he held a conference on Aug. 6 with John L. Lewis, president of the United Mine Workers, at Pittsburgh, are discounted in the East. It is being pointed out that what Mr. Ogle did was to visé a plan of settlement outlined by attorneys representing both sides and to offer to put it before the union coal operators. It is reported that the Indiana operators are indignant over the insinuations from Illinois and are backing Mr. Ogle. By some it is charged that certain Illinois influences are at work to disrupt the National Coal Association.

Following the meeting of the directors of the association in New York last week Mr. Ogle sent the following word to the directors who were not present:

"Reports and rumors going out from Cleveland last week to the effect that I had agreed to deliver Indiana and Illinois into the meeting called by Lewis at Cleveland are completely without foundation. It seems strange that anyone with intelligence would make a charge so palpably absurd on the face of it and almost equally strange that anyone should give it credence. That such groundless rumors have been so readily accepted is probably due to the strain under which everyone has been laboring during the tense and trying situations that we have been compelled to meet almost daily. It is fortunate that our National Association has developed sufficient strength to stand steady against the shocks caused by such temporary dissensions and misunderstandings."



Production and the Market



Weekly Review

HESITATION continues to mark the progress of the industrial coal buyer. Those, like the railroads and utilities, that must have coal as they go along are getting it with the help of the government. They are not confining themselves to the Hoover prices either, but are paying premiums as they go. Current production is just about equal to the current consumption of the essentials, as transportation and utilities, with perhaps a little left over for such as hospitals. Everyone appears to be waiting for the union mines that have signed up with John L. Lewis to begin work. Last week there was little evidence that these long idle union mines furnished much coal to the country, but the indications are that more will be forthcoming this week. Estimates place the total output this week a little short of 6,000,000 tons.

Resuming Mines Not Yet Out of Trouble

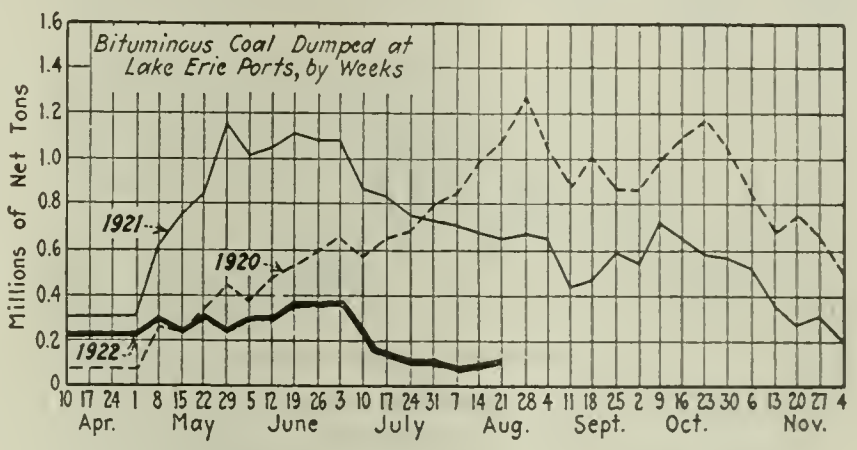
So far none of the large operators' associations has signed up as a group. This has not prevented individuals from putting their names on the dotted line and many mines in Ohio and Pennsylvania have started work in the past few days by this route. But those who attempt to start up find their troubles are not over, for men are scattered, some having left the country and others being away on other jobs, and it is going to take more time than many anticipated to get normal output from those mines that start, and much longer to get them all started.

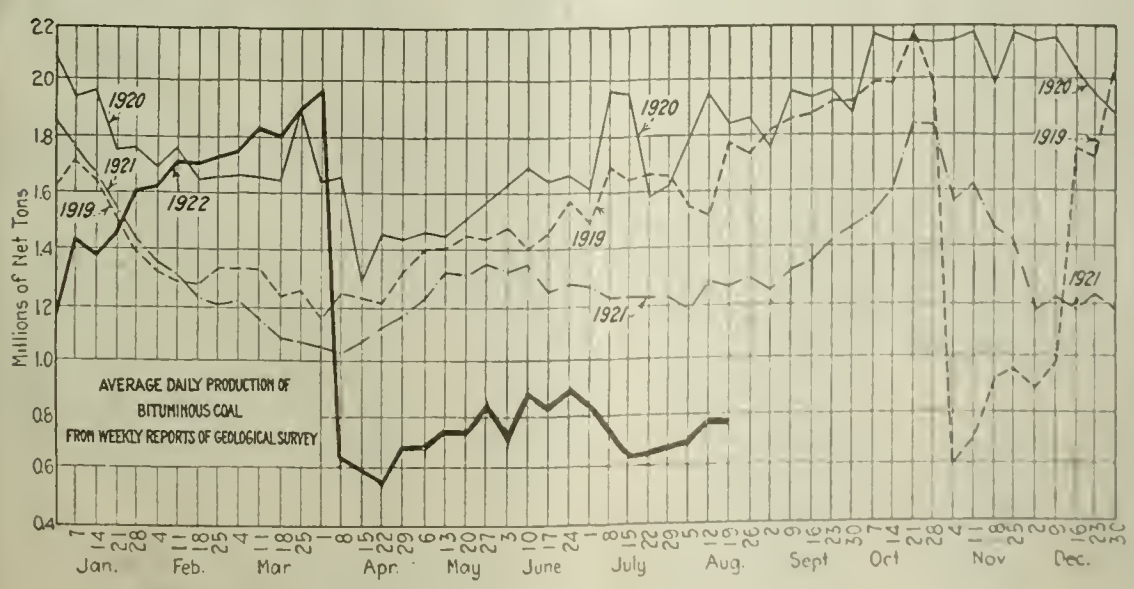
Thus the consumers who are sitting back waiting for a flush production are going to have to wait for some time. Their holding back is the factor mainly responsible for the continual staggering march of coal prices. It requires a stiff demand to hold prices at some of the high levels recorded in recent weeks and when a part of that demand is withdrawn the market sags. This is what happened during the past week: The result is that on Monday of this week *Coal Age* Index of spot prices of bituminous coal dropped 20 points to 530 from 550 a week ago. The corresponding average price was $6.41. One curious feature of this figure is that while the high range on Kentucky coal dropped $1.50 to $3 last week, the low range was raised a dollar by the change in the Hoover price from $3.50 to $4.50.

The government program of priorities is not working with all the smoothness that might be hoped for. In fact it seems to be functioning with some difficulty. Plainly the trouble is lack of complete co-operation and lack of understanding all around—even in Washington—of what it is designed and desired to accomplish. Certainly it has not operated so far as a price controller. The railroads are following orders as regards distribution but apparently have no influence on prices when it comes to placing cars.

A desperate effort is being made to get coal started up the Lakes and it is here that the real test is coming. Priorities have put coal up the Lakes before and doubtless will do so again.

Hopefulness prevails with respect to early resumption of mining in the hard-coal region and there is little more to be said on the subject. There is no hard coal to distribute and consumers have not become urgent for supplies. Coke is being turned into domestic fuel channels in order to get it moved under favorable priorities.





Estimates of Production

(Net Tons)

Week ended:	1921	1922
BITUMINOUS		
July 29	7,319,000	3,952,000
Aug. 5 (*b*)	7,186,000	4,312,000
Aug. 12 (*a*)	7,771,000	4,576,000
Daily average	1,295,000	763,000
Calendar year	239,686,000	212,185,000
Daily av. cal. year	1,271,000	1,120,000
ANTHRACITE		
July 29	1,750,000	27,000
Aug. 5	1,772,000	27,000
Aug. 12 (*a*)	1,772,000	23,000
COKE		
Aug. 5 (*b*)	55,000	111,000
Aug. 12 (*a*)	50,000	112,000
Calendar year	3,667,000	3,851,000

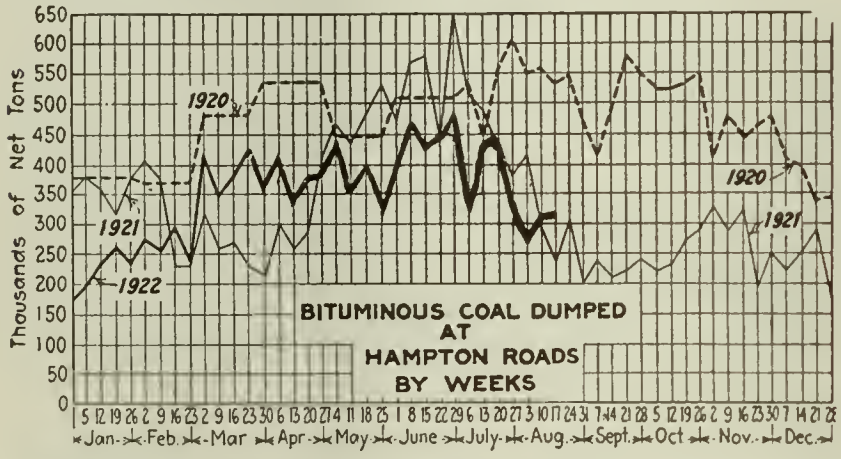
(*a*) Subject to revision. (*b*) Revised from [illegible] report.

BITUMINOUS

This is the first full week that any of the union coal miners have been at work and it will be some days before it can be ascertained how much they will add to the current coal output. According to the report of the Geological Survey for last week the best that was hoped for in the few days following the Cleveland conference was a few hundred thousand tons, mainly from Ohio and Pennsylvania. Illinois and Indiana were still holding out and but few mines had started up in the Southwest. Northern West Virginia was getting under way.

Great anxiety was being experienced by many operators about getting their mines to work now that they were willing to sign the pact that the United Mine Workers drew up at Cleveland, for every day at the high spot prices means many dollars of profit. Furthermore these operators are anxious to be the first to get to work, as they anticipate a decided car shortage when the districts as a whole get going.

Loadings on Monday, Aug. 14, according to the railroads, were 15,722 cars, a decrease of 3 per cent as compared with the week preceding. Thereafter they declined steadily to 12,530 cars on Wednesday. The loadings on Thursday, 13,463 cars, gave the first indication of shipments from mines reopened under the Cleveland agreement.



The following statement shows the number of cars on all railroads loaded daily:

	1st Week	12th Week	16th Week	17th Week	18th Week	19th Week	20th Week
Monday	11,445	15,311	12,666	13,267	15,102	16,229	15,722
Tuesday	11,019	16,622	10,821	11,571	11,446	13,729	12,971
Wednesday	11,437	17,032	10,932	11,461	12,447	13,368	12,530
Thursday	11,090	16,432	10,805	11,028	12,380	13,277	13,463
Friday	11,296	16,073	10,623	11,142	12,669	13,539	.....
Saturday	8,888	13,993	9,864	11,336	12,405	11,009	.....

Car supply improved in certain districts of southern West Virginia and Kentucky, but in Harlan County and adjacent fields of southeastern Kentucky and Tennessee



Coal Age Index 530, Week of Aug. 21, 1922. Average spot price for same period $6.41. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the total output of the United States, weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. (Pittsburgh District, Illinois, Indiana and eastern Ohio prices not included in figures for last week.)

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	July 24, 1922	Aug.7, 1922	Aug.14, 1922	Aug. 21 1922†
Smokeless lump	Columbus	$6.00	$5.60	$6.15	*$4.75@ $7.50*
Smokeless mine run	Columbus	6.00	5.25	5.75	*4.50@ 7.50*
Smokeless screenings	Columbus	5.50	5.10	5.65	*4.25@ 7.50*
Smokeless lump	Chicago	8.25	6.35	5.85	4.75@ 8.00
Smokeless mine run	Chicago	8.25	6.25	5.75	4.50@ 8.00
Smokeless lump	Cincinnati	5.40	5.90	5.60	*4.75@ 6.75*
Smokeless mine run	Cincinnati	5.25	5.50	5.50	*4.50@ 6.50*
Smokeless screenings	Cincinnati	4.90	5.40	5.40	*4.25@ 6.00*
*Smokeless mine run	Boston	7.65	8.90	10.15	*6.45@ 11.00*
Clearfield mine run	Boston	3.65	6.90	8.00	*7.00@ 8.25*
Cambria mine run	Boston	4.00	7.40	9.00	*8.50@ 9.00*
Somerset mine run	Boston	3.75	6.90	8.40	*7.50@ 8.50*
Pool 9 (Super.Low Vol.)	New York		8.65		8.00
Pool 9 (Super.Low Vol.)	Philadelphia		8.25	8.25	7.75@ 8.75
Pool 9 (Super.Low Vol.)	Baltimore	4.75	7.25	7.50	
Pool 10 (H.Gr.Low Vol)	New York	8.75	8.00	8.15	*7.25@ 7.75*
Pool 10 (H.Gr.Low Vol.)	Philadelphia		8.00	8.00	7.50@ 8.50
Pool 10 (H.Gr.Low Vol.)	Baltimore	4.75	7.25	7.50	**7.50@ 8.00**
Pool 11 (Low Vol.)	New York	8.25	7.25	7.65	*6.25@ 6.75*
Pool 11 (Low Vol.)	Philadelphia		7.85	7.85	*7.25@ 8.25*
Pool 11 (Low Vol.)	Baltimore	4.75	7.25	7.10	**7.50@ 8.00**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	8.75		7.60	
Pool 54-64 (Gas and St.)	Philadelphia		7.85	7.75	*6.00@ 7.25*
Pool 54-64 (Gas and St.)	Baltimore	4.75	6.25	7.50	7.50
Kanawha lump	Columbus	6.00	5.60	5.90	**4.75@ 8.00**
Kanawha mine run	Columbus	5.90	5.50	5.50	**4.50@ 8.00**
Kanawha screenings	Columbus	5.90	5.10	5.40	**4.50@ 7.50**
W. Va. splint lump	Cincinnati	5.15	5.85	5.60	*4.75@ 6.00*
W. Va. Gas lump	Cincinnati	5.15	5.85	5.60	*4.75@ 6.00*
W. Va. mine run	Cincinnati	5.25	5.50	5.50	*4.50@ 6.50*
W. Va. screenings	Cincinnati	$4.75	$5.10	$5 40	*$4.25@ $6.00*
Hocking lump	Columbus	5 75	5.85	6 15	**4 75@ 8 50**
Hocking mine run	Columbus	5.50	5.50	5 75	**4.50@ 8.00**
Hocking screenings	Columbus	5.50	5 35	5.35	**4 00@ 7.50**
Pitts. No. 8 lump	Cleveland	7.25	7 85	7.25	*5.00@ 7.25*
Pitts. No. 8 mine run	Cleveland	7.25	7 85	7.25	*5.00@ 7.25*
Pitts. No. 8 screenings	Cleveland	7.25	7 85	7.25	*5 00@ 7.25*
Midwest					
West Ky. lump	Louisville	10.25	6.35	6.35	*4.50@ 7.50*
West Ky. mine run	Louisville	10.25	6.25	6.25	*4.50@ 7.50*
West Ky. screenings	Louisville	10.25	6.10	6.10	*4.50@ 7.50*
West Ky. lump	Chicago	11 00	6.85	7.15	*4.50@ 7.50*
West Ky. mine run	Chicago	11.00	6.75	7.00	*4.50@ 7.50*
South and Southwest					
Big Seam lump	Birmingham	2.40	3.50	4.75	*2.50@ 6.00*
Big Seam mine run	Birmingham	2.35	3.20	3.85	**2 50@ 6.00**
Big Seam (washed)	Birmingham	2.50	3.50	4.00	**2.50@ 6.00**
S. E. Ky. lump	Chicago	9.40	6.35	5.85	**3 75@ 7.50**
S. E. Ky. mine run	Chicago	9.40	6.25	5.75	**3 50@ 7.50**
S. E. Ky. lump	Louisville	9 25	5.85	5.85	**3 75@ 7.00**
S. E. Ky. mine run	Louisville	9 25	5.75	5.75	3.50@ 7 00
S. E. Ky. screenings	Louisville	9 25	5.60	5.60	**3 25@ 7.00**
S. E. Ky. lump	Cincinnati	7 00	5 85	5.60	**3 75@ 7 50**
S. E. Ky. mine run	Cincinnati	5 00	5 75	5.50	**3 50@ 7.00**
S. E. Ky. screenings	Cincinnati	4 65	5 60	5.35	*4.25@ 6 00*
Kansas lump	Kansas City	5.00	5.25	6.00	
Kansas mine run	Kansas City	4.75	5.15	6.00	
Kansas screenings	Kansas City	4.25	4.90	6.00	

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown heavy type, declines in *italics*.
NOTE—Smokeless prices now include New River and Pocahontas.

transportation was for a time almost completely blocked. Western Kentucky also reported acute transportation loss.

There was no compensating increase in shipments from the non-union fields of Pennsylvania, according to the Geological Survey.

Final returns show production of all coal in the nineteenth week of the strike as 4,605,000 tons, including 29,000 tons of anthracite. In the corresponding week of 1921 the output of bituminous was 7,770,000 tons and of anthracite, 1,770,000 tons, a total for all coal raised of 9,540,000 tons; the year before that the total was 12,280,000 tons. Considering anthracite and bituminous coal as a common source of supply, the present weekly output is five or six million tons below normal.

Lake dumpings increased last week to 162,162 tons, of which 134,112 tons were cargo and 28,050 tons were bunker fuel. The Lake situation is disturbing. Under orders of the Federal Fuel Distributor all coal loaded on Monday, Wednesday and Saturday of this week in the Kenova-Thacker, Logan and Kanawha on the C. & O., Big Sandy, Hazard, Elk Horn and Harlan fields is to be consigned to the Lakes. The loadings from these fields on the corresponding days of two weeks ago were a little short of 400,000 tons. Lake shipments are now about 10,000,000 tons behind last year.

Not only is the movement of Lake coal behind past season's but the distribution of the coal actually dumped has differed from other years. Shipments to Canada have decreased more sharply than those to American destinations. Of the total dumped, only 11.7 per cent went to Canadian ports as against 28.5 per cent in 1920. There has been a great increase in shipments to Buffalo and other Lake Erie ports not ordinarily taking Lake coal. A total of 859,000 tons has been shipped to Lake Erie ports on the American side as against 12,555 tons in 1920.

Still more striking has been the increase in the proportion moving to Lake Michigan, to which 41.3 per cent of this season's dumpings has been consigned in comparison with 23.5 per cent two years ago. In like manner the sharpest decrease has been in the movement to Lake Superior. Only 715,000 tons—16.5 per cent of the total—had been consigned to American ports on Lake Superior up to July 31. Yet these ports absorbed 51.4 per cent of the movement in 1921 and 36.5 per cent in 1920.

The reserve of coal on the commercial docks at the head of Lake Superior decreased sharply during July whereas it normally increases at this season. According to the Northwestern Coal Dock Operators' Association, the stocks of bituminous coal at Duluth, Superior, Ashland and Washburn dropped from 1,498,000 tons on July 1 to 661,000 tons on Aug. 1. Stocks of anthracite declined during the same period from 364,000 to 170,000 tons.

In comparison with last year the present reserve appears very small, but it must be remembered that in 1921 stocks were above the average, says the Geological Survey.

STOCKS ON LAKE SUPERIOR DOCKS

Date	Anthracite	Bituminous
July 1, 1922	363,771	1,498,276
July 1, 1921	400,395	4,342,467
Aug. 1, 1922	170,450	660,988
Aug. 1, 1921	617,254	5,313,359

According to the Geological Survey mines in Pennsylvania, Maryland and northern West Virginia shipped less coal during the week ended Aug. 19 than during the previous week.

The all-rail movement to New England increased to 688 cars in the week ended Aug. 12 from 437 cars the week before. In addition to this figure 226 cars were forwarded to New England destinations by way of Rouses Point, up near the Canadian border. In the same weeks of last year the movement was in excess of 2,000 cars per week. Anthracite movement to the same territory was 226 cars during the second week of August, mainly of steam sizes.

A slight gain in tidewater dumping at Hampton Roads was recorded in the week of Aug. 17. In that week the total was 307,182 tons compared with 306,258 tons in the previous week. Many vessels are reported waiting for cargoes and the supply at the piers is gaining. Lamberts Point the N. & W. piers gained but Sewalls Point lost. The

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec., 1921	Jan. 1 to Apr. 1, 1922 Inclusive	April 3 to Aug. 5, 1922 Inclusive	Week Ended Aug. 5
U. S. Total	45.6	55.7	....	....
Non-Union				
Alabama	63.5	64.6	77.1	95.5
Somerset County	55.5	74.9	45.3	50.3
Panhandle, W. Va.	55.3	51.3	44.4	43.9
Westmoreland	54.9	58.8	83.7	88.7
Virginia	54.8	59.9	75.2	57.7
Harlan	53.3	54.8	No report	
Hazard	51.7	58.4	50.6	23.4
Pocahontas	49.8	60.0	69.5	47.7
Tug River	48.1	63.7	74.0	42.9
Logan	47.6	61.1	62.3	24.8
Cumberland-Piedmont	46.6	50.6	17.3	25.9
Winding Gulf	45.7	64.3	65.2	40.1
Kenova-Thacker	38.2	54.3	72.1	43.5
N. E. Kentucky	32.9	47.7	49.6	21.9
New River‡	24.3	37.9	30.0	35.2
Union				
Oklahoma	63.9	59.6	14.4	12.8
Iowa	57.4	78.4	0.0	0.0
Ohio, Eastern	52.6	46.6	0.0	0.0
Missouri	50.7	66.8	2.6	6.0
Illinois	44.8	54.5	0.0	0.0
Kansas	42.0	54.9	16.7	16.7
Indiana	41.4	53.8	0.0	0.0
Pittsburgh†	41.2	39.8	0.0	0.0
Central Pennsylvania	39.1	50.2	11.8	11.3
Fairmont	35.3	44.0	4.3	6.7
Western Kentucky	32.5	37.7	61.9	59.8
Pittsburgh*	30.4	31.9	0.0	0.0
Kanawha	26.0	13.0	6.0	8.6
Ohio, Southern	22.9	24.3	0.0	0.0

* Rail and river mines combined.
† Rail mines.
‡ Union in 1921, non-union in 1922.

Car Loadings and Surpluses

Cars loaded:	All Cars	Coal Cars
Week ended July 29, 1922	851,351	79,246
Previous week	859,733	76,374
Same week a year ago	786,178	146,095
Surplus cars:		
July 31, 1922	174,927	131,267
July 23	203,322	141,430
Same date a year ago	320,000	160,000

tidewater dumpings in the week ended Aug. 12 as reported by the Geological Survey follows:

TIDEWATER BITUMINOUS COAL SHIPMENTS FROM HAMPTON ROADS
(In Net Tons)

Week Ended	Foreign Cargo	Foreign Bunker	New England Cargo	New England Bunker	Other Coastwise	Total
July 29	7,776	22,878	197,948	5,889	84,452	318,943
August 5	21,300	15,132	183,051	3,116	104,358	326,957
August 12	8,676	19,442	170,333	3,027	105,193	306,671

ANTHRACITE

There is no change in the hard-coal situation. There is no production save a little river coal. Some pea is being lifted from mine storage in the region. All eyes are turned on the conferences between the operators and the miners at Philadelphia.

COKE

The production of beehive coke appears to have found a temporary level around 110,000 tons per week. Using reports of cars loaded by the principal coke carriers as a basis, the total output in the week ended Aug. 12 was estimated by the Geological Survey at 112,000 net tons.

For the country as a whole, the output of coke in the corresponding week of the past four years was as follows:

1918	575,000	1920	418,000
1919	387,000	1921	50,000

Thus it is seen that while the current rate of output is more than twice that in 1921, it is nearly 76 per cent below that in 1918, 1919 and 1920.

The past week in the Connellsville coke region has been marked by further increases in output of coal and coke to the extent of about 10 per cent above the previous week, and the resumption in a small way on open-shop basis of two additional operations; the Seventh Pool Coal Co. and the Martin plant of the Republic Iron & Steel Co. There was less violence during the past week than for several weeks.

Foreign Market And Export News

North American Orders Strain British Export Facilities; Production Nears Record

THE British market is very active. Prices are strong and the emergency demand from Canada and the United States is straining the exporting facilities of the country. Spanish demand is showing unexpected strength.

Exports to North America are expected to reach 200,000 tons per week and may soon exceed the pre-war record. Some American business extends into October, although most of the orders are for delivery within the next 30 days.

Production reached 5,122,000 gross tons during the week ended Aug. 5, according to a cable to *Coal Age*, the heaviest since early in April. The preceding week's output was 4,898,000 tons.

There is a slight lull in the north of England industry due to the fact that the entire output during August has been booked up, and shipping facilities beyond the end of this month are not certain. The Scottish market is disappointed at the non-materialization of American orders. It appears that Scotland was on holiday when the English pits were working, and were taking their time over filling the orders to America which they believed were ready to their hand. When the Scottish pits prepared to deal with the American requirements they discovered that no orders were coming their way. England and Wales had got busy, with the results that inquiries gravitated south.

The June audit in Wales, on which August wages are based, shows the worst figures since the National Agreement, and the proceeds were not enough to cover the standard costs. During this month revenue was £3,136,000 and costs £3,243,000. The owners have had to surrender £283,000. In these circumstances wages will remain on the minimum. The July audit will show little improvement, so that wages will remain about the same until October when the results of the American demand during August will be felt and wages will rise in sympathy. The only consolation the miners have is the regularity of employment.

French Feel Effects of U. S. Strike

Important purchases of British coals by the United States have been felt on the French market, which has materially improved since about the middle of July. Arrivals of British coals in France are decreasing. Pithead stocks are still so high that French collieries would particularly welcome a few substantial orders from America. The collieries of the Nord and Pas-de-Calais have a joint selling agency, Le Comptoir d'Expansion Commerciale des Mines du Nord de la France, 26 rue Saint-Jean, at Douai (Nord), and this organization could certainly arrange for coal exports to America as it did last year to Great Britain during the miners' strike in that country.

Other facts just now concur in improving the French market. A strike of river craft personnel on the Lower Rhine hinders the arrival of German coals; good deliveries are being made abroad of Sarre coals, which sell now in south Germany to the extent of 170,000 tons per month.

At a meeting of the Nord coal field miners' union, a resolution was adopted deprecating any reduction in wages.

Coal Paragraphs From Foreign Lands

ITALY—The price of Cardiff steam first was quoted at 42s. 3d., Aug. 19, according to a cable dispatch to *Coal Age*.

GERMANY—The production of coal in the Ruhr district for the week ended Aug. 5, according to a cablegram to *Coal Age*, was 1,731,000 tons.

Prices Soften at Hampton Roads

Vessel requirements registered at the piers expanded slightly during the past week, but there was no further tightening of the market here in consequence. Perhaps in keeping with the general relaxation of the market spot prices declined, although the fact that there is so little free tonnage in the market made the quotations nominal. Movement at the piers grew larger at Lamberts Point and at Newport News, but declined at Sewalls Point. Some delays to steamer calling for bunkers were reported. As a whole the bunker demand has not cut much figure in the market, however, as foreign trade vessels are taking their fuel on the other side. Among the vessels chartered or awaiting charter in the coal trade here is the largest fleet of sailing craft that has been anchored in Hampton Roads for several years.

Demands for tonnage for use in manufacturing plants and at public utilities appear to be following a more orderly and composed course, following the strike conference. Earlier in the month shippers here were beset with frantic appeals for small tonnages to avert what would-be purchasers described as serious crises.

Hampton Roads Pier Situation

	Week Ended Aug. 10	Week Ended Aug. 17
N. & W. Piers, Lamberts Point:		
Cars on hand	808	1,196
Tons on hand	49,220	64,710
Tons dumped	131,863	138,871
Tonnage waiting	71,500	101,375
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	512	502
Tons on hand	28,350	30,150
Tons dumped	80,861	53,065
Tonnage waiting	64,450	59,663
C. & O. Piers, Newport News:		
Cars on hand	408	323
Tons on hand	20,000	16,150
Tons dumped	60,721	82,334
Tonnage waiting	23,115	28,615

Export Clearances, Week Ended Aug. 17, 1922

FROM HAMPTON ROADS:

For Atlantic Islands:	Tons
Am. S.S. Lake Galisteo, for Curacao	3,743
For Cuba:	
Am. S.S. Charles Whittemore, for Santo Domingo	746

Pier and Bunker Prices, Gross Tons

PIERS

	Aug. 12	Aug. 19,†
Pool 10, Philadelphia		$11 50@12.00
Pool 11, Philadelphia		10.75@11 25
Pool 10, New York	$12.00@$12.25	12.00@12.25
Pool 11, New York	11.00@12.00	11 00@12 00
Pool 1, Hamp. Roads	9.50@11.00	*9.50@10.50*
Pools 5-6-7 Hamp.Rds.	9 50@11.00	*9 50@10.50*
Pool 2, Hamp. Rds.	9.50@11.00	*9 50@10.50*

BUNKERS

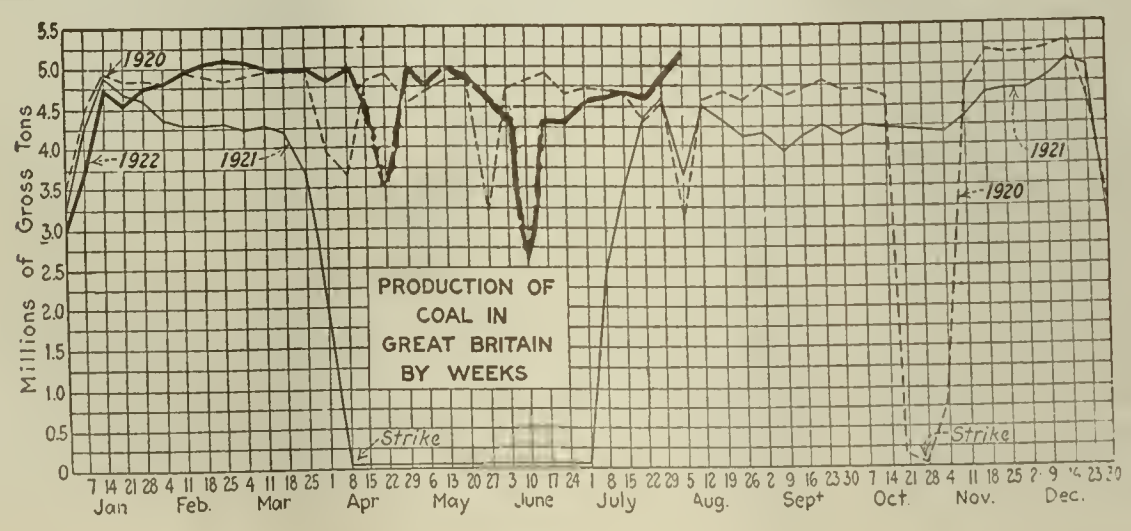
Pool 10, Philadelphia		$11.75@12.25
Pool 11, Philadelphia		11 00@11.50
Pool 10, New York	12.25@12.50	12 25@12.50
Pool 11, New York	11.25@12.25	11 25@12.25
Pool 1, Hamp. Rds.	9.50@11 00	*9 50@10.50*
Pool 2, Hamp. Rds.	9.50@11.00	*9 50@10.50*
Welsh, Gibraltar	38s. 6d. f.o.b.	**40s.6d. f.o.b.**
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s.6d f.o.b.
Welsh, Lisbon	38s. 6d. f.o.b.	**43s. f.o.b.**
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	38s. t.i.b.	**42s. t.i.b.**
Welsh, Algiers	38s. 6d. f.o.b.	*38s.* f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b.	65s. f.o.b.
Welsh, Madeira	42s. 6d. f.a.s.	**43s. f.a.s.**
Welsh, Teneriffe	40s. 6d. f.a.s.	**41s. f.a.s.**
Welsh, Malta	42s. 6d. f.o.b.	**44s. 6d. f.o.b.**
Welsh, Las Palmas	40s. 6d. f.a.s.	**41s. f.a.s.**
Welsh, Naples	38s. f.o.b.	**42s. f.o.b.**
Welsh, Rosario	52s. 6d. f.o.b.	57s. d f.o.b.
Welsh, Singapore	53s. 9d. t.i.b.	*52s. 6d.* t.i.b.
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Welsh, St. Michaels	50s. t.i.b.	50s. t.i.b.
Welsh, Alexandria	44s. f.o.b.	44s. f.o.b.
Welsh, Port Said	46s. 6d. f.o.b.	**49s.** f.o.b.
Welsh, Buenos Aires	50s. f.o.b.	50s. f.o.b.
Durham, Antwerp	30s. 6d. t.i.b.	30s. 6d. t.i.b.
Durham, Hamburg	26s. f.o.b.	26s. f.o.b.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	Aug. 12	Aug. 19†
Admiralty, large	29s.@31s.	**30s.@32s. 6d**
Steam, smalls	21s6d@22s6d.	**22s.@22s. 6d.**
Newcastle:		
Best steams	25s.@26s.	25s.@26s.
Best gas	25s.	25s.
Best bunkers	25s.	25s.

†Advances over previous week shown in heavy type; declines in *italics*.



North Atlantic

Trade Tastes Dose of Optimism; Prices Soften

Output Gains in Pennsylvania and Northern West Virginia Help Market —Southern Coals in Bigger Volume— British Fuel Disappoints—Priorities Absorb Most of Available Product.

INCREASE in production in Pennsylvania and northern West Virginia is proving a great help to the market along the northern Atlantic seaboard. These gains in output are small as mining is first resumed, but absence of car shortage and an evident purpose on the part of the miners to return to work again as soon as the individual mine owners sign the Cleveland contract has given the trade a dose of optimism and softened prices.

Demand is not insistent, but rather is holding back awaiting more production. Southern coals are in better volume at Northern ports. The first experiences with British coals, now flowing in, are not particularly happy. Some of our equipment is proving to be not adapted to this coal.

Priorities continue to absorb most of the coal available for the market.

NEW YORK.

The outcome of the Cleveland conferences and the probability that many mines that supply this market would soon reopen put a damper on the local demand last week. Quotations softened at various times during the week.

The enthusiasm which prevailed over the possibility of relieving the situation by the introduction of British coal was not so pronounced toward the end of the week when it became known that one of the public service corporations had experienced some difficulty in using it to advantage. During the first five days of the week there were 67,026 tons received here in eleven vessels, all of it apparently on order.

Southern coals are coming forward in good shape and with quotations at Hampton Roads ranging $10.25@$10.75, quotations c.i.f. New York harbor ranged $11.25@$12.25 in big bottoms and $13.00 in small barges.

The railroads are heavy buyers, although they have priority rights. Some dealers complain of having their coals confiscated. It was said that some railroads have been able to buy B. & O. coals at around $5 f.o.b. mine.

There is no talk of contract making and it is not believed that operators will be willing to bind themselves for the balance of the coal year. While some believe it will be possible to get at least $5 at the mine, others believe the minimum figure will be around $6.

FAIRMONT

Although the Cleveland conference created more or less of a feeling of uncertainty, operators not knowing to what extent the outcome might affect the mines already operating on an open shop basis, nevertheless producers continued to increase the output. About 220 mines were in operation, the largest number since the beginning of the strike. Prices were still on a high level, the maximum being about $7.25.

PHILADELPHIA

The general run of consumers seem to have taken it for granted that the Cleveland conference ended the coal strike and as a result they have ceased to inquire for coal. Some plants with barely enough coal to keep them going for a few weeks are taking the stand that by waiting prices will be much easier.

The indications are strong that the rail strike will soon be settled, and this being the case there will be a greatly increased movement of coal to the consumer and considerable reduction in prices.

There has been some softening in prices, although the cuts have not been deep. Indications are that there will be still further recessions during the next week.

CENTRAL PENNSYLVANIA

Operators pretty generally have agreed to the settlement and already many mines are working. The operations of th Pennsylvania Coal & Coke Co., thirty-five in number, are at work. The Stineman mines at South Fork, the Miller Run Coal Co. and the Clark Coal Co., at Hastings, the Barnes & Tucker Co. and the Maderia Hill Co., at Barnesboro, with mines in good condition, were ready to start operations at once.

Word from every mining community in the field is to the effect that operations will be gotten under way as fast as the equipment, tools and men can be gotten back into the mines. It is predicted that practically all mines in the district will be in operation before the end of the present week.

There is not likely to be a shortage of cars. The railroad shopmen's strike did not effect the repair shops in Altoona and all equipment is in good condition for handling the increased output of coal this road will now be called upon to handle.

BALTIMORE

Prices for soft coal have not fallen as a result of the impending strike settlement and in the face of the general transportation situation and the depletion of coal stocks. While practically all the coal moving is on priority this has not broken down the situation in which coal consumers readily pay high prices to get immediate supplies. Fairly high grade gas coals are selling at this time around $7.50 per net ton f.o.b. mines. What little steam coal is offering is taken up rapidly at $7.50@$8.

Baltimore industries have been running on narrow margins of reserves and therefore the receipt through a local concern of nearly 100,000 tons of Virginia coals by barge proved a real boon. The same firm is importing between 75,000 and 100,000 tons of British lump coal of high grade for the Baltimore trade. The first of this coal is expected this week and a considerable demand for it is already in evidence from householders to replace anthracite. Both the Virginia coal and the British coal have been placed on a price basis that is not prohibitive.

UPPER POTOMAC

The number of mines operating in the Upper Potomac region is increasing from week to week and about the only plants not producing now are those on the Maryland side of the Potomac where little or no protection has been accorded by local authorities. No trouble is being experienced in securing all the cars necessary. Prices are ranging $6@$7.25.

South

VIRGINIA

Under improved transportation conditions, the field is showing further signs of recovery from the slump caused by a break-down in car supply and coal movement. Improvement has been more marked on the N. & W. than in any other section of the region. Notwithstanding this increased production there is an acute shortage in the state and some industrial plants have found it necessary to close down.

BIRMINGHAM

Relief from the stress in demand on this field by foreign coal consumers is already evident. The Missouri Pacific placed a large tonnage a day or so prior to the strike settlement affecting a portion of the Central Competitive Field and almost immediately canceled same. A priority was recently granted the Rock Island in the matter of car supply to mines at which contracts had been placed for fuel in this district, the road not having been able to secure sufficient coal otherwise on account of shortage of equipment.

It looks as though the buying movement in normal Alabama territory has now received sufficient impetus to warrant the assurance that the average weekly production will be easily absorbed when shipments to outside territory are cut off.

The strong pressure in the spot market continuing through the past week maintained prices at high levels, ranging $5@$6 per ton, and like figures were paid for domestic sizes. However, probably not in excess of 15 per cent of the production moved at above figures. More recent business taken on from emergency consumers prior to the inauguration of Hoover schedules ranged $2.50@$3.50 per ton.

Production for the period of Aug. 5. reached 400,000 tons, although considerable time was lost at mines on all lines on account of shortage in the car supply.

Anthracite

Trade Concerned at Task of Spreading Short Fuel Supply

Sees Possibility of Trouble in Accumulated Demand—Dealers Dole Out Stocks Only Where Need Is Urgent —Householders Optimistic.

NO ALARM is manifested over the Eastern anthracite-coal consuming territory as the end of summer approaches and production of hard coal continues at a standstill. The trade itself—retailers, wholesalers and producers—is gravely concerned and fully recognizes the possibility for trouble when it comes to spreading out a short supply over an accumulated summer and early fall demand.

Dealers are holding to their stocks —quite scanty in most yards—and are doling out supplies only where urgently needed. Pea is the only size that is moving at all and that now is very difficult to get. River coal, size and quality not guaranteed, but at stiff prices, is available to meet the demands of particularly needy consumers.

Substitution of bituminous coal for anthracite is not in evidence to any marked extent as yet. Not until people really feel the pinch of a shortage of hard coal will they turn to soft coal. There is yet abundant optimism among those householders who give next winter's coal supply a thought, that the mines will soon start and that they will then have all the coal they want.

PHILADELPHIA

Retail dealers take it for granted that the miners and operators will get together, and are prepared to resume deliveries. Of course, in formulating their plans the dealers are going ahead without taking into consideration any rules that might be decided upon by the fuel commission. The hope is strong that the commission will confine itself to the distribution of fuel to the dealers, allowing them to work out their own method of placing the coal to the best advantage.

Due to the fact that there is no probability of a wage reduction it goes almost without saying that prices will be about the same as they have been during the past year, unless the dealers will pass along the entire freight reduction, which amounts to about 25c. a ton.

Pea coal continues to come in, and retailers are making immediate delivery, with the result that when winter comes there will be a lack of the usual reserve yard stocks of pea.

There is still a plentiful supply of river barley and if anything prices are a trifle easier, running $2@$2.75. Some concerns, in fact most, have found that the mixture of fine anthracite with soft coal does not work out advantageously, and this, combined with a promise of better bituminous shipments, is responsible for the easier prices.

BOSTON

Dealers are holding their small reserves of egg, stove and chestnut for such emergency needs as may develop, and are doling out what pea coal is available. Only small and scattered lots of bituminous are being delivered in place of anthracite, most householders having elected to take pea as long as it lasts.

At wholesale the trade has been much encouraged over the prospect for settlement. It is realized, however, that an agreement has not been reached yet and that several weeks may elapse before shipments are actually resumed. Meanwhile, what pea is in storage is being saved for locomotive use until the bituminous situation has improved sufficiently to justify its release.

NEW YORK

Outside of small tonnages of pea, buckwheat and river barley producers and wholesale dealers have nothing to offer. Pea coal is being used largely by the railroads, who find it more economical to burn than bituminous coal at the current quotations.

There is almost none of the larger sizes in the local retail yards. Demand for buckwheat and the smaller river products was easier last week, due to the conferences in Philadelphia, and the resumption of mining in some of the bituminous mines. There was no apparent change in quotations, however.

Buckwheat was scarce and was quoted by some dealers at around $12 alongside. River barley was quoted $3@ $3.25 at point of loading.

Some independent buckwheat was offered here at $9 f.o.b. mine and during the week a stray lot of rice was quoted at $7 f.o.b. mine. Independent pea coal was quoted at around $14, f.o.b. piers.

BALTIMORE

Hard-coal dealers are not particularly disturbed at the thought that British lump soft coal will be used in a number of homes hereabouts during the early winter. They believe that the advantage of anthracite over any class of soft coal for household use is such that hard coal will become once more the exclusive, or practically exclusive, fuel for the home as soon as it is available.

No delusions are entertained that the entire hard-coal demand for the early autumn and winter can be met, no matter how favorably the situation at the hard-coal mines may develop within the next few weeks. The Maryland Fuel Distribution Commission is allotting priority orders in cases of emergency, all of which are reported as being filled fairly promptly.

BUFFALO

As a rule the handlers of hard coal do not look for a supply for some weeks yet, even if the men go to work soon, as is supposed to be the program. The output is so much more slow and difficult than in the case of soft coal that no shipments of account will be made right away. So far as this market goes the situation is just as it was.

The consumers will be glad when the Lakes close, for then a few cargoes can be turned in here and there will be coal enough. It is doubtful if the old close adherence to anthracite and certain sizes at that for certain purposes, will ever be returned to. It is found that with the regulation sort and sizes as a foundation it is easy to use something else as a filler with good results.

West

SALT LAKE CITY

The domestic consumer is buying more coal now than he has done in any August for two or three years. This is due to the strikes and the published reports of the Commercial Club's offer to help the state executive to distribute coal when necessary. Further, there is some talk among operators of increasing the price of lump and stove coal and although nothing has appeared in the papers about it, it is presumed dealers are making it known to their customers.

Producers are all a long way behind on their orders and dealers are finding it difficult to obtain sufficient coal for immediate delivery, the filling up of their yards being out of the question.

KANSAS CITY

Better feeling prevails in the market here with the approach of the end of the strike. It appears that production in the fields near here will be at full tide soon and that—barring a complete collapse of railroad service—enough coal will be shipped to satisfy immediate demands. During the week just closed the main business of the coal man was pacifying consumers who demanded coal he could not get for them. Production is already on the upgrade. Union officials assert that 1,200 men have gone back to work in Arkansas and Oklahoma within a week. A conference for Tuesday, Aug. 22, was slated between union officials and Harry N. Taylor, president of the Southwestern Interstate Operators' Association. It is possible that a general resumption of mining will follow.

DENVER

Demand for coal from almost all classes of consumers grows heavier daily. Production is a little better to match and as a sort of backhanded aid to the market supply the Pueblo steel mills closed down last week, thus removing a large consumer from the market. Peace reigns in almost every mining region. Troops have been sent home from Frederick.

Chicago and Midwest

Entire Region Awaits End of Strike Parleys

Prices Tend Downward, as Resumption of Mining Is Expected Daily—Supply of Cars Keeps Most Fields in Hot Water—Indiana Coal on Market.

ALL the Midwest region sits on the edge of its chair awaiting the outcome of the conferences going on at the close of last week and the first of this week between operators and miners in Indiana and Illinois looking toward a resumption of mining. Since general operation of mines is expected almost hourly, buyers have largely withdrawn from the market and prices are on the downgrade. Kentucky, West Virginia and wagon-mine Indiana coal sold in various marts in this territory at figures ranging from $7 to $8.50 Aug. 18 and 19. Nobody bought save those compelled to by circumstances and most buyers demanded more than car numbers. There has been too much juggling of them lately.

The shortage of fuel in consumers' hands is even more acute than last week because of poor car supply and the hampering influence of the railroad shopmen's strike. Especially is this so around St. Louis.

The priority system of distribution continues to function haphazardly in this territory. Nobody thoroughly understands it, nobody appears to enforce any provision of it, and the railroads serving the mining fields make no efforts to shut off car supply to those who ship on priority orders regardless of the price.

CHICAGO

An expectant calm and downward prices characterized this market during the week just closed. Buyers rushing madly after anything black were not to be seen. Their days appear to be gone forever—until the next time. Such confidence was felt that coal would soon be produced in Indiana and Illinois that by the end of the week prices on Kentucky coal had reached $7.50 a drop of at least $3 from the week before, and were going on down. Very little of it was available. Only a few cars of West Virginia fuel got here. It was traded in at about the same price as Kentucky.

For the first time in months Indiana coal reappeared here in sizable shipments. Practically all of it was from wagon mines and was of doubtful quality and preparation. But it sold on Saturday for as high as $7.50, though a good deal was offered at varying figures under that.

Great uncertainty as to priorities and price regulation exists here. Robert M. Medill, now formally appointed State Fuel Adminstrator, came to Chicago a week ago and set up an office but no state fuel committee has yet been appointed by Governor Small, and the chances are that none will be.

SOUTHERN ILLINOIS

Some excitement in the southern Illinois field arises over the differences between Lewis men and those in favor of Farrington. The different gangs of outlaws in the places that have always caused trouble in the past seemed to be for Lewis, and the quieter and more reserved element seemed to be lined up for Farrington. The Farrington men seem to be far in the majority. There is a desire on the part of all miners to get to work. Operators continue to get their mines in shape for operation. Much the same condition prevails in the Mt. Olive and the Standard fields excepting that nearly everybody there is for Farrington.

There has been considerable trouble in the coal fields caused by mobs of miners intimidating and threatening the trainmen on the Illinois Central and Mobile & Ohio railroads that are hauling Kentucky and Alabama coal. At Percy, Ill., the trainmen were forced to switch the coal out where it was sidetracked, whereupon some of it was dumped and destroyed. The Mobile & Ohio R.R. got an injunction out against the miners in the Percy district from interfering with traffic and some action may be necessary along these lines by the Illinois Central. There has been no interference with coal moving over the Southern and the L. & N.

ST. LOUIS

The situation here is extremely critical. The City Hall is without electric power for lighting or elevators and many factories, including the rolling mills of the American Car & Foundry Co., have been shut down on account of no coal. The essential priorities that are furnished by wagonload through the dealers require 35 cars a day and in the last five days not more than 10 to 15 cars have been released. Some of these small plants that are highly essential are in a critical condition. The Union Electric Light & Power Co. is running from day to day and its load is increasing because the water at the Keokuk power plant is too low to give its normal electric power. The householder in St. Louis is still taking things easy.

The railroad situation here has been bad. The Terminal has been running on less than a day's supply of coal every day for several days. It depends upon getting a few cars in each night. For five days the Illinois Central brought no coal through, it all being held up south of Coulterville by the Illinois striking miners. On the 18th a couple of hundred cars came in in four trains.

The country districts are in a serious condition at many points and those who are running have begun to use wood. Kentucky coal sells anywhere from $6 to $9 at the mine, with Alabama ranging $6@$8. No coal has arrived here yet at the Hoover fair price. Byproduct coke is selling wholesale at $10 per ton f.o.b. St. Louis, and gas house sold at $9.25 until it was exhausted. Byproduct coke retail is $13 and gas house was $12.25.

WESTERN KENTUCKY

Operators report that loaded coal has been on tracks for days without moving and that they are not getting cars to load, as the trainmen's strike has been only partly settled and traffic conditions are very poor.

It is reported that some mines in western Kentucky haven't had more than a day or two of full operation this month. For the first ten days of the month it is reported that on the Illinois Central car loading equalled 93 per cent of potential capacity, and on the L. & N. 46.8 per cent, the average for the field being around 63 per cent. However, conditions on the L. & N. have been much worse for the past week.

Washington has set $4.50 as a fair price for Kentucky. Machinery set up by the state and federal governments to handle priority orders is beginning to function, but slowly. It is reported that railroads are not questioning prices in putting in or pulling cars, it merely being a question of priority and right to ship. It also is reported that priority buyers are not making any real effort to buy at Hoover prices. Sales were reported until the end of the week at around $8 a ton. Then the price started down.

LOUISVILLE

Although there is a great deal of talk of severe fuel shortage, it appears as if Louisville industries are fairly well taken care of. The Louisville Gas & Electric Co. has its own mines at Echols, Ky., and its own fleet of coal cars. The Louisville Railroad Co. has received service from its contract mines and hasn't had trouble. The Louisville Water Co. has had to pay prices, but has gotten coal. Some small companies here and there in southern Indiana and Kentucky are ranting about not being able to obtain fuel, but Kentucky men think that wherever a utility has been forced to close down it has been through refusal to pay the price asked or through bad management in buying ahead of actual demand.

Locally it is believed that the Cleveland agreement will soon begin to have effect on the prices in Kentucky fields.

INDIANAPOLIS

State operated mines in Indiana are a thing of the past, at least for this strike. On Monday the Governor ordered all guards home and announced that he would no longer attempt to run the strip pits. He said that the newly opened shafts and wagon mines will guarantee an ample supply to utilities and state institutions.

Such Kentucky and West Virginia coal as is being obtained here costs $6@$7. Indiana coal is being quoted at from $5.75 to $6.50, depending upon the grade. Anthracite is priced at from $15.50 to $15.75 to the retail consumer and Pocahontas from $8 to $8.50 with forked lump at $9.

Eastern Inland

Approach to Normal Still Some Weeks Off in Ohio

Much Repair and Cleaning Up Required —Car Shortage Predicted — Many Pittsburgh Operators Refuse to Sign Cleveland Agreement—Lake Situation a Vexing Problem.

IT WILL be several weeks before anything like normal conditions prevail in the coal fields of Ohio. Mines are starting up, but the operating organizations are disrupted, men scattered and mines in need of much repair and cleaning up after nearly five months' shutdown. Car shortage is predicted almost simultaneously with the resumption of mining. In the Pittsburgh area some mines are resuming work, but a majority are hanging together in a refusal to accept the Cleveland settlement.

The Lake situation is the main problem in this region, for until the Lake trade is taken care of coal for local users will be scarce. Priorities are being used to force coal to the Northwest, but with little effect so far.

Prices softened some on the news of the Cleveland settlement, but urgent buying has held them firm since then.

CLEVELAND

Settlement of the bituminous coal strike, at least partially, has not gone far in relieving conditions in this district. The shortage is still acute and the demand has sharply increased. Prices remain firm as a result. Screenings are quoted up to $6.75, mine-run up to $7.25 and domestic lump up to $7.50 a ton.

A combination of causes is operating to restrict the supply of coal for industrial consumption. Railroad demand and lake priority are diverting large tonnages. Operators who signed the new scale find themselves handicapped by short labor supply, as many strikers have scattered—some to Europe, others to jobs on farms and some to factories. Also, cleaning up the mines takes time. Where production has been resumed the car supply is insufficient. Until normal conditions are restored operators do not expect to be able to load coal more than two days weekly.

Receipts of bituminous coal at Cleveland during week ended Aug. 12 were 632 cars. This was 143 cars above the low week of the strike period and 625 cars under the maximum. Bituminous coal arriving at Cleveland for industries and retail yards has averaged approximately 908 cars per week since April 1 as contrasted with normal requirements of 1,500 to 2,000 cars.

EASTERN OHIO

Each day adds signatures of operators to the new Cleveland wage agreement. It is predicted that by the close of this week all Ohio will be signed up. Ohio in full blast will add three and one-half million tons per month at 1921 rates and will exceed that with maximum car and labor supply.

Prevailing spot prices on any grade of coal from most any producing district range from $5 to $7.25 per ton f.o.b. mines, the minimum figure indicating a decline of $1 per ton during the past few days. It is reported that one lot of 10,000 tons of Eastern Ohio No. 8 lump for lake shipment was offered at $5.75 per ton f.o.b. mines. The volume of non-union coal from the South continues to be negligible.

It is reported that, following telegraphic instructions, local unions in Ohio No. 8 started machine men cutting coal on the morning of the 17th. Not over 200 cars were loaded on that day, however.

In the lake trade the prediction is made that a pooling arrangement similar to that provided by Service Order No. 10, issued by the Interstate Commerce Commission during the lake season of 1920, will be made operative soon.

PITTSBURGH

Opinion in Pittsburgh is practically unanimous that the members of the Pittsburgh Coal Producers' Association will hold out for a district settlement with the miners, or the establishment of a regular open-shop condition. The chief doubt is as to how long this will take, some guesses being that the district will not be running well until two or three months have elapsed.

In some quarters, apparently well posted, confident predictions are made that the Connellsville strikes will be ended by about Sept. 1, it being intimated that there will be a moderate wage advance from the Frick scale of Aug. 1, 1921, which was the regular scale of the region last March although some independents were paying less. It is absolutely certain that there will be no semblance of recognition of any union.

The railroads practically dropped out of the coal market for a few days in the past week but are back again in a moderate way and there is now buying by other interests. In the interim the market declined, Connellsville steam coal being $6@$6.75. Westmoreland gas is quiet at about $7@$7.50. There is now a little production in the Pittsburgh district, but not enough to make a market.

BUFFALO

This market is now trying to square itself with the new state of things, though as yet they are to us only on paper.

As might have been expected there is on the market quite an amount of coal that the owners appear to have been holding for nobody knows what prices. If there is any real distress here it seems to be monopolized by the jobbers.

As a rule the city jobbers refuse to give out prices. They say there are none, for the consumer will not buy. Morning's mail is almost a blank so far as any communication from consumers is concerned. The price has been about $7.50@$8.50 at the mines, but a decline is looked for at once, unless some hitch develops. So far only one of the Allegheny Valley companies has announced a time for resumption, which is at once.

The Lake situation does not change. Fuel is still $10 or more and hard to get at that.

NORTHERN PANHANDLE

Operators are keeping production up to more than half of full-time capacity, with all but four or five plants in operation. Much of the tonnage, however, is being utilized for railroad fuel purposes. A little is going to the Lakes, and to Northern markets. Although much of the output is being delivered on contract and at the Hoover maximum, as high as $7.25 is being offered.

COLUMBUS

Active preparations are being made by operators to start work, following the agreement signed at Cleveland. The position of the Southern Ohio Coal Exchange was against signing as an organization, but the exchange adopted a resolution leaving the matter of signing the scale to the individual operators.

With the Ohio fuel commission functioning, practically all of the coal coming into this territory is under priorities, but the receipts are not up to current requirements. No price has yet been fixed on Ohio coal and consequently it is moving at considerably higher levels than the Hoover figures. Pocahontas and other smokeless grades are selling around $4@$6.50 with the Hoover levels generally maintained.

Lake trade is now attracting a good deal of attention on all sides.

The retail trade is at a standstill as dealers' stocks are pretty thoroughly cleaned up. Retailers, in many instances, are booking orders to be delivered later, with the price question held in abeyance.

DETROIT

So far the functioning of various fuel administrators has been productive of no substantial relief for the consumers of bituminous coal in Detroit, and the situation is becoming more acute as existing stocks are reduced without compensating receipts of coal.

The Detroit Edison, Detroit City Gas and the Ford Motor companies have been hard hit by the strike of trainmen at Corbin, on the Cumberland division of the Louisville & Nashville. The companies have mines in this field.

After organizing an auxiliary committee to assist Wayne County's fuel administrator, the Detroit Board of Commerce is informed that the fuel administrator, lacking the support of law, is without authority to control or regulate coal prices or distribute coal.

Meantime prices are generally considerably above the level recommended by Secretary Hoover. For coal arriving not subject to priority regulations the price is $8.75@$9 per net ton f.o.b. mines. Priority coal is reported selling at about $6.75. Retail prices on domestic bituminous range $11.50@$12.50 a ton delivered at the buyer's sidewalk.

Northwest

Everybody Feels Better With Strike About Over

This Region Fairly Confident Now That It Will Get Enough Coal, but Promised Shipments Have Not Arrived—Hope for Late Freeze-up.

THE Northwest, practically destitute of dock coal, feels greatly relieved at the signs that the coal-mining strike is about over and that mines will soon be able to dump great quantities of fuel over the lower lake docks consigned to upper ports. The only question that greatly worries this region is: Will the railroads be able to handle it? If they do, and if heavy shipments begin not later than Sept. 1 and if the freeze-up this winter is a little later than usual, then surely enough coal will reach the Northwest to take care of all its necessities until next summer.

Prices here have been steadily climbing. They have attained such heights, in fact, that one or more protests have been registered at Washington charging profiteering. The Northwest cannot stand $9.25 mine quotations on coal that sold for $3 and $4 before the strike. The latter is more nearly a proper retail price. However there are buyers willing to pay almost any price under protest, so long as they get some coal. Many industries throughout this region have already succumbed to emptiness of coal bins and most public utilities are about to scrape bottom.

MILWAUKEE

Prices of bituminous coal in Milwaukee were advanced 75c. per ton to the consumer, effective Aug. 15. This makes a total advance in soft coal of $1.25 per ton since Aug. 1. The trade is now paying $7.50 at the mines instead of the Hoover rate of $3.50 per ton.

The car supply also is vital. Unless the present shortage is relieved many industries will shut down. Priority orders that are not backed up by recognized authority are of little avail. Coal directed to Lake Michigan ports has been sent elsewhere or has been confiscated by railroads. Until government agencies begin to function reliably the coal trade is bound to continue in a state of demoralization. Electric utilities in Wisconsin, which consume from 60,000 to 70,000 tons of coal per month and gas companies using 30,000 tons are facing suspension.

Five cargoes of soft coal, aggregating 26,802 tons, were received by lake since last week's report, including 1,500 tons of Nova Scotia coal by way of Quebec. This makes the season's receipts up to this time 809,162 tons of soft coal with no anthracite. Last year's receipts as of this date aggregated 575,079 tons of anthracite and 1,672,185 of soft coal.

The following are the retail prices of soft coal according to the latest advance: Pittsburgh, Hocking and Youghiogheny, $11; pile run, $9; screenings, $8; West Virginia screened, $9.50; pile run, $9; screenings, $9; Pocahontas screened, $12.50; mine-run, $10.50; screenings, $9; smithing, $10.50; coke, large size, $15; pea and nut, $13.

A carrying in charge of 75c. is made on all except coke. The market is bare of Illinois and Indiana coal and Kanawha gas mine-run.

DULUTH

Duluth and the Northwest generally has heaved a sigh of relief at the news of the termination of the coal strike. The Northwest is in a bad way. The 530 cars from Kentucky allotted last week have barely started but shipments are promised soon.

There were only 632,483 tons of bituminous on the docks Aug. 1 and that quantity was 258,000 tons oversold. The docks at Ashland, Wis., had only 28,500 tons of soft coal and were 68.000 tons oversold. Six cargoes of coal arrived here last week. This was non-union coal sent as a stop gap, and filled a great need of vessels and public utilities. It is the opinion of dock men generally that arrivals of heavy shipments will resume at this port about Sept. 1.

In view of the unusually severe winter last year it is thought that the freeze-up will be long in coming this year. If this proves true it will mean that there will be sufficient time between Sept. 1 and the close of navigation to get the docks replenished.

The success of the refueling of the Northwest depends to a large extent upon the country dealers and the celerity with which they order stocks. If the tendency is to hold off and trust to a possible break in prices the Northwest will be cold next winter, in spite of the termination of the strike. The docks will become full and the close of navigation will see insufficient supplies. If, however, the country dealers do their part there is no reason why sufficient coal should not be brought up the lakes to satisfy all demands.

Prices are firm at $8.50 for lump, 50c. less for run of pile, and no market on screenings, of which there are none available.

New England

Midsummer Lull On; Trade Confined to Spot Shipments

Buyers More Optimistic—Quotations Far Above Hoover Fair-Price Level—Much Confusion Over Priorities—Fair Amount of Commercial Coal Still Coming Forward.

THERE is very little change in the current market. Trade is in a quiet mid-summer state and transactions are confined to limited quantities for spot shipment. The larger consumers have comfortable reserves, considering the almost uniform light business they are doing, and receipts for the present seem to be in sufficient volume to relieve them of any immediate anxiety.

News dispatches the last few days have taken such a favorable turn that buyers are more optimistic than a fortnight ago. No one in the trade really expects much increase in the volume of coal for New England during the next thirty days, but there is an undeniably easier feeling among buyers that probably reflects better reserves than were being counted on. Even users of high-grade gas coals are inclined to await developments, hoping there will be enough increase in output to modify current prices.

In practically every direction there are quotations far above the Hoover level. Inland from rehandling points like Boston, Providence and Portland $12@$13 is still being asked for Navy standard coal, while f.o.b. Norfolk and Newport News $10.50@$11 are the spot quotations on the same grades.

While commercial coal is still reaching Hampton Roads buyers and quite an amount of tonnage is waiting against its arrival, there is increasing confusion over the practical working out of Service Order No. 23. As between the Washington committee and those in the several states requisitions are going round in circles while priority coal is being confined almost exclusively to railroad fuel needs other than in New England. Attempts are made to get coal for various state consignees, but so far as reported at this writing there is none available through such channels. It is recognized here that Washington labors under great disadvantage, for apparently no one acting on behalf of the President's committee is in position to assume responsibility for anything that under court review might turn out to be discrimination.

Meanwhile, trade agencies are continuing to distribute as much of their own coal as may be available, and with varying policies as to the "fair price." Shipments on contract are coming forward in good volume, and there is some expectation that they will continue about on the same basis.

Cincinnati Gateway

Market Is Badly Muddled By Government Restrictions

Quotations Show Wide Range—Increasing Number of Sellers Disregard Hoover's Price List—Peace Efforts Bear the Market—Car Shortage Acute.

A DOZEN divergent angles have done their part to disrupt even a semblance of normal transactions of business through the Cincinnati gateway. Some firms have thrown themselves entirely upon the mercy of the coal permits that have been issued and are sticking strictly to the Hoover prices. Others are taking advantage of the 8 to 10 per cent allowed to wholesalers and are packing on all of the sail that such will stand. Others have resorted to the usual openings that have been left to put their coal on the market at the top prices and it is rather surprising to find that more and more firms that stood solidly back of the Hoover proclamation are beginning to chafe under the restrictions that have been imposed through the permits, privileges and priorities.

The Cleveland conference, followed by announcements of mine reopenings, was a bear to the market and prices have slipped down a peg.

CINCINNATI

Probably the most rasping occurrence of all that have come up in the past three months is the exposé of the fact that over 800 cars from Hazard, Harlan and southeastern Kentucky, as well as a large number from the West Virginia fields, have been moved to the Lake under Permits No. 1. granted to the Pittsburgh Coal Co., which has not been a factor in the Cincinnati trade for years and yet has taken precedence over firms with offices here who have handled this fuel since the fields came into national trade.

The Cleveland negotiations had their effect in lowering the prices. The news that Fairmont intended to start up by the end of the week also was a softening factor.

Smokeless prices seem to be held pretty generally to the Hoover schedule with the exception of some Dry Fork and New River offerings. Car supplies are short with the N. & W. declaring that they are in the worst position in years. The C. & O. and the L. & N. are resorting to embargoes to get coal moving.

Retail prices have not changed. Some of the companies are having trouble in making deliveries and holding their customers off to a later day when the strain will not be so great.

LOW-VOLATILE FIELDS

New River and the Gulf

Although New River mines are gradually recovering from the acute car shortage, production is still at a low ebb, averaging a little over 110,000 tons a week. The market is in rather an unsettled condition owing to the heavy demand and confusion attendant upon the establishment of the priority system which is diverting coal into new channels. So far as the general run of tonnage is concerned, it is being moved at Hoover prices.

Gulf mines are managing to speed up a little in view of a somewhat better car supply from the Virginian and the C. & O. which were so seriously crippled for a time by the strike of shopmen. Railroads are handling more coal to the piers and much of the congestion has been relieved. Supplies for the general market have been somewhat curtailed as a result of priority orders. Open prices are still high despite the fact that most producers are not charging more than the Hoover price agreed upon.

Pocahontas and Tug River

Conditions in the Pocahontas field are beginning to assume a semblance of normal once again as mines find it possible to secure more cars. Smokeless production is, however, insufficient to meet the demand, especially in view of the system of priority orders.

In the Tug River territory operating conditions are also slightly improved. The demand is so much heavier than the supply that prices are still several dollars in excess of the Hoover list, notwithstanding the fact that the bulk of the operators are not departing from that list.

HIGH-VOLATILE FIELDS

Kanawha

Tonnage is being gradually increased, especially in view of a more adequate car supply. Much of the coal originating in this region is being applied on priority orders under Class 1 and 2, so that railroads and utilities have been getting the lion's share of the output. Spot prices range $6@$7.25, despite the fact that the bulk of the tonnage is moving at the Hoover prices.

Logan and Thacker

Under improved transportation conditions, Logan production is once again on the up-grade. Owing to the curtailed output mines have not been able to furnish regular customers with a steady supply and priority orders are absorbing much of the coal needed to take care of these customers. Less tonnage is going to the steel mills and more to the railroads and utilities, with some to the Lakes. Government distribution agencies are functioning but that does not appear to have brought prices down appreciably.

Although all the mines in the Williamson field are in operation the point has not been reached where it is possible to work full time, owing to the restricted car supply.

Northeastern Kentucky

The supply of cars is still so short that the output is not over 30 per cent. The field is unable to fill the needs of regular customers or send a very large tonnage to the Lakes. Prices of $6@$7.25 are being offered in the open market.

Coke

UNIONTOWN

Resumption of some union mines through acceptance of the Cleveland settlement caused a drop of $1.50 per ton in the price of coal in the Connellsville region. Before the Cleveland conference the market here was quotable at $7.50@$7.75 per ton. The week closed with a drop to $6 with sufficient orders at that figure to absorb the tonnage produced.

It is now conceded that production is at the highest point since the strike started and is increasing each day. Figures of shipments for the present week are not yet available but railroad officials report an average of 1,000 cars of coal a day and 250 cars of coke per day being delivered by all lines. In addition it is known that working forces at Frick, Rainey and other independent operations are increasing daily with mines being added to the active list each day.

CONNELLSVILLE

The principal change in the strike condition in the past week is that the Frick company is producing considerably more coke and is also shipping more coal. Among independent operators a slight increase in operations is reported.

The market has continued very narrow, both demand and offerings being light. For many weeks past the demand has been very restricted by the high prices ruling, and has been narrowed down almost entirely to a few foundries, these foundries buying only in a limited way, from hand to mouth. Regular foundry coke is as high as ever, being quotable at $15@$16, while so-called "furnace coke" is easier, at about $13.50@$14.

Reports have become much more definite that the strikers in the Connellsville region are disposed to go back to work. The Cleveland settlement, whereby about 15 per cent of the coal operators hitherto union signed an agreement with the United Mine Workers, did not help the Connellsville strikers and it is expected that they will shortly realize that they can hope for nothing from the union. It is commonly assumed that in due course a moderate wage advance will be posted in the region, above the Frick scale of Aug. 1, 1921, and that in a short time the Connellsville strikes will all be over.

BUFFALO

The price continues strong. The supply is as light as ever. The big coke centers are still depending on a few side ovens and keeping their regular ones idle for want of coal. Prices remain at $15.50 for foundry, $13 for furnace and $9.55 (very scarce) for domestic, chestnut size, adding $2.28 for freight to Buffalo.

News Items From Field and Trade

ALABAMA

C. C. Copperstone, of Carnegie, Pa., has opened an office in Birmingham, as general manager of the **County Coal Co.**, which has operations in the Cahaba Valley, near the city. The property belongs to the Sossong interests of Pennsylvania and the company is now constructing a spur track to the Central of Georgia switch serving the Overton mine of the **Alabama Fuel Co.** in the same vicinity.

The Etowah Coal & Iron Co., recently organized and incorporated at Gadsden, has transferred to the Chicago Title & Trust Co., 10,000 acres of mineral lands in Marshall and DeKalb counties to secure a mortgage of $1,500,000, which will be used in the development of its coal and ore lands in that section.

COLORADO

All coal mines in Colorado with the exception of three Colorado Fuel & Iron Co. mines in Fremont County have resumed operation, according to announcement of the commandant of the Colorado Rangers.

Robert Turner, superintendent of the Turner mine in Huerfano County, was arrested by rangers when miners reported that they went to the mine to work and that Turner informed them that it would not be safe unless they had a guard of fifteen rangers. Mr. Turner was charged with locking out the miners and was released immediately under bond.

ILLINOIS

The Niantic Carbon Coal Co. has leased its mine to **William A. Magee**, who is in full charge of the property. Mr. Magee is preparing to open the mine to its full capacity as soon as the present strike is over.

W. G. Hartshorn, Jr., of the firm **Hartshorn Mining & Crushing Co.**, Danville, was in Elkville recently making plans for the purchasing of a large tract of land west of that town, on which the company expects to sink a strip mine. The company also plans the erection of a large rock-crushing plant near the town.

Linton Short has been named to succeed **Walter F. Hardy** as chief clerk at the Kathleen mine at Dowell, owned by the Union Colliery Co.

The Jackson Coal Co. has filed a $500,000 mortgage on its mine at Hallidayboro, with the circuit clerk at Murphysboro. The loan will be used to liquidate outstanding obligations of the corporation which has headquarters in Connellsville, Pa. The **North Star Coal Co.**, at Ward, a few miles south of Hallidayboro, also placed a $150,000 mortgage on its mine property there.

INDIANA

Huffman Brothers, whose coal mine recently burned four miles east of Petersburg, have leased coal land three miles east of Petersburg along the Big Four and are opening a railroad mine there. Work on the shaft is nearing completion.

The Carl Fletcher Coal Co. has been organized at Indianapolis with a capital stock of $100,000 for the purpose of buying and selling coal and other fuels. Carl Fletcher, one of the organizers of the company is secretary of the Knox County Coal Operators' Association. The other organizers are Mary H. Fletcher and **Larz A. Whitcomb**, who is an attorney in Indianapolis.

The Consolidated Coal & Supply Co. of Kokomo, has filed incorporation papers with the secretary of state. The company has a capital stock of $200,000. Directors are George E. Bruner, John H. Panabaker and Ernest E. Ellis.

Work on the new mine shaft of the **Deep Vein Coal Co.**, three miles south of Princeton, is progressing nicely. Coal will be reached this fall. The temporary buildings have been completed and a siding from the C. & E. I. is being built. The mine is to be electrically operated and will be one of the most modern in southern Indiana. No further attempts are being made by the company to reopen the mine in Princeton destroyed by a cave-in last spring.

Appointment of a receiver for the **State Coal Mining Co.** is asked in a complaint filed recently in Indianapolis by a big insurance agency, creditors of the company. The company operates mines in Vigo County. It is alleged the company is in danger of insolvency, that its mines have not operated since March 25 because of strikes and insufficient funds.

KENTUCKY

Troops were sent to Ilsley on Aug. 15 to protect the **Magic Collieries**, strip-mine property, after snipers had started firing on civilian guards.

Gov. Morrow has named **Fred M. Sackett** chairman of the State Fuel Commission, which has opened offices at 616 Republic Bldg., Louisville. Mr. Sackett served as food administrator during the war.

The Proctor Coal Co., of Williamsburg, has filed amended articles increasing its capital stock from $200,000 to $1,000,000.

The Sackett Fuel Co., jobbers, capital $10,000, has been chartered by M. G. Sackett, A. P. Sikking and John Roberts, all of Louisville.

The Frankfort Elevator Coal Co., which has mining connection and Kentucky river transportation direct to mines, has been awarded a contract of 3,000 tons, at $5.50 a ton, for the state capitol power plant, contract award being made by the Sinking Fund Commission.

A. Wallet & Co., grain elevator operators, have filed suit for $37,500 alleged damages against the **Canoe Creek Coal Co.**, for alleged mining of coal under property owned by the Waller interests. Plaintiffs allege that 15,600 tons of coal have been removed without their consent.

The Louisville & Nashville R.R. reported a few days ago that it had brought its shop forces up to 7,750 men.

The Frost Coal Co., Wilton, Knox County, capital $10,000, has been chartered by Charles Frost, John Frost, H. A. Steele, Miner Evans and William Leforece, all of Knox County, for development purposes.

The Eastpoint Block Coal Co. has been chartered by J. F. Auxier, Paris Bowling and N. C. Auxier, all of Auxier, for development of a mine.

MICHIGAN

John Kraft Coal Co., Detroit, has increased its capital from $5,000 to $125,000.

The Owosso Coal Mining Co., Owosso, has been incorporated with capital of $350,000. Incorporators are H. A. Bacon, C. D. Bell, C. C. Fritz.

W. W. Potter, of Hastings, member of the Michigan Securities Commission, has been appointed State fuel administrator. The Ford Motor Co. of Detroit was one of the first seekers of a priority order from the fuel administrator. The company was given a manufacturer's priority order for 2,700 tons daily with an additional 800 tons daily on its representation that it is under contract to supply the Detroit City Gas Co. with 8,000,000 cu.ft. of gas daily.

MINNESOTA

The Zap Colliery Co. has been incorporated at Zap, N. D., to operate a lignite stripping mine. The Pratt interests of Minneapolis, are the incorporators. This operation requires removing about 15 ft. of earth to reach a vein of 10 ft. There are several other open pit mines in North Dakota.

Ivan Bowen, of the State Railroad and Warehouse Commission, has been named fuel director for Minnesota by Governor Preus.

Berwind's No. 2 Dock at Duluth-Superior harbor is completing a new concrete floor 350 x 1,900 ft. The work will be done by Sept. 1. This improvement will make the dock one of the most modern on the Lakes.

E. W. Johnson, of Duluth, has been appointed superintendent of the Inland Coal & Dock Co. He will succeed **A. W. Fay**, who is now with the Cleveland & Western Coal Co., of West Virginia. Mr. Johnson was formerly assistant superintendent of the Berwind Fuel Co. docks at Duluth.

MISSOURI

A petition in equity has been filed in the Macon County Circuit Court asking for a dissolution of the partnership in the **Star Coal Mines**. The petition recites that the parties have disagreed and that the defendants have stopped the payment of funds in the bank, necessary for the conduct of the business. The company's property at Bevier is estimated to be worth from $60,000 to $70,000.

The stockholders of the **Callaway County Coal Co.**, with mines at Carrington, are to meet to vote on a resolution to dissolve the company and close up its affairs and dispose of its assets.

Governor Hyde has appointed **Hugh J. McIndoe** of Joplin, a member of the state public service commission, **E. R. Sweeney**, a banker of Kansas City, and **E. J. Wallace**, a wholesale coal dealer, of St. Louis, members of a commission to supervise the distribution of coal in Missouri. The commission will be made of either five or seven members and other members will be named by Gov. Hyde.

Incorporation papers have been granted to the **Central Missouri Mining Co.**, at Centertown. The corporation is capitalized at $50,000. The company plans to mine in the vicinity of Centertown on an extensive scale, by stripping.

NEW YORK

The Pond Creek Coal Co. for the six months ended June 30, 1922, reports total earnings of $497,256, against $615,127 in the same period last year. Net profits, after depreciation, depletion and charges for the period, were $316,824, equal to $1.48 a share on the 212,920 shares of capital stock outstanding. In the same period last year net profits totaled $410,097, equal to $2.93 a share.

The J. P. Burton Coal Co., Cleveland, has opened an office at Buffalo, with A. P. Stubbs resident manager.

Scheid Engineering Corporation, New York City, has been appointed metropolitan and export representative for the **Franklin Moore Co.**, Winsted, Conn., manufacturers of material handling machinery for industrial plants.

OHIO

No bids were received Aug. 11 by the **Columbus Board of Education**, for 10,000 tons of lump coal for the various school buildings of the city. This was attributed to the unsettled conditions incidental to the strike. The board re-advertised for bids.

The United States Coal Co. has just announced its intention of extending its coal mining operations at Bradley, Jefferson County, to Smithfield, where two new shaft mines will be opened and a tipple erected. The company will build a new town near Smithfield and the Wheeling & Lake Erie is to extend its road from Bradley to Smithfield and put on passenger service between the latter place and Wheeling. Headquarters of the company are located in Cleveland, and H. E. Willard is the general manager.

Sim Buka, who has been with the American Inland & Export Coal Co. for the past three years, has severed his connections and opened an office for the W. R. Deegans Coal Co., of Huntington, at the Dixie Terminal Bldg., in Cincinnati.

S. W. Riddle, of the Riddle Coal Co., Chattanooga, and **Clyde Palmer**, Cincinnati manager of that company, spent ten days going over and inspecting the mining properties of the company in southeastern Kentucky and northwestern Tennessee.

R. C. Snipes, president of the Elkhorn City Coal Co., of Johnston City, Tenn., was a recent visitor to the Cincinnati market. Other mining men there were: **T. J. Roberts**, of the Mahan-Jellico Coal Co., of Pineville, Ky., **J. C. Callahan** and **W. R. Hurst**, of Elkatawa, Ky., and **Sol Allen** of Prestonburg, Ky.

PENNSYLVANIA

N. S. Greensfelder, mining engineer of the Hercules Powder Co., recently addressed the students attending the summer courses in coal mining at the Carnegie Institute of Technology and at State College of Pennsylvania. His subject was the scientific selection of explosives for coal mining. **E. T. Steidle** is in charge of the summer school at Carnegie Institute, and **Wm. R. Chedsey** at the Pennsylvania State College.

The Greensburg Fuel Co., has notified the State Department at Harrisburg of an increase in its capital stock from $25,000 to $75,000. W. F. Zercher, Westmoreland County, is president of the company.

The Moshannon Coal Co. operations at Brisbin, Clearfield County, were sold at auction at Ebensburg recently to **W. H. Sarford**, of Patton, the price being $22,100. The coal company was forced into bankruptcy but the bond holders had a first lien on the property and the trustee for the bondholders had the right to sell the real estate and equipment. The property includes coal leases, 40 small houses, railroad siding, mine cars and machinery and appliances.

The industries of Northumberland County last year turned out products having a total value of $77,160,500, according to statistics just compiled by the State Department of Internal Affairs. Approximately 45 per cent of the county's production valuation was represented by anthracite, the value of which was $34,290,100. The county produced 5,973,483 tons of anthracite and 103,305 tons of river coal were reclaimed from streams.

TENNESSEE

The property of the **Cagle Coal Co.**, near Pikeville, recently purchased by the **Pocahontas & Sewanee Coal & Iron Co.**, is being rapidly developed. Among the improvements contemplated is a tunnel 1,225 ft. long and a steel tipple. The estimates of the engineers who have examined the company's property runs up to 300,000,000 tons of coal of good quality. It is stated that the Chicago offices will be transferred to Chattanooga as soon as the mine is placed in operation.

WEST VIRGINIA

Under arrangements just consummated between the **Robinson Coal Co.** and the **Consolidation Coal Co.**, both operating in northern West Virginia, the former company has leased mine No. 57 of the Consolidation company, better known as the O'Donnell mine on the east side of the Tygarts Valley River near Fairmont. This mine has been out of commission for some time.

One of the largest deals of recent months has been consummated at Fairmont, interests identified with the **Fairmont & Cleveland Coal Co.** having acquired 2,000 acres of Sewickley coal land controlled by the **Chesapeake Coal Co.**, a concern in which the Edward Hines coal and lumber interests of Chicago had a dominating interest. The understanding is that the purchase price was about $1,000,000. The property was actually purchased by the **Fairmont-Chicago Coal Co.**, which is capitalized at $600,000. The purchasing company has already perfected arrangements to increase the equipment at the mining plant near Barrackville and to expend about $200,000 in increasing its capacity. Twenty-five more houses for miners are to be bu lt, 100 new mine cars have been ordered and the tipple is to be enlarged. Officers of the newly organized Fairmont-Chicago Coal Co. are: E. F. Hartley, president; T. H. Johnson, vice-president, and W. E. Watson, general manager. The tonnage from the mine of the Fairmont-Chicago Coal Co. will be handled exclusively by the Fairmont & Cleveland Coal Co., both having the same offices.

The tipple of the **Mutual Coal Co.**, at Maidsville, in the Monongalia field has been destroyed by fire and two mine locomotives valued at about $20,000 have also been destroyed. The blaze is said by county authorities to have been of incendiary origin. The Mutual company has been operating its mine as an open shop mine since April 1.

ONTARIO

J. A. Ellis, vice-chairman of the Ontario Railway Board, has been appointed fuel controller for the province with wide powers for regulating the purchase and distribution of fuel. He has been in conference with coal dealers over the situation and is of the opinion that fuel will have to be doled out in hand-to-mouth quantities.

A meeting of the creditors of **Ontario Fuels, Ltd.**, with head office in Toronto and a branch plant at Port Stanley, where briquets were manufactured, was held recently in Toronto. The company assigned last July to the Trusts & Guarantee Co., Toronto. The liabilities are $41,058.29, with assets of $8,119.75. It is hoped to realize about $6,000 on the assets.

QUEBEC

Sir Bertram Chadwick, M. P. for Barrow-on-Furness, England, is in Canada investigating the coal situation with the view of finding a permanent market here for British coal. He states that it is chiefly a matter of laying the coal down here at a satisfactory price and does not think that the question of ocean shipping rates presents insurmountable difficulties. He has contracted to deliver large quantities of Welsh coal in Quebec and as far west as Toronto.

Traffic News

Eleven coal companies operating in the Whitesburg-Hombre district of Kentucky on the L. & N., have appealed to the State Railroad Commission to reduce coal rates from that section to other points in the state to the same level as the rates from the Hazard district.

The I. C. C. has decided the following coal rate cases. The rate on bituminous coal from St. Leonard, New Brunswick, to Griswold, Me., is unreasonable, acting on the complaint of the **Stetson Cutler & Co.** Proposed cancellation of joint rates on the interstate transportation of bituminous and cannel coal from Bessemer and Lake Erie Group No. 1 points in Pennsylvania to stations on the Buffalo, Rochester & Pittsburgh in Pennsylvania and New York, is not justified. Rates on bituminous coal from mines in the Boonville, Ind., district to Huntington, Tell City and Cannelton, Ind., during Federal control, were unreasonable, acting on the complaint of the **Cannelton Sewer Pipe Co.** Rates on bituminous coal from Century, W. Va., to Pump Station, Ohio, are unreasonable because the factor from Strongsville to Pump Station exceeded the rates fixed, acting in the complaint of the **Buckeye Pipe Line Co.** Rates on bituminous coal from Casselman, Pa., to St. George Staten Island, N. Y., are unreasonable. Rates on bituminous from points on the B. & O. in the Meyersdale, Pa., district, to an industry on the Erie at Weehawken, N. J., are not unreasonable, acting on the complaint of **A. W. Hillebrand Co.**

In the complaint of **A. W. Hillebrand Co.** the I. C. C. decides that the rates on bituminous coal from mines on the Pennsylvania in the Clearfield district to an industry on the Erie at Weehawken, N. J., are illegal.

Trade Literature

Reducing Valves. Atlas Valve Co., Newark, N. J. Pp. 27; 4 x 7 in.; illustrated. A handy reference book of rules, tables, curves, data and formulae to determine the correct size and capacities of reducing valves; also for determining the capacity and flow of steam in pipes of different diameters and different losses in pressure.

Williamsport Wire Rope Co., Chicago, Ill., has issued a two-page spread featuring its Telfax Patented Tape Markers which appear in the centre of the core indicating the various grades of ropes. Also its Climax Galvanized Clips, giving price-list per hundred pieces.—Advertiser.

Better Mine Cars. The Timken Roller Bearing Co., Canton, Ohio. A four-page folder describing the Timken tapered roller bearings and the advantages gained by their use on mine cars.—Advertiser.

Timken Engineering Journal. The Timken Roller Bearing Co., Canton, Ohio. Pp. 282; 8½ x 11 in.; illustrated. Contains authoritative data on machine tools of all descriptions, mino and electrical equipment, etc.—Advertiser.

Jeffrey Single-Roll Coal Crusher. The Jeffrey Mfg. Co., Columbus, Ohio. Catalog 259. Pp. 32; 7½ x 10½ in.; illustrated. Describes use of crusher built in five sizes, adapted for the power house, to insure a constant supply of stoker or small coal where stoker sizes cannot always be secured direct from mines; for the coaling station, to reduce run-of-mine and lump to proper firing sizes; and for the coal mine, to reduce lump coal to smaller sizes to meet the demand for a uniform stoker coal The book describes typical installations of the crusher in service and table of capacities of the different sizes of machine for crushing various grades of bituminous coal. —Advertiser.

Coal — Published by Walter Bledsoe & Co., Terre Haute, Ind. Describing and illustrating sections of the company's operations.

Griscom-Russell Evaporator Systems for the Economical Production of Distilled Boiler Feed Water. The Griscom-Russell Co., New York City. Bulletin No. 360. Pp. 7; 6 x 9 in.; illustrated. Describes the application of Reilly self-scaling evaporators to the power plant for the elimination of scale blow-down, priming, etc.

The Edison Lamp Works of the General Electric Co. has published the following bulletins on lighting: The **Lighting of Public Buildings**, Bulletin L. D. 135; **The Edison Mazda Lamp for Motion Picture Projection**, Bulletin L. D. 107A; **Church Lighting**, Bulletin L. D. 136; **Residence Lighting**, Bulletin L. D. 137.—Advertiser.

Copperweld Nails — Copperweld Ground Rods. Copper Clad Steel Co., Rankin, Pa. One page, containing tables and information on uses of these nails and rods.—Advertiser.

Type LG-116 Indoor Disconnecting Switches and Type QC-3 Quick Break Lever Switch. General Electric Co., Schenectady, N. Y.—Advertiser.

Multiwhirl Cooler. The Griscom-Russell Co., 90 West St., New York City. Bulletin No. 904. Pp. 15; 6 x 9 in.; illustrated. Describes the application of Multiwhirl coolers for cooling of oil and water in connection with Diesel engines.

The Terry Turbine. The Terry Steam Turbine Co., Hartford, Conn. Pp. 40; 8½ x 11 in.; illustrated. Describing the company's condensing and non-condensing turbines.—Advertiser.

Sandvick Steel Belt Conveyors. Sandvik Steel, Inc., New York. Catalog No. 18-T; 6 x 9 in.; pp. 24; illustrated. Information as to how the steel belt is applied to solving conveying problems.

Coming Meetings

New York State Coal Merchants' Association will hold its annual meeting at Richfield Springs, N. Y., Sept. 7-9. Executive secretary, G. W. F. Woodside, Arkay Bldg., Albany, N. Y.

Coal and Industrial Exposition under the auspices of the Huntington Chamber of Commerce will be held Sept. 18-23 in the Chamber of Commerce Bldg., Huntington, W. Va. **The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers** will again hold its annual meeting in the same building during the exposition.

National Exposition of Chemical Industries will hold its eighth national exposition at the Grand Central Palace, New York City, Sept. 11-16. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Mining Congress. Twenty-fifth annual convention and exposition of mines and mine equipment will be held at Public Hall, Cleveland, Ohio, Oct. 9-14. Executive offices, the Hollenden Hotel; E. C. Porter, convention manager.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Institute of Mining and Metallurgical Engineers will hold its fall meeting during the week of Sept. 25 at San Francisco, Cal. It is proposed to arrange for a party to leave New York on Sept. 10, stopping at different cities en route. Secretary, F. F. Sharpless, Engineering Societies Building, New York City.

American Chemical Society's annual fall meeting will be held Sept. 4-9 at Pittsburgh, Pa.; divisional meetings will be held at Carnegie Institute of Technology and general meetings at Carnegie Music Hall.

The Rocky Mountain Coal Mining Institute will hold its next meeting at Glenwood Springs, Col., Sept. 7-9. Secretary, F. W. Whiteside, Denver, Col.

National Safety Council. Eleventh annual Safety Congress at Detroit, Mich., Aug. 28 to Sept. 1. Executive secretary, W. H. Cameron, North Michigan Ave., Chicago, Ill.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

Volume 22 NEW YORK, THURSDAY, AUGUST 31, 1922 Number 9

What of the Business Revival?

PRICES and wages are going up. Every indication is for a busy and prosperous winter. Talk of business revival is in the air. The Steel Corporation has increased wages 20 per cent, making the pay of unskilled labor $3.60 per day, in an effort to hold the men that might be attracted to the coal mines, where the wage is again to be $7.50 per day. Liquidation of wages and prices has been estopped for the time being. The big question remaining concerns the permanence of the boom that appears to be on us. This is of interest to the coal industry because of what it portends after March 31, 1923.

It may be premature to speculate on next summer, and quite likely fruitless, but for coal it is important. The industrial storm this year may be largely traced to the effort made to liquidate wages in the unionized coal mines, and the end of the general movement due to the failure of the struggle in coal—that is, failure for all except the coal miner. Whether or not there will be a repetition of the effort next year and whether that effort will be accompanied by a coal strike will depend on the strength of the industrial revival, so called, and on the outcome of efforts yet to be fully inaugurated for preventing open breaks in coal wage negotiations in the coal industry.

The most important and at present the most apparent factor in the quickening of business is the absence of stocks of coal and of iron and steel products, traceable directly, of course, to the shortage of coal. As is noted in the monthly survey of business by the Department of Commerce, production has been descending for some time and prices have been going up. The twin strikes are held accountable for this state of affairs. Iron furnaces have been banked by the score, foundries are without pig, and a huge demand for iron in all forms is backing up on the manufacturers. Deliveries cannot be promised, for the furnaces are actually short of coke and but now are getting the supplies they need.

The railroads have been making a fine showing despite their strike, but they have not met all the demands placed on them and he would be shortsighted who would not anticipate still further and important shortages of transportation as the crops are offered to the rails and as coal mines get back to operation. Prices of coal are dropping from their peak—$8 coal was followed by $7 coal and that in turn by $6 coal. The trade is unsettled but a cross section of opinion seems to hold to the belief that the market will settle down to around $5 for the winter.

Will business function on a boom basis with coal at that figure? Just how sturdy is this revival? If it is predicated only on the making up of shortages caused by the strikes, then it will not be longlived. If it is that and something more, then it will live through. No one thinks that the demand for coal in the coming months will be as insistent as during 1920, that the country can or will absorb as much at as high figures as then. Theoretically stocks of coal in the hands of consumers are reduced to zero, and in fact they are lower than ever before recorded. The demand will be strong until that hole is filled, but beyond that point the strength of the coal market will depend on the persistence of general business activity.

The soft-coal requirements of the United States during the first six months of this year were very close to an average of 8,000,000 net tons per week. Consumption has declined since July 1. The two largest consumers, the railroads and the iron and steel industry, have used less, largely because they could not get it. The coal strike actually caused plants to shut down and fewer trains to move. It is not unlikely that from 8,000,000 tons per week consumption has fallen to nearer 6,000,000 tons in recent weeks. As production gains and prices recede that figure will increase.

If the present revival is the beginning of a secondary period of inflation, to be followed by another effort at deflation, and very competent opinion holds to that view, then we will experience a second effort to lower coal-mine wages after March 31, 1923.

King Lewis I

CREDIT without stint is given the United Mine Workers as the greatest labor organization in the world. On every hand the press and private comment confess to the remarkable victory of the miners in the soft-coal strike. Recorded history, we are told, has no counterpart for the struggle in the coal industry this year. With every factor dead set against the union miners, they pulled themselves out of the hole—even though they may have pulled the shopmen in—and they now stand the acknowledged victors, conquerers alike of the mine management and owner, of the government and of the people.

And John L. Lewis is crowned the hero of it all. He is the mighty force that held the army of 600,000 together, held the bucking broncos, Farrington and Brophy, in line, encouraged the line force and inspired the heavy artillery of propaganda, pulled the wires in Washington, confounded the administration and walloped the operators. Like the boy wonder, the chess player from Austria, he lone-handed moved his pieces on a score of boards, outfighting a score of separate individual operator groups each electing to play its own game. They are all cleaned up now, save one that he has stalemated and one that is not quite played out.

By the editors of the country John L. Lewis is hailed as King, Dictator, and with other equally choice and endearing encomiums. Some refer to the conclusion of the strike as unionism gone wild. Some class him with the renowned and redoubtable George Baer of 20 years ago. His loyal followers flock about him and do lip service, telling him how mighty and how wonderful he is.

It is not necessary, however, to quote the press on the greatness of John L. Lewis. He admits it. We wonder what the public that is getting excited over the revelation of power held by this one man would say were they to hear Mr. Lewis tell how mighty he is. Picture him pacing back and forth across the room where he is supposed to be negotiating a contract with operators —let us say, for instance, in Philadelphia last week with the anthracite producers. Hear him say, for instance: "You ask me why I will not accept arbitration; why I will not accept even recommendatory arbitration with freedom to accept or reject the findings. Why, gentlemen, because I know that by any comparison made, whether with the cost of living, earnings, wages in other industries, however arrived at, the miners lose. We will not have our wages and earning compared with others to our disadvantage. That method of adjusting wages is out of date for us."

Or perhaps the subject was the life of the contract, the little matter of wages having been settled in advance as the highest ever recorded. Perhaps the operators have said that they could not agree to pay those wages beyond next April, because they did not know what the price of bituminous coal would be, an important factor in selling steam sizes, comprising from 30 to 40 per cent of their output. Mr. Lewis demands in the hard-coal region a contract to run until March 31, 1924. To the objection of the operators he perhaps said: "Let that not worry you. The price of mining bituminous coal is not coming down. *I have the soft-coal men wrapped around my little finger.*"

Or as a peroration: "They told me I could not do it. College professors, economists, business men, my best friends and advisers said it was folly to undertake a strike this year, to try to hold coal miners' wages up to the post-war heights. *But, gentlemen, I have done it.*" Can't you just hear the rumble of that basso voice and see the shake of that magnificent mane? What an autobiography John L. Lewis would write today!

Choose an Able Commission

COAL legislation in three forms is being considered in Washington. Just plain inquiry heads the list in popularity, some method of controlling prices follows and outright seizure of the mines is latest and last.

The first, a commission of inquiry, is favored on every hand. As to the form of the investigation there is little discussion but the character of the commission has provoked much argument. The miners' union wants to have some of its people on that body, arguing that unless it is represented the commission cannot get the facts and will not know what to do with the data when it gets them. This argument has much merit, but is completely overshadowed by the counter argument that were they to have representation the commission would have to agree with their contentions entirely or there would be a minority report. The country wants no minority report and it therefore is saying keep both miners and operators off.

We earnestly hope an able commission will be appointed, that it will have ample powers, ample funds and ample time to make its study and report. In its anxiety to save the country from freezing, Congress will, it is hoped, come to some better method of getting coal out of the ground than taking over the mines. It is not the ownership that is holding up production of hard coal and laws cannot make the men dig coal.

British Miners and Coal for America

VARIOUS attempts to restrain the British miner from producing coal for America failed, as they were bound to fail. The fact that the proposal was vetoed at the recent Miners' International Congress held at Frankfort-on-Main may be regarded as conclusive evidence that the miners' leaders desired to abstain from interference in the matter. It has been pointed out that the miners in Great Britain were justified in the course they have taken, owing to the American miners' refusal to co-operate during the coal stoppage in Britain last year. This seems an excellent reason why the British worker should retaliate, but there is a still more practical one. It is obviously impossible for the miners to stop producing coal for America without ceasing production altogether, since it is not within their knowledge to which of the overseas markets the coal they produce is sent. Furthermore, it was mainly the non-union miners in this country who produced the coal for export that helped to break the strike in Great Britain last year.

British exporters are not reaping a financial harvest from their business in this country. American buying has been judicious in the main and carefully executed. Owing to the dull state of the export trade when the inquiries from this country first began the purchasers were able to obtain what are now considered by London as remarkably favorable terms. As a matter of fact the charter market has been as important an influence in determining the c.i.f. price of British coal in New York or Boston as has the price f.o.b. Cardiff.

It is clear that the British miners are doomed to disappointment in so far as they have been anticipating high wages later resulting from high prices and substantial margins over costs by the British export trade from the American business.

It will be remembered that last year in less than three months Great Britain bought and imported from this country some three million tons of soft coal at her own price. There was no perceptible increase in the market as the result of the British purchase of our coal in 1921. Under similar circumstances of dull market, low prices and idle mines, British coal men selling America not over two-thirds as much coal as we sold them last year record a market rise of 5s. or more in a month.

SOME OF THE OPERATOR GROUPS are reported in the press to consider that they emerge partial victors from this strike. Central Pennsylvania producers, for instance, announce that inasmuch as they negotiated a "district" agreement with District No. 2 of the United Mine Workers in so far as they deviated from the Cleveland contract by omitting provision for a gathering in October they beat John L. Lewis, who held out for no district settlements. These operators are just fooling themselves if they really think that way. Their victory is akin to that of the prisoner in the late war who was permitted to retain his trousers, although his suspenders were removed. Illinois operators, signing exactly similar terms, openly announce that they have been compelled to surrender.

KIN HUBBARD, HOOSIER HUMORIST and originator of Abe Martin, had this to say of the coal strike settlement: "Th' coal strike has been all settled fine an' dandy an' temporarily."



Cambria Steel Co. Drops Coal Down Well, Loads It at Bottom and Hauls It to Ovens*

Coal Is Passed Down a 110-Ft. Shaft from an Upper Bed to a Lower and Is Reloaded for Two-Mile Run to Rosedale Ovens—Electrically Actuated Gates Load Through Measuring Hopper

By George A. Richardson†
Philadelphia, Pa.

THE excellence of the iron ores in the vicinity of Johnstown, Pa., and the abundance of timber for the manufacture of charcoal fuel resulted in the development of many small iron furnaces in the early part of the last century. The presence of large coal deposits, in turn, aided in stimulating the business and maintaining it after local ores were no longer used.

The inception of what ultimately developed into the Cambria Steel Co. dates back to the year 1842 but it was not until 1855 that the first rolling mill was completed and put in operation. At the same time what is known as the Rolling Mill mine was opened. This mine, with the exception of three years (1888, 1889 and 1890), during which time natural gas displaced coal at the works of the Cambria Iron Co., has been in continuous operation ever since.

One Seam Yields 20,000,000 Tons in 67 Years

An excellent idea of the extent of the operations is to be gained from the figures that follow. In the sixty-seven years that have elapsed since the opening of the mine more than 20,000,000 net tons of coal have been produced from the C¹ seam alone. Despite the large amount that has been removed there is still remaining in the C¹ seam in the territory allotted to this mine an unmined tonnage of nearly 40,000,000, or twice the tonnage that has been removed since the mine was opened.

The record yearly production for this mine was made during 1905, when 804,188 net tons of coal was produced. The record production for any one month was made in May, 1907, when 79,875 net tons was dumped, and the daily record was made as recently as May 31, 1921, when 3,872 net tons was extracted.

This mine has worked over the largest territory of any single opening in the country, covering an area of approximately 10 square miles. The distance to the farthest working face is 5 miles.

From these figures it will be seen that the transportation problems at this property are unusually difficult and that the tonnages to be handled are larger than those in most single coal-mining operations. These drawbacks make imperative the introduction of the most modern



ABANDONED COAL TIPPLE OF ROLLING MILL MINE

This structure was used until April, 1922, after which the coal produced in the mine was dumped down the Elk Run shaft to be loaded into mine cars and hauled to Rosedale where it is hoisted and conveyed to coke ovens.

Note:—The frontispiece shows part of the Cambria plant of the Cambria Steel Co. and the Conemaugh River where the eight-track viaduct from the Rolling Mill mine would have crossed had it been constructed. Ample justification is shown for boring down and under, especially in view of the automatic devices by which the cost of transport by such original and unusual methods is reduced to a minimum.

*First part of an article on the Rolling Mill mine.

†Midvale Steel & Ordnance Co., Cambria Steel Co.

methods if production is to be maintained and to be performed economically.

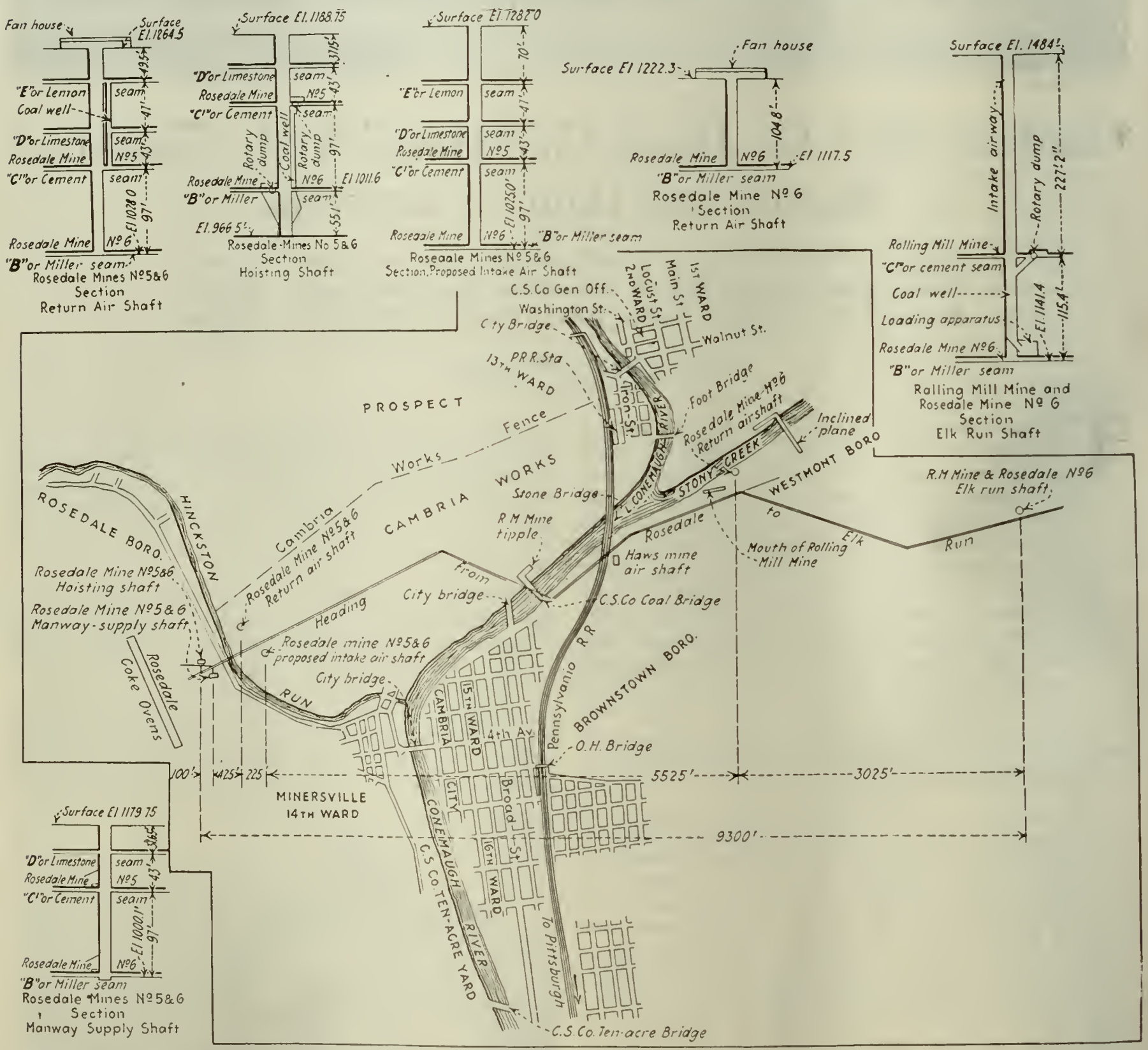
At the Rolling Mill mine two seams are workable. Both are in the Allegheny series. The upper, known locally as the Cement seam, is sometimes called the C^1, but is more generally designated as the Upper Kittanning. From it the Rolling Mill mine has obtained all its tonnage. It is a bright, horizontally bedded coal, the height of which averages about 3 ft. 6 in. At an average depth of about 110 ft. below this seam lies the Lower Kittanning bed, known as the Miller or *B* seam.

The roof is exceptionally good, in general being of black slate. It requires little or no timbering. In the new development which is to be described the main heading in the Miller seam has a length of more than two miles, and throughout its length no timber is used.

Until quite recently this coal was transported by six different kinds of haulage before it was finally dumped on the tipple. These consisted of mules, storage-battery locomotives, trolley locomotives, head-and-tail rope, grip-rope and chain haulage.

Until 1881 all the coal produced in this mine was handled entirely by mules, which hauled it from the mine across the Conemaugh River and directly into the steel works in small mine cars. The coal was all mined by hand.

In 1881 small steam locomotives were introduced to haul the coal from the main sidetrack, which is about a mile and a quarter back in the mine, this being a system of haulage that has seldom been attempted in the mines of this country. The coal was delivered to the main sidetrack with mules, and the dinkeys, or



PLAN SHOWING MINES OF CAMBRIA STEEL CO., WITH PARTS OF THE CITY OF JOHNSTOWN AND SUBURBS AND CROSS SECTIONS OF THE SHAFTS.

Note the long underground roadway from the Elk Run shaft on the right, at which point coal is dropped down a well from the Cement seam to the Miller seam. The section of this shaft, or coal well, is shown in the upper right-hand corner. The roadway passes under Westmount Borough and under the Conemaugh River on its way to the hoisting shaft of mines Nos. 5 and 6 in Rosedale. This shaft is located on the far side of Hinckston run, near the Rosedale coke ovens. At that point a well passes coal from No. 5 mine, Cement seam, down to No. 6 mine in the Miller seam. The section of this shaft is shown in the second illustration in the upper left-hand corner. Had the coal been taken above ground to the Rosedale plant in accordance with the original plans it would have interfered with operations of the Cambria Steel Works and the cost would have been excessive.

steam locomotives, hauled it outside and distributed it directly into the mills.

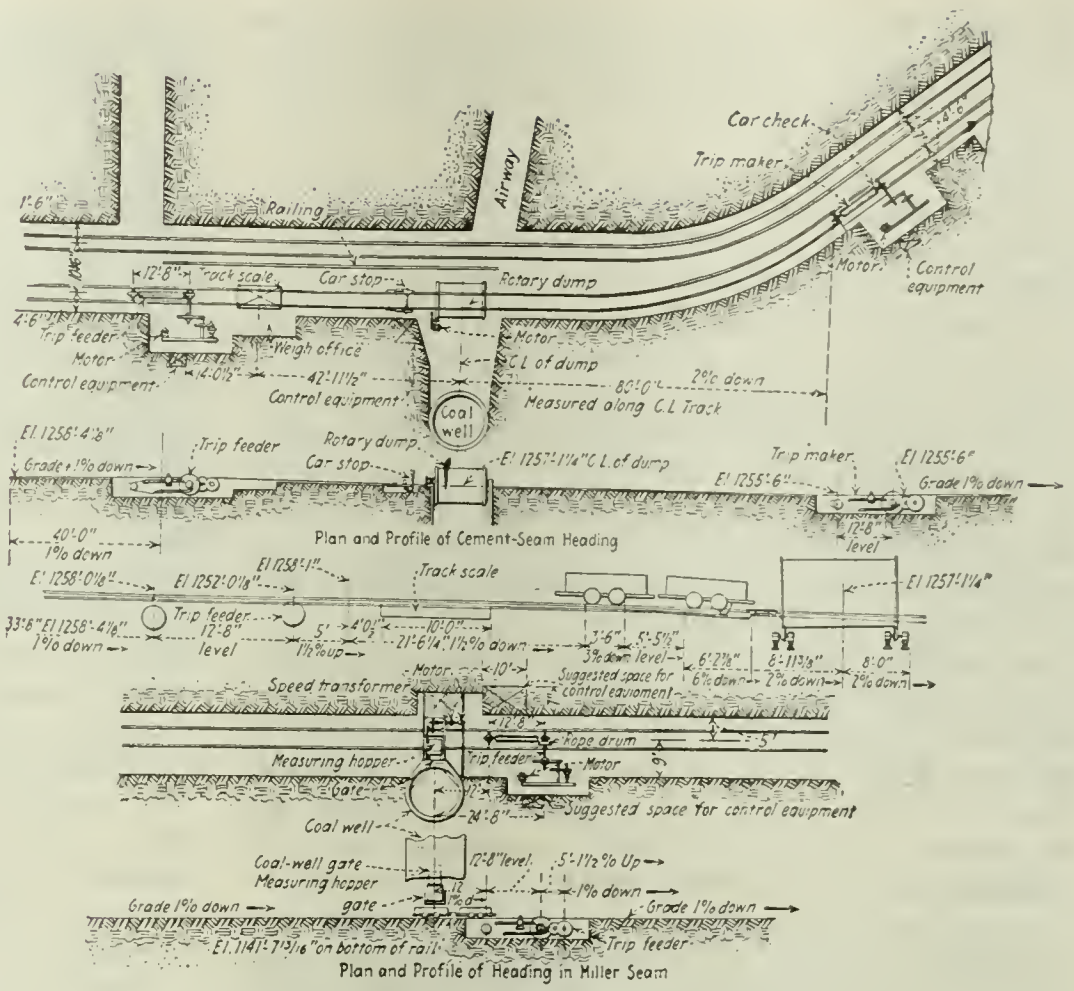
This method was again changed in 1890, when the present tipple was built and a rope was installed. The mules continued to be used for gathering the coal to the main sidetrack.

As the mine developed further and further under the hill, the need for additional haulage facilities arose. In 1898 a compressed-air plant was installed in the Mill Creek valley, the mine was piped for compressed air and a number of air locomotives were installed and used for hauling the coal from the different sections to the main sidetrack, where it was picked up by the rope haulage. Mules were still used to gather coal from the working faces.

In the same year (1898) compressed-air coal-cutting machines were installed for undercutting the coal, greatly adding to the number of tons per miner.

The development of the mine over a still larger area made necessary the installation of five electric storage-battery locomotives in 1916-17. Until this time the gaseous condition of the mine would not permit of the installation of trolley locomotives and electric coal-cutting machines, but in 1918, owing to the excellence of the mine ventilation and the improvement of the gas conditions, the management and the state mine inspector considered it safe and in keeping with the state mining code to electrify a portion of the mine.

As a result the electric trolley motors were put in use in this mine for the first time in its history, and in January, 1919, this was followed by the installation of a modern electric coal-cutting machine, the first that the Rolling Mill mine has ever used. The introduction of electricity eliminated the use of the compressed-air locomotives, many mules and several air-cutting machines and air pumps. Hence, despite the fact that the mine has been in use practically without a break for 67 years, the equipment is among of the most modern in the country.



REVOLVING DUMP TRIP FEEDER AND COAL WELL AT ELK RUN SHAFT

The coal is discharged from cars by a rotary dump in the Cement seam to a measuring bin above the Miller seam being weighed before dumping. The seams are 115 ft. apart. The trip feeder will handle as many as 110 cars at the rate of six or seven cars per minute. The feeder in the Miller seam will handle 130 cars. They can be filled at the rate of six cars per minute, the action of the delivery mechanism being automatic. The upper figure is a plan and the next below a profile of the car-handling layout in the Cement seam. Below this is a larger-scale profile of the same from the trip feeder to the rotary dump. Under these again are a plan and profile of the car-handling layout in the Miller seam.

With New Ovens Came New Mine Equipment

The practice of conveying the coal from the mine to the tipple, located in the Cambria plant, by means of rope haulage was continued until April, 1922. In 1916 what is conceded to be one of the best and most modern byproduct coke-oven plants in the country was designed for a location in a deep valley near the Cambria plant, through which flows Hinckston Run, the new installation known as the Rosedale plant. The carrying out of this design was commenced in 1917 and completed in 1922. Here care is taken of the entire output of the Rolling Mill and Rosedale mines.

One of the most important problems to be solved was the conveyance of the coal from the Rolling Mill mine to the Rosedale shaft. Several plans were considered and in explaining these it will be helpful to refer to the diagram which shows the relative location of the various openings.

The first plan considered involved the construction of an eight-track viaduct over the Conemaugh River from the Rolling Mill mine and the Miller seam into the upper end of the Cambria plant, the building of a new tipple, etc., at an estimated pre-war cost of $1,500,000, which would have meant three to four times as much during the war and the period immediately following. This plan had serious disadvantages. To begin with, the cost was high. More important, however, was the fact that congestion would be increased at a place that was already congested. Johnstown lies in a narrow valley between high, steep-sided hills, and the level space so necessary in steel-plant operation is always at a premium. Lastly, it would be necessary to haul the coal from the tipple to Rosedale, necessitating additional trackage through the plant and the use of still more space that was valuable for other purposes. On the diagram the location of the entrance to the Rolling Mill mine, the space occupied by the rope-haulage system, viaduct, tipple, etc., are all indicated.

The second plan proposed involved a radical departure from the first and there was some question of its practicability. It was finally adopted, however, and brought to a successful completion. This new plan involved the entire abandonment of the old system of rope haulage, the viaduct, tipple, etc., and the introduction of direct communication with the Rosedale plant through a heading from the Elk Run shaft of the Rolling Mill mine driven in the lower coal bed, which is known as the Miller, or *B*, seam.

The greatest difficulty with this plan and the one which gave rise to a fear that it was impracticable lay in the fact that it was necessary to drive the heading under the Conemaugh River and at a level which allowed

only about 70 ft. or cover. The diagram clearly shows the new route. It was expected that the water encountered in passing under the river would give much trouble.

The total length of the new heading is a little more than two miles and except in the section under the river gave no trouble of any kind. In driving that section drillholes were carried 16 ft. ahead of the gangways for fear that water would enter the workings in unmanageable quantities. Due to crevices in the strata large inflows were encountered on four separate occasions. The crevices, however, were filled with cement and no further difficulty was experienced with them. Today the plan adopted is in successful operation, and it is interesting to note that it was completed at a cost practically the same as that estimated on a pre-war basis for carrying out the first plan.

As might be expected, equipment of the most modern type has been used at this new operation and many new ideas originated by the mining department of the Cambria Steel Co. have been successfully developed. These will be described step by step in connection with the account of the methods used in getting coal to the Rosedale plant.

It has been mentioned already that the operations in the Rolling Mill mine are in the upper, or Cement, seam. Under the new arrangement coal, instead of being taken to the old opening which comes out at the Conemaugh River, is brought as far as the Elk Run shaft, located in the Borough of Westmont and about one-half mile back in the mine. Here a coal well has been sunk to the Miller seam, which at this point is 115.4. ft. below the Cement seam and about 342.6 ft. from the surface.

The equipment for handling coal at this point includes one trip feeder, a car stop, a rotary dump and a trip maker in the Cement seam, with automatic power-driven gates, trip feeder, etc., in the Miller seam. Coal from the Cement seam is weighed in cars before being dumped.

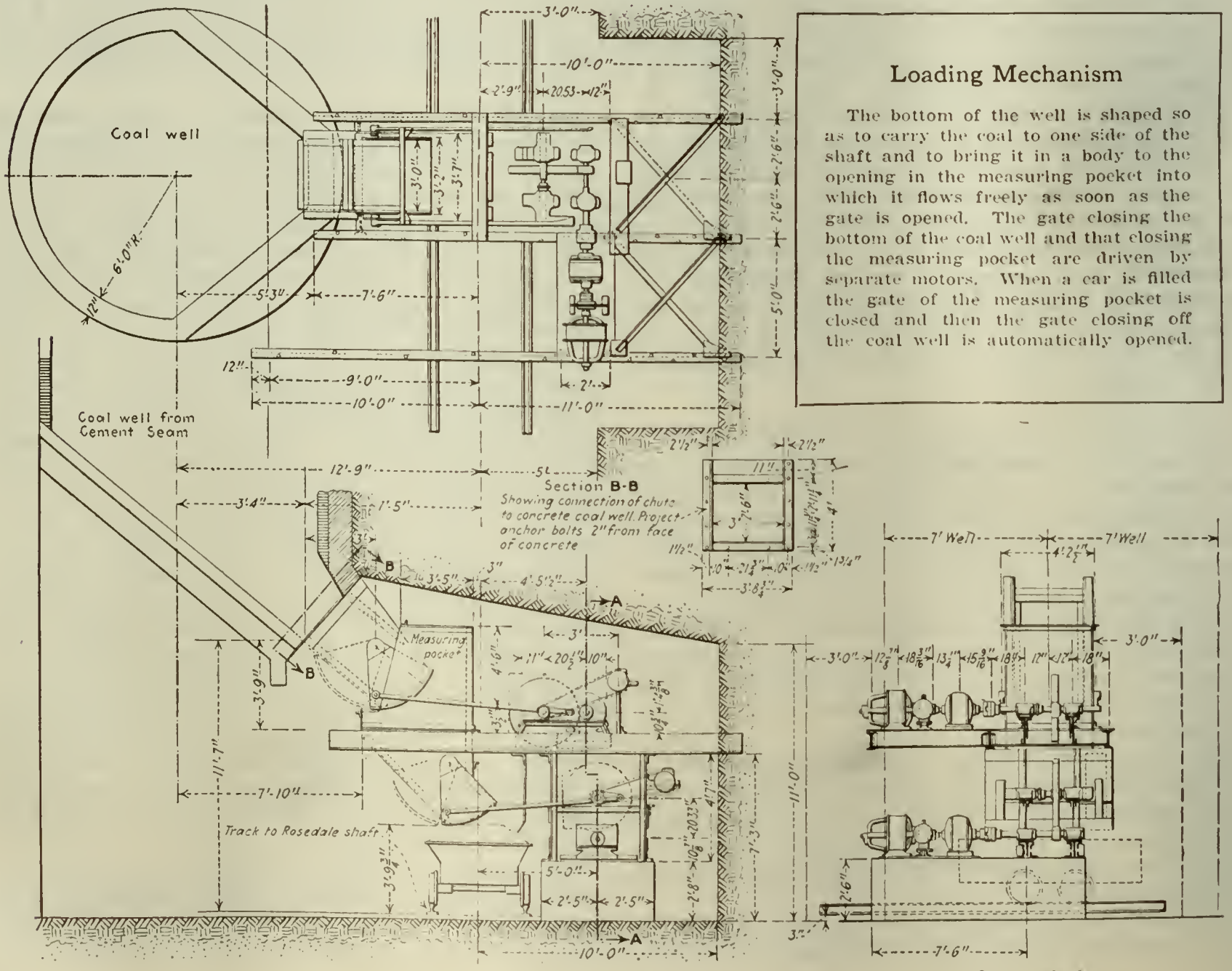
The equipment provided for the Cement seam is capable of handling loaded mine cars in trips not exceeding 110 cars each, advancing and dumping at the rate of six or seven cars per minute and remaking into trips of the same size. The trip feeders at this point are of the chain type with hooks and have a speed of about 65 ft. per minute. Trips of the size mentioned, the number of cars being based on an average load of 3,000 lb. each, can be handled on a 1-per cent favorable grade, enough cars being spragged to keep them from running forward.

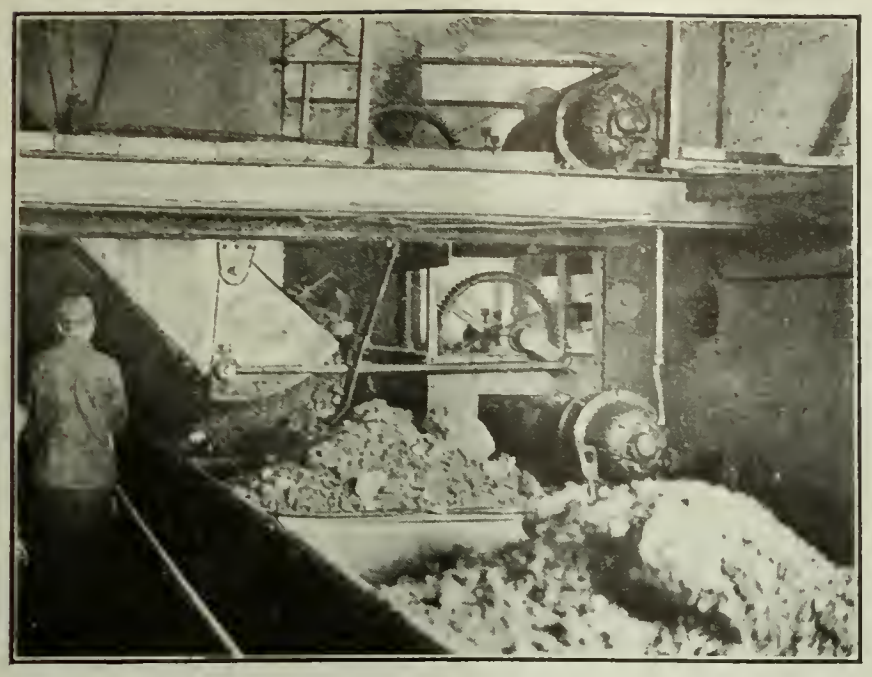
A standard car stop is provided at the dump so that the operator has position control of the delivery of cars. This consists of a pair of heavy steel horns seated on heavy steel coil springs. These horns the operative controls by hand with the aid of a system of levers.

The rotary dump is operated by a 10-hp. 250-volt direct-current motor with automatic electric control. It requires no attention other than to start and stop it by the pressing of push buttons. Spring-seated car

Loading Mechanism

The bottom of the well is shaped so as to carry the coal to one side of the shaft and to bring it in a body to the opening in the measuring pocket into which it flows freely as soon as the gate is opened. The gate closing the bottom of the coal well and that closing the measuring pocket are driven by separate motors. When a car is filled the gate of the measuring pocket is closed and then the gate closing off the coal well is automatically opened.





LOADING CARS FROM COAL WELL AT ELK RUN SHAFT

A motor-driven gate lets enough coal to fill one car pass from the coal shaft to the measuring bin. Another gate also opened by a motor, allows the coal to drop into the car below. The cars pass at the rate of 65 ft. per minute. As each car approaches the chute it forms a contact opening the lower gate.

stops are provided in the dump, these being connected by levers to a treadle at the dump entrance.

The dump is so arranged that each car entering it will open the car stops and push the empty car out at the opposite end. Coal dumped into the well accumulates and is released at intervals into the measuring hopper of the loading machinery and thence passes into the cars.

In the Miller seam a cast-iron drum and 165 ft. of steel wire rope are provided for bringing the trips to the trip feeder. This feeder is capable of handling empty trips not exceeding 130 cars each, advancing them coupled under the gate of the loader at a constant speed of approximately 65 ft. per minute.

The loading apparatus proper consists of the following parts: A steel nose for the bottom of the coal well (this is equipped with a motor-driven gate that opens into the measuring hopper, having a capacity equivalent to one mine car) and second gate, also motor-driven, allowing the coal to drop into the car. The gates are of the chop type and made of steel. They are driven by 7½ hp. variable speed motors ranging from 450 to 1,350 r.p.m. through a gear reduction. All motors operate on 250-volt direct current.



UNDERCUTTING MACHINE AT WORK IN MILLER SEAM

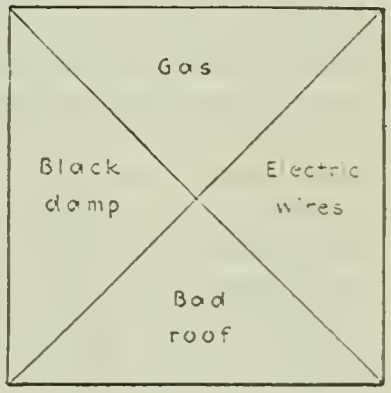
Note the excellent roof which enabled the heading to Rosedale mine to be driven and maintained without a stick of timber or a steel girder.

The control of the loading machinery is entirely automatic. As each car approaches the gate a contact is formed and the lower gate is set in operation. It opens and discharges its contents into the car while the latter is in motion and then closes automatically As the lower gate closes the upper gate starts its cycle of operation and the hopper is refilled. When the hopper has been filled both gates remain at rest until the next approaching car forms the contact which starts the apparatus in motion again.

With apparatus of this character cars can be loaded with great rapidity, the average rate being six cars per minute. The trip, both empty and loaded, is moved forward by a chain haul of the same general construction as that used for the feeder in the Cement seam but modified in some details. The speed is 80 ft. per minute instead of 65 and the spacing of the hooks is different. This chain haul can handle 130 cars, the grade being 1 per cent and favorable to the load. The average weight of the loaded cars is 5,000 lb. Enough cars are spragged to keep the trip from running forward.

Proposed Danger Sign Divided Diagonally

IN THE report of the thirteenth annual meeting of the Mine Inspectors Institute of America appearing on page 133 of *Coal Age* for July 27 last, the description of the proposed underground danger signal was in error. The recommended signal is intended to be arranged as shown in the accompanying illustration. It will be seen at once that the proposed board is divided by diagonal lines into four quarters—an upper, a lower, a right and a left. This arrangement will be less confusing than that described. Had the drawing here presented been at hand when the description referred to was written no such mistake as was made would have been possible.



THE PERSONNEL OF THE U. S. BUREAU OF MINES CAR NO. 2 recently conducted first-aid and mine-rescue training at Dawson, N. M., and at Cameo, Somerset and Gilman, Col. The city firemen at Trinidad, Col., were given a course in first aid. The crew of Car No. 3 has conducted training at Heilwood, Frugality, Fallen Timber, Blandburg and State College, Pa. Car No. 4 was one of the attractions at the King Koal Karnival recently held at Henryetta, Okla., which was attended by approximately 40,000 people. G. T. Powell, of the Evansville (Ind.) safety station, gave first-aid training in June at Seco, Millstone, Blackey, Sassafras, and Wico, Ky. K. H. Chisholm, of the Norton (Va.) station, conducted first-aid training at Moss, Va., for the Clinchfield Coal Corporation and at Roaring Fork and Pardee, Va., for the Blackwood Coal Corporation. First-aid Miner Reid, of the Norton station, conducted first-aid training for the Stonega Coke & Coal Co., at Stonega and Dunbar, Va., and for the Clinchfield Coal Corporation at Crane's Nest and Clinchfield, Va. J. G. Schoning, foreman miner of the Seattle (Wash.) safety station, conducted training at Issaquah, Burnett and Black Diamond, Wash.

"THESE SAFETY GUYS MAKE ME TIRED. It's too much trouble testing out this breathing apparatus."

Well, he didn't care much about breathing any longer, anyway.



Conditions Under Which Made Wonderful

Orient Dumps a Mine Car Every Three-Eighths Million Tons in One Production—Output per Man per

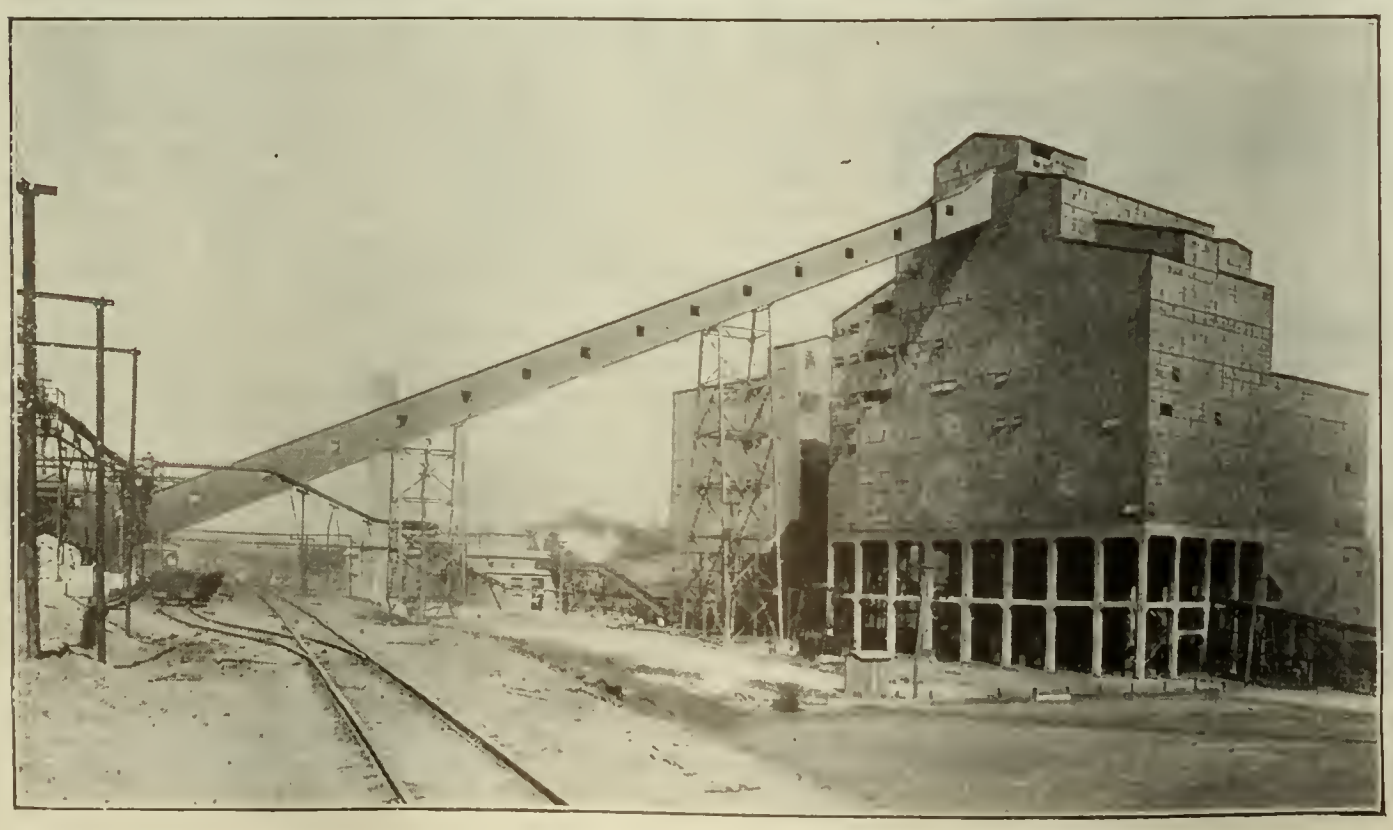
BY RAISING 8,218 tons of coal in a single shaft on March 25, 1922, the Orient mine of the Chicago, Wilmington & Franklin Coal Co. established a one-day single-balanced-hoist record that has so far never been beaten. The Zeigler mine of the Bell & Zoller Mining Co. during the same month established the one-month hoist record, producing 164,109 tons, its maximum production in any one day being 7,537 tons.

It will be said doubtless that there are single breakers in the anthracite region that not only handled but actually prepared more coal than the Orient and Zeigler shafts lifted and the surface plants prepared. That is true. Truesdale breaker of the Glen Alden Coal Co. put out in 1921 1,550,014 tons of fresh-mined coal, which would average, it is true, only 129,168 tons per month but the output in the record month of that year was 162,000 tons, and in March, 1922, when Orient and Zeigler made their big record, its production was 202,000 tons. The greatest quantity of coal shipped in one day from Truesdale breaker was 10,314 tons.

Note—The illustration at the top of the left-hand page shows the Orient and that at the top of the right page the Zeigler mine. These plants are only five miles apart and are located in the Franklin County field, where some of the largest producers in the United States are to be found, that county having been left undeveloped for many years owing to the depth of the coal, not one of the mines in that district being mined by drift or slope.

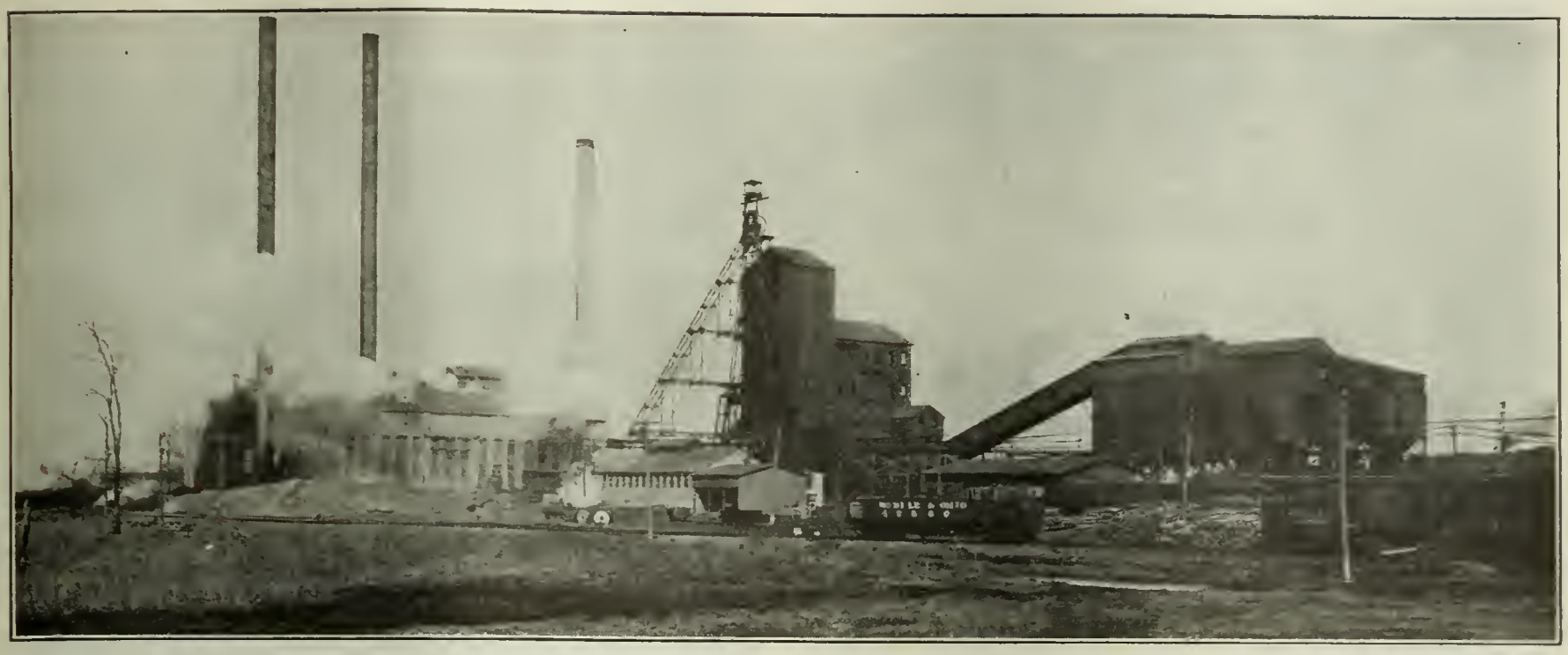
On March 31 of this year the Truesdale plant mined, hoisted and prepared 12,000 tons, of which 9,500 tons were shipped, and 2,500 tons of coal were held for the boiler plant and in pockets for retail trade. Truesdale has been for many years a consistent producer. Since and including 1913 it has not failed once to ship more than a million tons of coal a year. It has no culm banks or strippings to help it maintain its output, but its coal comes from two shafts, five slopes and two tunnels—nine openings in all.

Plymouth No. 5 also, one of the plants of the Hudson Coal Co., commonly known as the Loree colliery, which has five coal shafts, a slope and three tunnels, put out 1,502,071 tons of fresh-mined coal in 1921 and 1,580,000



Truesdale Breaker

A preparator that for nine years has never failed to produce a million tons yearly and has shipped in a single day 10,314 tons. Tributary to the mammoth breaker are two shafts, five slopes and two tunnels. In 1921 1,550,014 tons of fresh-mined coal was produced. On March 31 this plant mined 12,000 tons, but 2,500 tons was held back to keep the mine free of water during the impending strike.



Orient and Zeigler Mines One-Hoist Records

Seventeen Seconds—Loads One and Year—Zeigler Has Biggest Monthly Day Six and Three-Quarter Tons

tons including coal from culm banks. These are plant outputs and are not obtained through the handling of a single shaft hoist.

It is useful, however, to recall the gigantic operations of the anthracite region in sizing up and in considering the importance of the records made in the Orient-Zeigler contest and to realize that the tonnage of each of the Illinois shafts all came to one landing and was hoisted up one shaft by one hoist. There was a concentration not only in regard to time but in regard to facilities of operation. This is really the important fact. We might attain the output of the Orient mine by putting in two plants each of which could produce 4,000 tons and get the result desired—an output of 8,000 tons—but the essential point is that the greater cost of two plants was avoided and that one gang of men produced the whole tonnage.

Still it would not have been a particularly creditable performance if to obtain so much coal through the shaft it was necessary to use an undue number of men. After all, economy of operation is the main consideration. Thus Zeigler produced on its best day about 8.1 tons per man and during the whole month averaged 6.78 tons. The average output per loader per day for the whole month was 11.7 tons and per machine man 95.9 tons, the bottom laborers handling 27.9 tons per man and the top laborers 63.3 tons. These records are exceptionally good.

TABLE I.—COMPARISON OF ORIENT AND ZEIGLER RECORDS

	Orient	Zeigler
Maximum output per day	8,218 tons	7,537 tons
Average output per day in March, 1922	6,001 tons	6,078 tons
Monthly production (March, 1922)	162,015 tons	164,109 tons
Lowest tonnage per day	5,241 tons	4,103 tons*
Days run	27	27
Depth of shaft, collar to bottom	520 ft.	417 ft.
Average thickness of coal	9 to 10 ft.	11 ft.
Hoisting time on day of maximum production	468 min.	463
Lost time on day of maximum production	12 min.	17
Total time on day of maximum production	480 min.	480 min.
Number of dumps on day of maximum production	1,640	1,968 at bottom
Dumps per minute	3.5	2 1
Capacity of mine cars	5 tons	4 tons
Size of skip	.....	8 tons
Production in coal year—April, 1921 to April, 1922	1,374,985 tons	1,349,610 tons
Average tons per hoist	5.0091 tons	8 1 tons
Average time per hoist	17 12 sec.†	29 75 sec.
Lower landing to dump	600 ft.	517 ft.
Two engineers worked in relays of	30 min.	one man
Working relations	Union mine	Union mine
Mine opened	1912-13	1904
Mine worked by	open lights	open lights
Method of operation	room-and-pillar‡	room-and-pillar
Size of main shaft	11½ x 8 ft.	8 x 12 ft.

* Last day of run. † Allowing 5 seconds for caging, 5 seconds for acceleration and for retardation the maximum rope speed figures 5,070 ft. per minute, or 57.61 miles per hour. ‡ Fifty per cent of coal removed in first mining. Hope to recover 25 per cent on retreat.

Tonnage Per Man Exceeds American Practice

Is it necessary to call attention to the fact that in the United States the average tonnage per man-shift in whole years, when idle days interspersed among working days made men more anxious to do their best, ran during the period from 1890 to 1918 between 2.56 tons and 3.91 tons and that even in Utah, where coal



CLEANING NUT COAL AT ORIENT MINE

The method of suspending the shaking chute is interesting. Note the evenness of the product. There is a close analogy between the anthracite and Illinois coal shipments, despite the difference in the degree of mineralization of the fuel. The Illinois coals are more carefully prepared than most bituminous coals, the domestic fuel market being fostered with unusual solicitude.



Zeigler Officials

Front row, left to right: Lawrence Hawkins, bottom boss; Joe Dudec, section boss; Paul Johnson, assistant mine manager; Ed Prudent, mine manager; Robert Hart, section boss; Michael McMahon, night boss; Ernest Prudent, machine boss; George Brown, section boss; Richard Prudent, section boss. Rear row, left to right: Paul Weir, chief engineer; E. C. Berger, underground superintendent; R. H. Zoller, general manager and vice-president; Joseph Yerly, top superintendent; Ed. Ferguson, top electrician; Martin Uhrich, company weighman; John Dudash, section boss; Andrew Leslie, top boss.

tonnages per man are unusually high, the output in 1918 was only 4.79 and in 1917, 5.40 tons per man per day.

The showing certainly compares favorably with those that Professor Henry Lewis gives for the British mines in 1921—namely, 177.2 tons per year per person. The men in the Zeigler mine beat that record in a single month of twenty-seven working days.

It must be remembered, however, that the coal in Illinois is not so uneven in thickness, so irregular in level and so wet as in Great Britain. Illinois coal is clean. Several true faults are found in the Orient mine but the displacement is relatively small. The grades in sections run to 5 or 6 per cent and in Zeigler even 8 per cent, but there are stretches of half a mile or more where the seam lies practically level or with only a gentle dip. Regular workings with headings driven in any direction without trouble from water give Illinois an advantage over Great Britain and most of the United States. The southern Illinois mines have not failed to take advantage of the favoring conditions. The operating staffs have with long experience learned to install such equipment as will render the best account of every opportunity. It must also be remembered that the assurance of a strike on and after April 1 made every man paid by the ton anxious to do his utmost so as to obtain the largest possible cash reserve for the long period of idleness which was in view.

The attached tables will give some idea of the relation between the tonnages and the number of men at work at both mines.

TABLE II—OUTPUT AND MEN AT WORK, ZEIGLER NO. 1, IN MARCH, 1922

Date		Tonnage	Loaders	Machinemen	Bottom Laborers	Top Laborers
March	1	5,500	462	59	193	96
	2	5,415	508	70	222	96
	3	6,073	529	70	229	96
	4	5,900	531	70	225	96
	5	Sunday				
	6	5,600	501	62	217	96
	7	5,700	546	68	232	96
	8	5,900	557	70	236	96
	9	7,214	558	69	236	96
	10	6,210	551	72	232	96
	11	5,780	536	74	224	96
	12	Sunday				
	13	6,345	530	67	227	96
	14	5,992	546	69	234	96
	15	6,461	534	66	232	96
	16	5,219	427	63	197	96
	17	5,748	518	57	222	96
	18	6,137	493	67	222	96
	19	Sunday				
	20	5,734	495	62	205	96
	21	5,757	546	66	218	96
	22	7,283	529	68	222	96
	23	6,734	556	71	221	96
	24	6,284	558	69	220	96
	25	6,619	548	70	216	96
	26	Sunday				
	27	6,349	531	63	214	96
	28	7,537	547	68	219	96
	29	6,268	515	67	206	96
	30	6,248	492	32	200	96
	31	4,103	336	2	167	96
Totals		164,109	13,980	1,711	5,888	2,592

Days worked, 27; average loaders, 518; average machinemen, 63; average bottom laborers, 218; average top laborers, 96.

At the Zeigler mine it was an easy matter to handle the coal up the shaft because it was provided with two 8-ton skips. Its main difficulty was getting enough coal to the landing. The interesting methods by which this problem was overcome may be found described in *Coal*

Officials at Orient Mine

In front seated, left to right: George Pollack, mine manager; John Rodenbush, superintendent; Peter Borrella, assistant superintendent. In rear, standing, left to right: Joe Spaven, assistant mine foreman; Peter Chiaventone, top foreman; William Nestler, Charles Rodenbush, William Medill, Luther Jones and Jake Rodenbush, assistant mine managers.





MINE BOTTOM AT THE ORIENT MINE

The top landing has been done away with by the automatic self-dumping cage. Unfortunately there is still the bottom caging and decaging to be performed and these are real problems. How speadily and efficiently they were handled at Orient the tonnage tells.

Age, May 25. At the Orient mine the coal is raised in cages and there the difficulty was in vertical rather than in horizontal transportation. Much interest is shown in the relative methods of operation and for this reason the equipment and results at the two mines are tabulated for ready reference.

TABLE III—OUTPUT AND MEN AT WORK, ORIENT NO. 1 IN MARCH, 1922

Date		Tonnage	Total Number Day Men	Loaders	Machine Men	Top Company Men	Underground Company Men	Night Shift	Total
March	1	5,645	935	563	53	81	234	47	982
	2	5,773	1,013	623	59	86	244	46	1,059
	3	5,797	1,034	635	63	91	245	49	1,083
	4	5,843	1,003	615	61	85	241	47	1,050
	5	Sunday	51			35	16	25	76
	6	5,289	1,012	623	62	89	237	51	1,063
	7	5,663	1,052	642	66	91	251	52	1,104
	8	5,861	1,023	617	62	96	246	54	1,077
	9	6,009	1,045	647	58	89	249	52	1,097
	10	5,241	1,056	650	67	89	250	52	1,108
	11	5,333	1,045	644	65	90	246	52	1,097
	12	Sunday	62			37	25	22	84
	13	6,052	1,017	616	55	92	254	42	1,059
	14	6,012	1,054	641	63	89	261	49	1,103
	15	6,058	1,058	642	55	90	265	48	1,106
	16	6,124	969	579	47	93	250	49	1,018
	17	6,096	1,018	623	49	95	249	53	1,071
	18	6,028	990	603	56	91	240	51	1,041
	19	Sunday	97			45	52	32	129
	20	6,061	1,014	626	62	89	237	48	1,062
	21	6,548	1,065	660	65	88	252	55	1,120
	22	6,359	1,049	648	64	93	244	52	1,101
	23	5,791	1,053	639	65	88	261	54	1,107
	24	5,719	1,064	645	63	93	263	62	1,126
	25	8,218	1,065	650	66	92	260	60	1,125
	26	Sunday	99			46	53	39	138
	27	5,929	1,052	625	63	95	267	48	1,100
	28	6,130	1,068	648	58	95	263	50	1,118
	29	6,466	1,054	633	56	91	272	50	1,104
	30	5,706	1,104	620	39	91	252	47	1,061
	31	6,235	859	510	7	92	248	50	909
Total		162,015	28,080	16,867	1,549	2,607	6,937	1,488	29,478

Number of days, 27; average number of day men, 1,040; average loaders, 625; average machine men, 57; average top company men, 97; average underground company men, 257; average night shift, 55; average total, 1,092.

At the Orient mine 825 dumps aggregating 4,100 tons were made in the morning and 815 dumps totalling 4,118 tons were made in the afternoon. Three railroad trains of fifty-eight cars each, or a total of 174 cars, were needed to handle the day's production, the coal being screened into seven sizes over tipple and rescreener.

Thirty-Day Free Storage Given at the New Government Terminals, Mobile, Ala.

By David Holt
Mobile, Ala.

BARGES of rough-hewn lumber first brought Alabama coal to Mobile in the early fifties. This could be done, however, only when the rivers were at high stages. The boats usually were sold with the coal and were broken up for the timber they contained. The bargemen returned by steamboat to Tuscaloosa, and thence traveled overland to their homes in Walker County.

No large quantity of water-borne coal ever moved to this seaport. Frequently the coal and barge were sold at Tuscaloosa to save the long drift down the Warrior, Tombigbee and Mobile Rivers. With the extension of railroads through the coal fields this limited use of the natural waterways for coal transportation gradually came to an end, and it was not until after the canalization of the Warrior River was completed in 1915 that the water traffic in coal was revived. Even then lack of facilities for handling water-borne cargo coal at Mobile retarded development of this commerce.

Floating equipment for bunkering steamers long has been ample for the needs of the port. Such equipment can place fuel aboard a vessel as rapidly as it can be trimmed and stored in the bunkers. The Southern Ry. built a tipple with which to handle coal from cars to ship and the Louisville & Nashville RR. did likewise. Then the government built a coal- and ore-handling plant. This was completed last May and now forms an important link in the Mississippi-Warrior service.

A survey of the port compiled by the Mobile Chamber of Commerce for publication in June, 1922, shows that the present coaling facilities exceed 12,000 tons per day of 8 hr., or more than two average ship cargoes. This equipment includes the government tipple, two railroad tipples, five derrick barges of from 50 to 100 tons hourly loading capacity; one collier capable of placing 150 tons of coal aboard ship per hour, and a locomotive crane designed to transfer coal from barge to ship.

Mobile did not advertise itself as "the cheapest coal port on the Gulf of Mexico" until it was prepared to "deliver the goods." The Mississippi-Warrior service has published and placed in effect its tariff for the delivery and storage of coal at its Mobile plant, which has a capacity of 400 tons per hour from barge or storage pile to ship or other carrier. This publication shows that coal for export or coastwise movement via ocean



DANISH S. S. NORDFARER LOADING COAL FOR PERU

Coal and coke were loaded on this vessel from the Southern Ry. tipple at Mobile, Ala., bound for Callao, Peru. This shipment aggregated 5,000 tons.



COAL AND ORE-HANDLING PLANT AT MOBILE, ALA.

The capacity of the plant is 400 tons per hour from barge or storage pile to ship or other carrier. Delivery can be made from barges or the stockpile to ocean vessels or from barges to the stockpile. Ships trading with the Orient and going to Pacific Coast ports of the United States find in wheat, flour, fresh, dried and canned fruits and fish available return cargoes

vessels, will be handled at the Waterways tipple under the following conditions:

"Delivery will be made direct from barges of the Waterways or from the stock pile into ocean vessels, or from barges to stock pile, the Waterways reserving the right to unload barges immediately upon arrival at Mobile, placing the coal on the stock pile. No charge will be made for delivery of coal into ocean vessels from barges of the Waterways or from stock pile or from barges of the Waterways to stock pile or for storage, provided delivery is completed within 30 days after the arrival of the coal at Mobile. The period of 30 days will be computed from 7 a.m. of the day following the arrival of the barge at Mobile, Ala., Sundays and holidays excepted.

Fifteen Cents per Ton After Thirty Days

"If delivery is made, or if coal is held in storage after the expiration of the 30-day period a charge of 15c. per ton of 2,000 lb. will be assessed. This charge includes the transference of coal from barge to stock pile, from stock pile to vessel, or from barge to vessel, as well as storage at the tipple. This charge must be paid immediately upon the expiration of the 30-day period referred to in the preceding paragraph."

Under present regulations, no coal will be handled at the tipple by the Waterways except in line service. No railway connects with the plant, which is located on the east side of the Mobile River. The storage capacity of the bins is 40,000 tons, which will permit the accumulation of sufficient coal for several ships' cargoes.

As the plant was placed in commission in June, the greater part of the coal handled by it has gone to Texas ports by ocean barges. One Mobile shipping firm, Page & Jones, has handled four cargoes of coal and coke, or approximately 24,000 tons, from the port of Mobile within as many months. Further exportations are anticipated in the near future. The greater part of the cargo coal handled was loaded at the railroad tipples and all of it came to the port by rail. The latest shipment, composed of about 5,000 tons of coke and coal, was made to Callao, Peru, on the Danish S.S. "Nordfarer." This is said to be the beginning of a large movement of Alabama coal and coke to that Peruvian port.

Shipment of pig-iron, iron pipe, steel rails and other manufactured products of the Birmingham district to the Orient and to Pacific coast ports of the United States, via Mobile and the Panama Canal, with return cargoes of wheat, flour, fresh, dried and canned fruits and canned fish, has shown a marked increase during the present year. It is not an uncommon occurrence on the Mobile water front to see a steamer taking metal products from cars on one side and steel rails from Warrior barges on the other. The distribution of freights brought in by these steamers inbound gives the Warrior barges the return cargo that is needed for the successful operation of the line.

The commerce of the port of Mobile is in a flourishing condition and will be further improved after the passage of the proposed Seaport Amendment on which a vote will be taken on Nov. 14, the purpose of which enactment is to permit the State of Alabama to lend $10,000 on its credit for the further improvement of the seaport, by the building of self-supporting terminals, to be owned and controlled by the state, through its harbor commission.

Telegraphic advices from Alaska are to the effect that the Naval Collier Jason is en route south from Alaska with 5,000 tons of washed coal from the Chickaloon mine and 600 tons from the mines of the Behring River Coal Co. This coal is to be given a battleship test. An ingenious application of gold-mine practice has been resorted to in washing the Behring River coal. Gold sluices have been put in for this purpose and are giving splendid results. They are built in parallel, so that while one is being cleaned the other is in service. The plan is so effective that even the fine coal which settles in the bins shows no more than 4 per cent ash. Much of the coal thus far mined has run only 2 per cent in ash. The coal is sacked at the foot of the sluice and there transferred by truck to a canoe landing four and one-half miles away.

"Cap crimpers are toys for kids. I'll use my teeth." He did. But he has no use for them now.

"This must be a missed shot. I'll dig in and find out." Wham!

Laws Compelling Use of Telephones at Mines and Provisions that Make Them Safe and Durable*

Several States Provide for Their Compulsory Installation—Severe Conditions Imposed Require Specially Constructed Devices—Reliable Transmission and Signaling, Prevention of Burn-outs, and Safety to Users Essential

By D. E. A. Charlton†

At A mine not a shift passes in which the usefulness of the telephone fails to be made manifest, and it hardly seems necessary in these days of enlightenment to enact laws making the use of the telephone in mines compulsory.

In June, 1921, the U. S. Bureau of Mines issued‡ a compilation of state safety regulations pertaining to the use of telephones at mines prepared by L. C. Ilsley and R. A. Kearns. This shows that sixteen states have rules or enactments relating to telephones, and I understand§ that no new state regulations have been enacted since then, although changes may take place at any time. It is of interest that the Federal Leasing Act of Feb. 25, 1920, has the following reference to mine telephones: In each mine where more than 100 men are employed underground on any shift the lessee shall provide and maintain a telephone system between the hoisting-engine room, the ground landing of the shaft or slope, the principal mine exit of drift mines, the fan building when same is located 1,000 ft. or more from the power house or main exit of the mine, and such other points on the surface as the safety of the employees may dictate. The telephone system shall also extend into the mine and telephones be placed on each shaft or slope landing in use and at the inside siding of each of the main haulage roads. The underground telephones shall be so placed that no body of twenty men shall be more than 1,000 ft. from the nearest telephone station. Telephones shall also be placed in each refuge and first-aid chamber.

What Laws of the Several States Require

The following is a résumé of the various state regulations with regard to the use of telephones at mines: The rules of California provide that telephones be maintained in all mines over 500 ft. in depth. Colorado orders the maintenance of an adequate telephone system in all mines, extending from the surface to the bottom of the shaft. Illinois requires that a system of party-line telephones be installed that shall include one telephone at the bottom of the hoisting shaft or, in slope or drift mines, at the first cross entry, and one at each inside parting. Iowa demands that in all mines where the workings extend more than 3,000 ft. from the foot of the slope, shaft, or the mouth of the drift a telephone system shall be installed and that this shall be extended as the works of the mine progress 3,000 ft. therefrom. Kentucky specifies that in any coal mine where more than fifty men are employed underground, one or more telephones shall be installed communicating with the surface. In Kansas it is unlawful to operate or permit any coal mine to be operated not equipped with a party-line telephone system. The New Mexico law apparently exempts metal mines, for it is stated that it shall be the duty of the operator to install and maintain a telephone system in every coal mine. The North Dakota legislation also relates to coal, and specifies that in any coal mine where more than fifty men are employed underground, one or more telephones shall be installed. The Oklahoma laws provide that a telephone system shall be furnished in every coal mine where as many as fifteen men are working.

Pennsylvania, Tennessee, Utah and Wyoming

In the anthracite mines of Pennsylvania means of communication must be provided by telegraph or telephone between mines and collieries, and in the bituminous region of that state the law relates more specifically to communication between the surface and the bottom of the shaft or slope. Tennessee specifies the maintenance of a metal tube from top to bottom of shaft, or a telephone system. Texas also requires that a metal tube or telephone be maintained. The Utah laws provide that in all mines in which ten or more men are working more than 2,000 ft. from the entrance, or in which there are ten or more working places more than 2,000 ft. from the entrance, an underground telephone system shall be installed. Washington specifies that a telephone or metal tube shall be maintained from the top to the bottom of every shaft or slope, and at each alternate working level. Wyoming orders that a system of party-line telephones be provided at each coal mine in operation. In addition, several of the regulations of the various states contain clauses relating to the installation and maintenance of mine telephones.

The severe conditions to which mine telephones are exposed make it necessary to construct them more ruggedly than is necessary in ordinary installations. Underground, the device frequently must be exposed to moisture, gases, acid water, and mechanical sources of injury. Of these, the last, which include falls of ground, blasting concussions and rough handling, are the most frequent; moisture is probably the next. Gas and acid water are in general restricted to coal and copper mines.

Mine telephones are in general housed in a moisture- and rust-proof iron or steel case, of sufficient thickness to provide ample protection from injury. The edges of the case are well rounded, so that water and falling objects will easily slide off, and strong mounting supports are provided to insure rigidity when the telephone is installed. An outer door on the case, provided with a rubber gasket, serves, when closed, completely to protect the mechanism from any disturbing elements.

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*A paper presented before the Mining Section of the National Safety Council, Detroit, Mich., Aug. 28 to Sept. 1, 1922. This article was presented under the title "The Use of Telephones in Mines."

†Managing Editor, *Engineering and Mining Journal-Press.*

‡"Reports of Investigations," June, 1921, Serial No. 2,258.

§Personal communication.

When this is opened, only the transmitter, receiver, receiver cord, and generator handle are exposed, as an inner door effectually conceals and protects all of the delicate mechanism of the telephone. When necessary, locks or padlocks may be placed on the outer door, the shift bosses or foremen being provided with keys. Binding posts for the line and ground wires are placed in a terminal box, which is either mounted on the underside of the case proper or included as a part of it. The bells, bell mounting, and clapper rod assembly are housed in a dome-shaped casting on the top of the case.

The talking apparatus of the mine telephone consists of a standard long-distance transmitter and receiver, slightly modified for underground service. In the design of these the manufacturers have considered carefully the hard usage to which the mechanism will be subject, and waterproof windings and special insulation are used throughout. The ordinary form of gravity-controlled hook switch is not sufficiently rugged for mine service, and one manufacturer, at least, has devised a positive spring-controlled hook switch in which the force of gravity is not employed. The receiver, instead of being suspended from a lever which terminates in a fork-shaped yoke, normally rests between the jaws of a special holder. When the receiver is taken out of the jaws a trigger depresses a small plunger which passes through the door and actuates the contact spring of the hook switch.

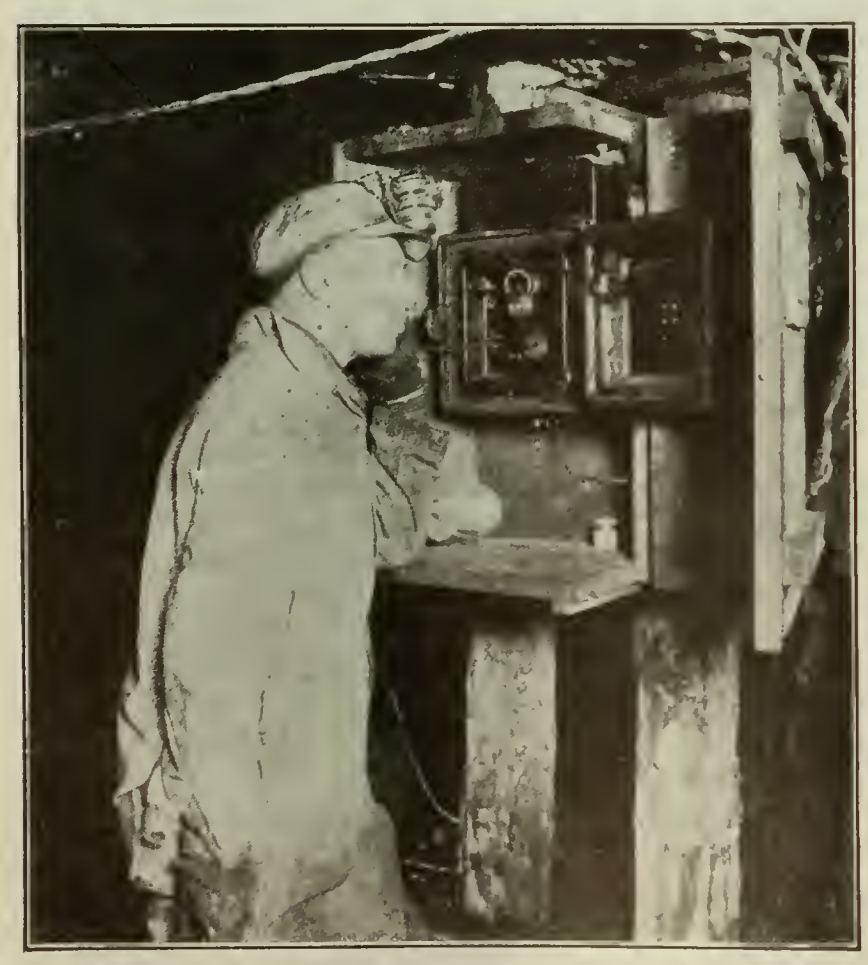
Mine telephones are usually supplied with ringers of 1,600 or 2,500 ohms resistance and five-bar hand generators. Under average service two standard dry cells will furnish talking current for a year or more, as the transmitter has a fairly high resistance and therefore a low current consumption.

Frequently it is desirable to supply loud-ringing extension bells so that the telephone signals may be heard at some distance or above the noise in that particular place, which may be a shaft station or a pump room. In this event gongs of 6- to 8-in. diameter are supplied, the ringer coils usually having the same resistance as those used in the telephones.



MINE CLERK CHECKS UP UNDERGROUND DATA

In a surface plant it is easy to run out and talk over difficult matters with the foreman, but in a mine plant without underground telephones one may often wait till evening to discuss matters and then the foreman may not come to the office. When a job is started and is delayed for lack of information the telephone furnishes a way of speeding the work to conclusion.



TELEPHONES INCREASE SAFETY AND EFFICIENCY

The mine foreman below ground is the more disposed to make his rounds because he can remain in touch with the surface through the telephone and can direct affairs through his lieutenants at the tipples and partings. This makes a telephone an instrument of efficiency as well as safety.

It is customary to protect mine telephones against lightning discharge and accidental crossing with high-tension lighting or power circuits, and for this purpose a protector, consisting of mountings equipped with fuses and carbon-block type open-space cutouts, is used.

Large Choice of Telephone Conductors

Conductors of many kinds may be used for mine telephone lines, and many different types of brackets and insulators are available. No one type of installation can be recommended for all conditions. The following kinds of conductors are in general use for wiring mine telephone systems:

Surface: Triple braid weatherproof copper or iron wire (No. 12 gage); bare copper or iron wire; bridle or drop wire for short runs.

Underground: Practice greatly differs as to sizes and types of wire used underground. One manufacturer recommends armored cable, Ferrin cable, or twisted-pair drop wire (40-per cent para insulation). From a questionnaire which I sent out the replies varied greatly, but in general Nos. 12, 14 and 16 copper wire, rubber-covered and armored, also No. 12 iron wire, tinned, were specified. In some instances, the wires down the shaft are included with the signaling wires, the whole consisting of a single cable with individual strands for the two functions. Where conduits were used, ½-in. metallic carriers were specified.

Not infrequently much trouble is experienced from the breaking of the line by falls of roof and similar happenings. In the installation of wires, particularly in haulage drifts where trolley locomotives are used, it is essential that care be taken in the placing of wires

so that there shall be no connection between the two circuits. Unless the telephone wire be well insulated, a wooden or insulated conduit should be provided where it crosses over trolley wires.

The location of mine telephones depends of course upon the extent of the operations. Not infrequently a group of mines will be connected from a central switchboard which will serve all important points above and below ground. In most installations, however, it is customary to maintain a single circuit at each mine, connecting the surface with the underground workings and signaling to the different stations by means of code rings. The following buildings will usually be included in such a circuit. For metal mines (surface): Office, engine room, boiler room, shops, change house, first-aid room, and top of shaft; (underground): shaft stations, pump stations, powder magazines, loading pockets, and transmitting levels. For coal mines (surface): Office, engine room, shops, tipple, top of shaft or slope, and first-aid room; (underground): shaft or slope bottom, pump stations, main partings and first-aid rooms.

In a tentative draft* prepared by the U. S. Bureau of Mines the following general requirements have been stated to be used as a basis in establishing a list of telephones which would be permissible for installation in gaseous mines:

What a Permissible Telephone Should Embody

The apparatus shall be so designed and constructed that under no circumstances can its normal operation cause ignition of surrounding explosive mine atmospheres. All parts of the apparatus shall be adequate for the service for which they are intended.

The construction of permissible apparatus shall be especially durable. This requirement shall be applied consistently to all the details of the apparatus under test in order that with proper care and maintenance the permissible qualities of the apparatus will remain unimpaired under the severe conditions imposed by mining service.

All terminals and contacts, and all wiring, shall be adequately protected, and all leads shall pass through the casings of the apparatus by means of adequately insulated devices of approved design.

All parts of the apparatus, such as the magneto, the hook switch, etc., which are capable during normal operation of igniting explosive gas and air mixtures, shall be placed in permissible compartments.

All openings in the casings of permissible compartments shall be tightly closed and it is desirable that such openings shall be as few as possible. All joints in the casings of a permissible compartment shall be metal-to-metal, so designed as to form a path not less than 1 in. long from the inside of the casing to the atmosphere. All bolt holes in the casing shall be bottomed or so arranged that the accidental omission of a bolt will not give an opening through the casing. The compartment shall be provided with an adequate lock or seal to prevent any person from tampering with the apparatus inside the casing.

Battery cells shall be placed in a permissible, or in a locked or sealed adequate compartment, and their terminals and the connections thereto shall be arranged so as to preclude the possibility of anyone meddling or tampering, or making electrical connection with them. The short-circuit current of the battery measured as close as possible to the terminals shall not exceed the following limits: For batteries giving 2.5 volts or less, 100 amperes; for batteries giving 2.5 volts but not more than 4 volts, 85 amperes; for batteries giving more than 5 volts but not more than 6 volts, 45 amperes.

The manufacturer shall permanently attach to the case of the apparatus adequate instructions for the installation and connection of the telephone, so that the safety and efficiency of the apparatus and the system to which it is connected shall not be diminished by its installation. He shall also attach to the instrument an adequate wiring diagram of the apparatus.

*Tentative Draft, Schedule 9A, Bureau of Mines, "Procedure for Establishing a List of Permissible Telephones for Use in Gaseous Mines; Character of Tests, etc."

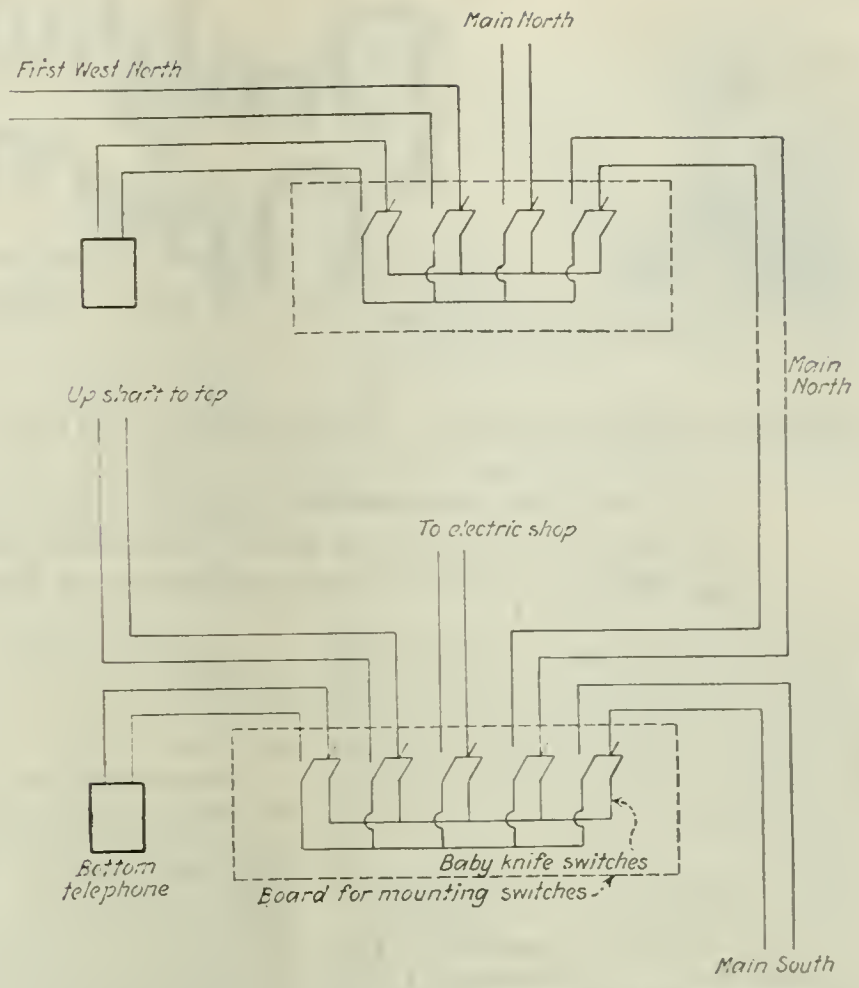


DIAGRAM OF TELEPHONE SWITCHES IN A COAL MINE

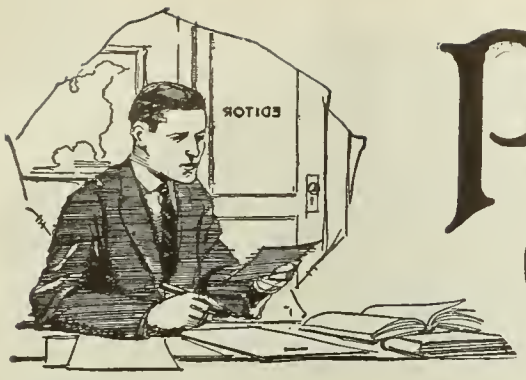
This installation would be greatly extended in mines having many ramifying workings.

Correct wiring and proper installation and maintenance, combined with sensible usage, are essential to the success of mine telephone systems. The telephone is a prime necessity in every mine, for without it today safety and efficiency are impossible.

In the preparation of this paper I am indebted to L. C. Ilsley, electrical engineer of the U. S. Bureau of Mines; the Stromberg-Carlson Telephone Manufacturing Co., the Western Electric Co., and to the several safety engineers and superintendents who have given me specific information concerning telephone installations and various other details of practical operation at their mines.

J. J. Rutledge, superintendent of the Central District experiment station of the U. S. Bureau of Mines, Urbana, Ill., is devoting much time to the study of improved methods of underground work in coal mining which result in increased recovery of coal. Mr. Rutledge recently conferred with operators of Iowa mines regarding a method in use there which recovers 90 per cent of the coal in the bed when conditions will permit its use.

Numerous tests have been made at the experimental mine of the U. S. Bureau of Mines near Pittsburgh, Pa., to determine the resistance offered to given quantities of air by placing mine cars in different sections of the air passageway, including timbered sections with timber sets spaced respectively at 5-ft. and 10-ft. centers. Tests were made to determine the equivalent straight-entry lengths corresponding to a right angle turn, respectively without vanes, with one vane, with two vanes, and with two vanes and a Venturi vane. A program of 30 tests was completed in July.



Problems of Operating Men

Edited by James T. Beard



Inborn Superstition Regarding Mine Accidents

Fatal Accident Starts Men Thinking—Superstition of Large Class of Mining Men—Death Rate Shown by Statistics—Prevailing Indifference of Workers

IN HIS article entitled "Importance of Checking System," *Coal Age*, July 20, p. 96, J. W. Powell expresses his deep regret on reading the reports of fatal mine accidents recorded, from time to time, in *Coal Age* and the public press.

When investigating a recent fatal accident in a mine, I was impressed with the lack of consideration given to these sad occurrences. There seems to be a widely prevailing feeling that accidents will happen in coal mines, in spite of all that can be done to eliminate them.

A remark commonly made is, "When a man takes a job in a mine he assumes his own risk," and Providence only knows how great is that risk. Such an attitude on the part of the worker, it must be acknowledged, does not tend to lessen casualties.

My visit to the mine just mentioned has started me thinking. The foreman spoke of this accident as "Number one," adding, "We will sure have two more soon." He said that, in all his experience, he had never known it to fail; but when one accident occurred two more were sure to follow.

This philosophy, I have learned, is inborn in a large class of mine workers and mining men in general. It is a superstition that pervades their minds. Many mine workers have come to look on an accident as something mysterious and beyond the comprehension of mortal man. The idea relieves the worker of his own personal responsibility in the matter.

Estimated Accident Rate in All Industries

It is said that industry is responsible for a death every fourth minute and an accident every fourth second. This estimate, I believe, is based on five 9-hr. working days in a week, and embraces all lines of industry, including coal mining.

In a general way, we know that accidents are common—so common that we pass over the record of minor accidents with little special thought. It takes some serious accident, or a great disaster, to awaken our minds to the responsibilities that are ours.

Workmen in a neighboring plant rarely know of an accident in one adjoining and, beyond a small circle of friends and neighbors, the incident goes unheeded. There is not the community interest that the occurrence should awaken in the hope of making labor more safe.

Instead, what do we find? A serious or, perhaps, fatal accident occurring awakens nearby workers to a sense of their danger. For a time they are more alert and cautious. But the sense of danger grows less, as time passes, and when a second accident occurs many are hardened and the effect is far less than on the first occurrence.

Again, time passes and a third accident occurs. Then the old indifferent manner of performing their work returns. With evident relief a worker exclaims, "Well, that is Number three. We are safe now, for a while, anyway."

Importance of Investigation

It is my belief that this attitude of mine workers, call it superstition if you will, is responsible for the great indifference displayed by the average miner, regarding his own personal safety. It explains why an accident out of the ordinary is required to bring men to a realization of the hazards about them and make them, for a time, more careful about their work.

Reflections such as these should bring to our mind the fact that there is much need for improvement in this direction. The proper way to approach the matter is to make every fatal accident the subject of a thorough and immediate investigation. It is important that this should not be delayed, or the impression to be made on the minds of the men will be lost.

At once, on the occurrence of an accident in or about a mine, the superintendent or mine foreman should appoint a committee of three to make a thorough and careful investigation and report the facts to him for submission to the highest official in charge. Throughout the investigation, the aim should be to fix the blame for the occurrence on any one found to have neglected a duty, and make recommendations to avoid a similar occurrence.

The investigation made by the committee, in addition to those made by the state mine inspector and the coroner if the accident is fatal, should make a deep impression on every one connected with the undertaking.

In other words, every one should be made to feel that an accident, be it small or great, serious or otherwise, is not a thing to be passed over carelessly or lightly set aside. Cause for the occurrence must be found and the responsibility placed on the shoulders where it belongs. Bulletins and pictures strongly emphasizing the fact make a lasting impression on the mind.

GEORGE EDWARDS.

Pikeville, Ky.

The Certificate and Safety

The mine symbolized as a ship—Mine officials are the captain and officers of the ship—Knowledge required to insure safety—Responsibilities of the fireboss.

PERMIT me to offer a few words in addition to what has already been said regarding the employment of certificated men in responsible positions in coal mines. Arguments have been advanced on both sides of the question, but it stands to reason that a certificate of competency honestly gained is an evidence of the holder's intelligence and acquaintance with the principles of mining.

Without doubt, we have many good men who have gained experience through long years of practice and, yet, it cannot be denied that some of these are dangerous men to be given charge of a mine where the conditions require a knowledge that cannot be gained through practical experience alone.

Must Know More Than Practice

Consider for a moment a foreman given charge of a very gaseous mine where the coal is highly inflammable and makes much dust. His previous experience does not guarantee that he will be able to handle successfully the problems that will arise under these conditions. He must have a knowledge of the nature and behavior of gases beyond what practice has taught him.

What is true of the foreman is true, to an even greater extent, of the fireboss in whose hands are placed the health and safety of the men employed in such a mine. Like the foreman, his knowledge must be greater than what one can learn in the practice of firebossing alone.

Let me liken the mine to a great ship voyaging the ocean. The miners and daymen are the passengers and the mine officials, from the superintendent down, are the captain and officers, to whom are entrusted the safety of the ship and its precious burden.

Will anyone question the statement that the officers in charge of a ship must have a thorough knowledge of the principles involved in their calling. It is just as true that all mine officials must possess the same thorough knowledge of the principles of mining, in order to cope successfully with the dangers incident thereto.

Today, the mining student requires a more extensive knowledge of many of the appliances than was necessary in the earlier history of the coal industry. As manager, superintendent, foreman or fireboss, the man must deal with matters that come under his notice and direction and which call for a working knowledge of all appliances. In this regard, we are more fortunate than our forefathers in having the means at our disposal for securing an efficient education, which is within the reach of all.

In respect to the safety of the mine and the men employed, the fireboss has the most responsible position. He it is who O.K.'s the board, telling them the mine is safe for work; it is his word that sets the wheels of the mine in motion.

Brushing the Gas Dangerous

Strange as it may seem, many of our so-called "safety inspectors" and a few firebosses insist on brushing the gas that they may find in a place, using their coats as a fan for that purpose. They do not seem to realize that gas, disturbed in this manner, will return shortly and before the men reach their places for work.

Brushing the gas in the manner mentioned, is a dangerous practice. No man with an education would do this. Instead, he will see that sufficient air is conducted to the face and made to sweep the place where the gas is accumulated, in volume sufficient to dilute and render harmless the gas.

Another danger requiring a higher knowledge than that gained in practice is the dust menace in mines. Where the fine dust of an inflammable coal is allowed to accumulate on the timbers, roof and sides of the roads and aircourses, or in the working places, it is extremely dangerous. It becomes the prime factor in propagating an explosion throughout the mine that would, but for the dust, have had only a local effect.

Mine Officials Require Knowledge Gained Only by Study

The study of appliances to which I have referred gives both the mine foreman and the fireboss a knowledge of the dangers present, and enables them to avoid all conditions that make the mine unsafe. It is up to every mine official to gain this knowledge in addition to his practical experience.

Let me say, in closing, that I am of the opinion that there has been and still exists a close relation between the certificate of competency and mine safety, which every man should recognize. The holder of a certificate should be employed, in any official capacity, in preference to a man who holds no certificate, provided both are practical experienced men.

The certification of mine officials raises the standard of excellence, giving to every such man a knowledge of gases, ventilation, pumping, drainage, timbering and other subjects, including the geology of the coal formations that makes him familiar with the economics of mining. Such a man will be better able to understand the cost-sheet and reduce the accident list and insurance.

In the last examination, in Kentucky, out of 126 applicants, 114 passed a successful examination and gave evidence of their practical intelligence.

L. Blenkensopp,
Chief Inspector of Mines.
Lexington, Ky.

Heating of Gob Areas

REFERRING to the question of the heating of the gob, as the result of mining a seam, in a clay parting containing sulphur, allow me to give a little of my own experience in keeping the waste cool under similar conditions.

In the first place, let me say the mine should be well ventilated. From the conditions described, in this case, there is little doubt but that much fine coal is mixed with the clay cuttings thrown back in the gob and every opportunity is afforded for heating to develop that will cause trouble and should be prevented.

Use of Salt in Blasting Advocated To Reduce Heating

In the reply to this inquiry, mention has been made of the use of salt, as a means of counteracting the tendency to combustion in the waste. This, to my mind, is a good plan; but let me suggest that, before the machine is brought into the face for the purpose of cutting, a layer of salt should be sprinkled broadcast on the bottom rock along the face.

By so doing, there will result a more intimate mixture of salt with the clay cuttings and fine coal. Then, before throwing this refuse into the waste, it should be again sprinkled with salt. Indeed, the salt should be used without restraint if it is to prove effective.

Again, when throwing the refuse into the waste it should be distributed in thin layers and not piled in heaps, in order to reduce the tendency to heating, by giving the air current a better opportunity to carry away the heat as it is generated. Also, the gob should never be piled against the coal rib, which should be kept clear and free. This will also prove an advantage by giving cleaner coal when removing the pillars. Oscar H. Jones.

Wilder, Tenn.

AS HAS already been suggested, the best way to eliminate the trouble caused by the heating of gob, in the longwall-advancing method of mining, under the conditions described by "Mining Engineer," in *Coal Age*, May 25, p. 886, is to load out the clay cuttings mixed with fine coal and containing some sulphur. This should not be stored in the gob if trouble is to be avoided.

The suggestion of the use of salt, in an attempt to reduce the tendency of the gob to heat is, in my opinion, well worth trying. We are taught that coal absorbs anywhere from 1¼ to 3 times its volume of oxygen and the resulting oxidation of the hydrocarbons in the coal develops heat, which if allowed to proceed will eventually fire the coal left in the waste.

Excluding Air from the Goaves Practice in England

My method for preventing this action is to exclude the air from the goaf, as far as that is practicable. The goaf, in longwall working, should be stored as closely as possible and confined by well-built packwalls. The building of these packwalls, shutting in the goaf and excluding the air, is a matter of great importance in longwall advancing, under the conditions named. In some districts in England, the coal seams are subject to gob fires; and it is the custom, there, to build the packs, along the roads or "gates," as they are called, very solid so that they are impervious to air.

At times, these packwalls are made of blocks of clay 9x9x18 in., in size, sent down from the surface into the mine, and these are built up as walls on each side of the gateroad. The result is that little air can reach the goaves, except at the working face; and, at times, such a wall is built across the face when it becomes necessary to seal off the area because of a fire started in the gob.

William Dickinson.

Lochgelly, W. Va.

Some Facts in Coal Mining

Higher accident rate among American miners—Employed in more dangerous work—Causes of waste of coal and material.

IN HIS address before the Clarksburg Mining Institute, a short while ago, R. M. Lambie, chief of the Department of Mines of West Virginia, made one or two statements to which it will be well to refer by way of explanation.

As reported in *Coal Age*, May 18, p. 825, Mr. Lambie is said to have remarked that "the percentage of accidents in coal mines is greater among Americans than among foreigners, claiming that in 1921 there was one fatality for every 342 American miners employed, while the rate among Hungarians in the mine was one for every 645 miners.

This statement is anything but flattering to the American miner, unless the reason for its truth is explained. The speaker went on to say that Negroes, Italians and Spaniards were among the most careful men in avoiding accidents.

A simple statement giving the ratio of fatalities for so many persons employed, it will be generally agreed, is

no criterion by which to judge miners of different nationalities, in respect to their relative freedom from accident.

It is well known that the American miner is called on to perform the most dangerous work, in the mine, more often than falls to the lot of a foreign miner. From the very nature of the case, as a class, foreign miners are employed on the less hazardous kinds of work. Few of this class of miners are to be found drawing pillars, timbering high falls and doing other dangerous work.

In one mine where I was recently employed, of the 200 men engaged in loading the coal cut by machines, only 20, or 10 per cent, were Americans and most of these were so employed only temporarily, because of a lack of pillarwork and other more hazardous undertakings.

In the same mine, from 75 to 80 per cent of the men employed in the pillar workings were American miners. It is clear from such illustrations as this, that any ratio of fatalities to the number of men employed has no national significance and must be unfair to American miners to whose lot it falls to perform the more hazardous work.

Waste of Material Due to Large Areas to Be Inspected

In the course of his address, Mr. Lambie referred to the deplorable waste of both coal and material manifest in a large number of mines. Unquestionably, this is true, but the responsibility for the same is to be attributed more to the fact that underground officials are given, generally, more territory to supervise than these men can look after efficiently.

Much of the waste can undoubtedly be avoided by giving each foreman and assistant foreman less territory, so that he will be able to visit each working place several times a day, instead of having to hurry around in order to visit every man once a day.

More frequent inspection of the working places would have the advantage that the foreman or assistant foreman would be able to see that his orders, given on a previous round, were obeyed and not put over till the next day with the chance that, in the meantime, accident would befall the man.

Large Amount of Coal Lost in Crushing of Pillars

The largest loss of coal occurs in places where the pillars are so badly crushed that work on them is too dangerous and must be abandoned. This condition often results from pillars being left standing for an indefinite period; or because of a haphazard system of working, in respect to driving the rooms and drawing back the pillars.

For example, where the line of pillarwork is to parallel the entry, a sufficient number of rooms should be driven up together and, on reaching the limit or boundary, the pillars between them must then be drawn back together. On the other hand, if the rooms are turned in regular order, one after another, the work should be so arranged that they will reach the limit or boundary in regular order and the line of pillarwork should then be kept straight and make an angle of about 45 deg. with the entry.

Any delay, either in driving the rooms forward, or pulling back the pillars in regular order, will throw an excessive load on those rooms or pillars that are delayed. This will cause the roof to cave in the rooms and pillars will be crushed. Proper attention to these matters will avoid a very large waste of coal in our mines.

Thomas Allen,
Mt. Harris, Colo. Safety Instructor.

Inquiries Of General Interest

Estimating Calorific Value of Mine Feeder Gas

Heating Value of Any Combustible Depends on Its Composition—Heat of Combustion Calculated From Chemical Reaction—Composition of Feeder Gas Variable

RECENTLY my thoughts have dwelt much on the great loss we permit in allowing large volumes of feeder gas to escape into the atmosphere, without making any attempt to utilize its heating value. I believe attention has been drawn to this matter, at different times, in the columns of *Coal Age* and other mining publications.

Lately, the subject has impressed itself strongly on my mind, in connection with the draining of gas from abandoned panels and other large areas that have been sealed off in mines. The gases generated in these areas have been drained to the surface through boreholes sunk for that purpose.

Now, why would it not pay to conduct this gas, by pipes, to the boilerhouse and burn it under the boilers. There may be practical reasons why this cannot be done; but it seems to me that the saving of the heating value of these waste gases would more than compensate for the expense of installing the necessary piping system.

If there are objections to introducing the gas under the boilers, could it not, at least, be conducted to the main flue or base of the stack where it would be ignited and create a motive column that would increase the draft in the stack? Such an arrangement would also greatly assist the drainage of gas from the sealed portions in the mine. I have often thought that allowing these gases to go to waste, when they could be reclaimed at a small cost, is an unwarranted neglect that waits to be remedied.

In this connection, allow me to ask, what may be assumed to be the calorific value of the gases coming from the drillholes that drain large abandoned and sealed areas or panels in mines; and how is this heating value of the gas calculated? Information on this subject will be interesting and I believe of much practical value to all engaged in the operation of coal mines.

Linton, Ind. W. H. Luxton.

As stated by this corespondent, attention has frequently been drawn in these columns to the fact that the waste gases, in the mining of coal, have a heating value that might well be utilized in the production of power and thereby effect a considerable saving in fuel. In the Pittsburgh district and elsewhere, feeder gas issuing from boreholes sunk from the surface, has been largely utilized for the purpose of heating.

There is no question but that much heat goes to waste when this gas is permitted to escape into the atmosphere and is lost. The illuminating quality of feeder gas, of course, is commonly low, because of the small percentage of the heavier hydrocarbon gases contained in it. As is well known, pure methane (CH_4) is almost non-luminous.

The heating value of any combustible, whether solid, liquid or gaseous, depends on its composition. In the matter of coal, the chief combustible is the fixed carbon; but the heating value is greatly modified by the amount of volatile combustible matter contained in the coal. The best results are obtained by estimating the heat value of each constituent, in proportion to the percentage present, as determined by the ultimate analysis of the coal.

In the combustion of a gas, the heat of combustion is equal to the excess of the heat of formation of the several products of the combustion, over the heat of formation of the combustible itself. This can only be estimated by means of a thermochemical equation. For the purpose of such a calculation, reference must be had to a table giving the heats of formation of the different mine gases. Such a table is given on page 68, "Mine Gases and Ventilation" —Beard, Eighth Edition.

The entire subject of calculating the heating values of substances and gases is fully treated in those pages. For example, the molecular heat of formation of pure methane (CH_4) is given as 39,060 B.t.u. The products of combustion of this gas are carbon dioxide (CO_2) and water (H_2O) and their respective heats of formation, as given

in the table, are 174,600 and 126,288 B.t.u. The reaction is shown by the chemical equation.

$$CH_4 + 2O_2 = CO_2 + 2H_2O$$

Their being but one molecule of carbon dioxide and two molecules of water formed in this reaction, as shown in the equation, the total heat of formation of the products of combustion, less the heat of formation of the methane; is 174,600 + 2(126,288) — 39,060 = 388,116 B.t.u., which is the total molecular heat developed when methane is burned. But, the molecular weight of methane being 16, the unit heat of combustion of this gas is 388,116 ÷ 16 = 24,257 B.t.u., which is the theoretical amount obtained by calculation. The experimental heat of combustion of methane, however, is 23,513 B.t.u.

It must be remembered, however, that the composition of feeder gas is very variable. An analysis of natural gas, in the Pittsburgh district, is given as follows (percentage of volume): Methane, 67.0; hydrogen, 22.0; olefines, 6.0; nitrogen, 3.0; carbon monoxide, 0.6; carbon dioxide, 0.6; total volume, approximately, 100. The heating value of the same gas, as determined by experiment, is given as 892.4 B.t.u. per cu.ft. of the gas at 64 deg. F. An interesting problem is to calculate the heating value of this gas, as a check on the experimental value just given.

Examination Questions Answered

Alabama Mine Foremen's Examination, Birmingham, July 24-27, 1922

(Selected First-Class Questions)

QUESTION—*If the ventilation of a mine is insufficient, how may it be increased without increasing the power?*

ANSWER—Clean up all air-courses, removing every obstruction to the free passage of the air; enlarge all breakthroughs and shorten the course of air travel, as far as that is practicable, avoiding all sharp turns in the airways. Wherever the velocity will permit of further dividing the air, this should be done in order to reduce the mine resistance.

QUESTION—*When coal is shot off the solid how should the holes be drilled and what kind of powder should be used?*

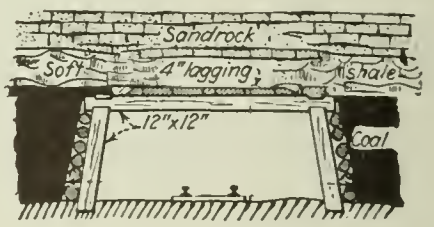
ANSWER—The axis of the drillhole should make such an angle with the face of the coal and the charge be so located that the line of least resistance, extending from the charge to the face of the coal, will be less than the depth of the hole. The hole must be well tamped and only permissible powder should be used in charging.

QUESTION—*Where coal is undercut by machines, is it possible to have a windy or a blownout shot? If so, what would be the cause?*

ANSWER—In machine mining, a windy or a blownout shot may result from the hole being drilled beyond the depth of the cutting, making it a shot on the solid. If an undue accumulation of fine cuttings is permitted at the working face, the fine coal and dust will be blown into the air by the force of the shot; and the explosion of the dust clouds thus formed will have, more or less, the same effect as a windy shot. In order to avoid such an occurrence, the fine cuttings of the machines must be removed before any shots are fired. Much will depend on the soft friable nature of the coal and its inflammability.

QUESTION—*In a faulty heading where the sides are showing weight and the roof in the face bad, how would you timber to hold the side squeeze and make progress and safe work in the face? Give sketch of timbering.*

ANSWER—As shown in the accompanying figure, heavy timber frames should be used, from 10 to 12 in., either round or square. The legs should be



well notched into the collars and lagging used above the collar beams and behind the sideposts or legs.

QUESTION—*How would you timber a room that had bad roof and a soft fireclay bottom? How would you keep your roadway safe?*

ANSWER—Under these conditions a systematic form of timbering should be adopted in the room, the posts being set in rows parallel to the face and three or four feet apart, center to center. The posts should be set on footboards or stringers to avoid their sinking into the soft bottom, and long cap-pieces, booms or stringers should be used above the posts to support the frail roof.

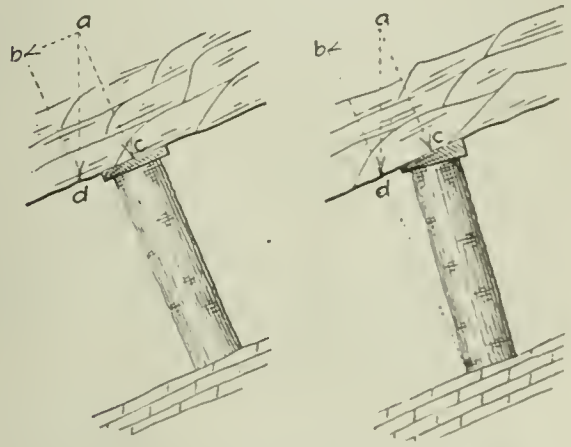
On the roadways, the timber frames should be set from 2 to 4 ft. apart, center to center, depending on the depth of cover, and lagging should be used above the collars to prevent the fall of small pieces of slate that would block the roads. The legs of the timber frames should be set on stringers, on each side of the track.

QUESTION—*If you were firing five shots in the face of a room, with one shot depending on the other, what precaution would you use to prevent a windy shot?*

ANSWER—If five shots are to be fired consecutively, one depending on the other, the only safe method to pursue is to fire each shot separately and in order, starting with the first free shot. Dependent shots must not be fired with fuse, on any condition; neither should they be fired electrically, causing practically the simultaneous explosion of all the shots. In firing the shots separately, as stated, time should be given for the smoke and gases produced by each shot to be carried away, before a succeeding shot is fired; otherwise, a local explosion of these gases and dust may result.

QUESTION—*In timbering pitching seams, would you underset your props or place them at right angles with the top and bottom? Explain fully with sketch.*

ANSWER—In setting post timbers in a pitching seam, the posts should be inclined slightly up the pitch from a normal line. By so doing any slip or movement of the roof down the pitch will tend to tighten the posts. On the left



of the accompanying figure, is shown a post set normal in the seam, or in line with *ac* drawn perpendicular to the strata. Again on the right of the figure is shown a post set inclined up the pitch from the normal line *ac*, or *bd*. It is quite evident that any slip or movement of the roof down the pitch will loosen the post on the left, while the same movement would tighten the post on the right of the figure.

QUESTION—*How and in what parts of a mine is coal dust produced?*

ANSWER—In a machine mine, the greatest portion of the dust is produced in cutting the coal. The same is true, but to a less extent, in pickmines. Much dust is produced, in all mines, by coal falling off the cars in transit and being crushed to fine coal and dust by travel on the roads. In mines where blasting is performed by black powder, much dust is produced by the miners using excessive charges of powder. Overcharging the holes is not as common in the use of permissible powder. Generally speaking, the largest quantity of dust is produced at the working face.

Sentiment for Control of Coal Prices Bolstered by Unsettled Conditions on Railroads

By Paul Wooton
Washington Correspondent of *Coal Age*

Washington, Aug. 29—The hope that Mr. Ford will not find it necessary to close his plants on account of coal prices was expressed today by Secretary Hoover. He called attention to the fact that Mr. Ford has signified his willingness to pay $4.50 for coal. Mr. Hoover expressed the opinion that the price would not be greatly in excess of that figure on Sept. 16, the date set for the closing of the Ford factories. Even should Mr. Ford have to pay $6.50 per ton for coal after the 16th, Mr. Hoover pointed out that this would not be a heavy tax on his business, since at the present rate of his output the added coal cost, at the very most, would be $1.50 per automobile.

That the administration has at no time favored putting the government in the coal business was indicated when Secretary Hoover declared emphatically today that the Cabinet never has seriously discussed the seizure of either anthracite or bituminous mines. Mr. Hoover stated that no less than 25,000 cars loaded with non-union coal are awaiting movement. None of the coal mined under the drastic priority requiring one-half of all non-union coal sent to the Lakes has reached the lower Lake ports as yet, he declared.

Principal emphasis is being placed by those opposed to legislation looking to the control of coal prices and distribution on the argument that such control no longer is needed. Many lawmakers are of the opinion that the situation is such that it can take care of itself. Those who favor the legislation might be willing to accept the argument if they were sure that the railroads could function at a high rate of efficiency. With the uncertainty as to railroad operation, however, they contend that this control must be established.

They point out that the emergency will not have passed until coal starts moving to the Northwest at the rate of one million tons a week; until prices show a definite downward tendency and until the anthracite mines are in operation and careful attention has been given the problem of substitution for that portion of the anthracite production which cannot be made up.

Theoretically at least all stocks of coal now have been wiped out. Whatever stocks there may be in fact are known to be negligible and too low to enter the winter with safety. The market cannot be expected to tranquilize until a considerable amount of coal has been put in storage. How soon such a point can be reached depends entirely on the service which the railroads can give. The American Railroad Association makes the ambitious estimate that the carriers can transport 9,000,000 tons weekly. At the National Coal Association it is thought that 8,000 000 tons is the maximum. Disinterested traffic men, however, point out that if coal shipments reach 8,000,000 tons of bituminous, in addition to the anthracite that is expected soon to be moving, and at the same time the usual volume of other freight is handled, the railroads will have performed an extraordinary feat even if there were no strike and if the equipment all was in good condition.

There is an increasing feeling among officials in Washington, however, that the railroad managements are not being entirely frank with them or with the public. They seem to think that the situation with regard to railroad equipment is much worse than the railroads are willing to confess, to say nothing of the question of their ability to attain a high degree of efficiency with the morale of its employees in its present state. The attitude of the railroad executives is compared to that of the coal operators when they declared the strike would be crushed flat by July 1.

Within a week after the Cleveland conference 230,000,000 tons of production had signed on the dotted line. In no case has anyone of the district settlements departed from the Cleveland contract, unless the action of one district in central Pennsylvania in refusing attendance at the Oct. 3 conference be termed a reservation. Western Pennsylvania, part of northern West Virginia and the Chesapeake & Ohio tonnage in Kanawha are still holding out as this is written, but it is believed here that their effort to get the men back at the 1920 scale, but without signing the contract, will be futile. It seems quite certain that no contract will be signed in western Pennsylvania that does not include the check-off. The operators, officials here believe, have saved nothing out of the wreckage, except that they have not gone through with the old-time Central Competitive Field agreement.

In the meantime the United Mine Workers have threatened to call a strike in the New River district with the idea of forcing a contract there. This action is regarded as significant as foreshadowing a series of strikes in the districts formerly organized but lost to the union in 1921. Even in the Central Competitive Field probabilities point to sporadic local troubles, for in many places the men are reported to be returning to work in an arbitrary and arrogant frame of mind.

Fair Price for Pennsylvania Bituminous Fixed; Name Regional Fuel Committees

The Pennsylvania Fuel Commission has established a fair price for bituminous coal but has not as yet attempted to fix a fair price for anthracite. At its meeting on Aug. 22 it fixed bituminous prices according to the type of veins in the coal region, $4.50 a ton, f.o.b. at the mines being the price of coal in District No. 1, including the thin-vein mines, and $3.75 a ton, f.o.b., for coal at the mines in District No. 2, containing the thick-vein mines. The districts are those designated in 1918 by the Federal Fuel Administration. A commission not exceeding 25c. a ton also was fixed by the commission.

The commission, of itself, has not the power to enforce the rates, but through co-operation with the Interstate Commerce Commission and the Public Service Commission of Pennsylvania holds it can make them effective. Commissioner Clyde Aitchison of the Interstate Commerce Commission will soon confer with the Public Service Commission relative to naming a joint representative of the two commissions as a member of each of the six regional fuel committees, recently announced by the State Fuel Commission. These representatives will be the agents of the Fuel Commission throughout the bituminous districts.

It was originally intended by the State Fuel Commission to name seven regional fuel committees, but the number was reduced to six when the personnel was announced. These committees, to which will be added the joint representative of the Interstate Commerce Commission and the State Public Service Commission, are:

Fayette and Greene Counties—George Whyel, G. S. Harah, E. D. Brown and T. J. McClernen, Uniontown; F. B. Lockhart, W. W. Parshall and W. H. Klingerman, Pittsburgh.

Somerset County—John C. Brydon, W. H. Kramer, Ralph S. Zimmerman and John H. Beerits, Somerset; Congressman S. A. Kendall, Washington, D. C.; A. B. Stewart, Baltimore, Md.; Thomas Fisher, Philadelphia; T. W. Guthrie, Pittsburgh, and Telford Lewis, Johnstown.

Westmoreland County—T. W. Guthrie, Pittsburgh; J. B. Huff, Greensburg; S. P. Hutchinson, Philadelphia; Frank Graff, Blairsville; Samuel Brownfield, Ligonier; Thomas Fisher, Philadelphia.

Washington and Allegheny Counties—James H. Woods, W. H. Henderson, D. W. Kuhn, Frank M. Wallace, J. T. M. Stoneroad and A. W. Calloway, all of Pittsburgh.

Northwest Pennsylvania—Edward Soppitt and Fred Stover, Butler; Samuel Sherwin, Karns City; F. P. Filer, Mercer; J. L. Deegan, Cleveland, Ohio; T. F. Diefenderfer, Butler; R. F. Cann, Stoneboro.

Central Pennsylvania—Charles O'Neill, Altoona; H. J. Meehan, Johnstown; G. Dawson Coleman, Philadelphia; Rembrandt Peale, Clearfield, William Lamont, El Mora; B. M. Clark, Indiana; Harry Bolton, Clearfield; J. R. Casley, DuBois; J. C. Forsyth, Clearfield.

Anthracite Deadlock Blocks Peace in Coal Fields

Although the government has continued to exert pressure to bring the two sides to an agreement, the anthracite operators and miners refuse to recede from their respective positions. Secretary of Labor Davis held a two-hour conference in Philadelphia on Aug. 28 with John L. Lewis and then returned to Washington, where it is understood that he will make a report to President Harding concerning the situation. Anthracite remains the stumbling block to more or less complete peace in the coal fields. Every effort so far has been made to break the deadlock in the negotiations between the operators and miners. The union on the one hand is holding out for a contract at wages and with working conditions the same as before the strike, a contract to extend until April 1, 1924. The men ask a continuance of the high wages for two winters, as compared with their victory in the soft-coal fields that gave it to them for one winter—that is, until next April.

The operators have agreed to extend the expired contract until April 1 next, but refuse to commit themselves to paying the maximum wage beyond that date. They say they are willing to make a contract for any number of years covering working conditions, but ask that the wages after April 1 next be subject to arbitration, either by a board appointed by the President or some other outside party and the award to be either binding or to be merely recommendatory.

The miners refuse to agree to the interjection of any outside party or influence in the determination of their wages, either now or at any future date. It is not the wages that are to be paid this winter that is holding up the resumption of hard-coal mining but the matter of how the next scale is to be determined and when.

Many and powerful influences on the outside are being brought to bear on both parties to reach a settlement. The President has used his persuasive powers and Senators and others have been in conference with John Lewis for days. The pressure from public interests over the hard-coal-burning East is daily growing stronger. Congress is being flooded with protests and is being urged to do something. With the soft-coal strike largely out of the public mind, attention is rapidly being focused on the deadlock in anthracite.

Samuel D. Warriner, spokesman for the anthracite operators, made the following statement Aug. 23, reviewing the steps that have been taken in conferences between the operators and representatives of the anthracite miners:

"Our conferences with the representatives of the anthracite miners, which began on Aug. 17, were brought about in response to the request of the President of the United States, communicated to us by Senator Pepper. The hope was expressed by the President that there might now be found some 'fair basis' on which the suspension of operations in the anthracite fields might be terminated.

"In the proposals we have made to the miners' representatives in the course of the conference we have had in mind not merely the bringing about of a resumption of production, although we think that is most important. We have endeavored to accomplish this, and at the same time to establish a basis looking toward permanent peace and continuous operation in the future.

"It was our belief that this could be best secured by a long-term contract with a provision for periodical revision of wages by arbitration, which should be binding upon both parties. We were entirely willing to accept as a board of arbitration a commission or tribunal to be appointed by the President.

"This having been refused by the miners, we proposed to utilize the existing and familiar machinery of the Conciliation Board, which in the anthracite field has been adjusting disputes between operators and miners satisfactorily for the past twenty years. In case the Conciliation Board, which is composed of equal numbers of operators and miners, should not be able to agree, we proposed that the presiding Judge of the United States District Court of Appeals for the Third Judicial District should appoint three umpires whose decision should be final and binding upon both parties.

"Unfortunately and, in our opinion, unwisely, the representatives of the miners rejected this proposal.

"In a further effort to meet their opposition to binding arbitration, however impartial, we made the following proposal:

"'All mines to resume operation upon the execution of a contract extending to March 31, 1923, the wages and working conditions which were in effect March 31, 1922. This contract to provide that:

"'(a) On Jan. 3, 1923, the Anthracite Board of Conciliation shall meet in conference and determine wages and working conditions in the anthracite field effective for a period of one year beginning April 1, 1923. On Jan. 3, 1924, the board shall meet in like manner to determine wages and working conditions for a period of two years beginning April 1, 1924.

"'(b) In case there has been no agreement prior to Feb. 15 in the years 1923 and 1924, the Presiding Judge of the United States Circuit Court of Appeals for the Third Judicial District shall appoint three disinterested citizens of outstanding character and ability, who shall sit with the board to hear the argument and make findings with respect to the matters in dispute. These findings shall be rendered on or before March 15, shall be recommendatory in character, and shall be subject to acceptance or rejection by either party within ten days thereafter.'

"This proposal, representing the extreme of concession by the operators, was rejected by the miners' representatives Aug. 22. We have offered to consider any practical modification of these plans which would not sacrifice the ends sought. The miners' spokesmen declined to make any such suggestions. They can speak for themselves as to their attitude. To us their plan seems to be indefinitely to retain war-time wages regardless of any other considerations.

"It will be noted that our suggestion embodies the use of the Conciliation Board instituted in the anthracite field by the Roosevelt Commission in 1903. The board's personnel includes the three district presidents of the miners' organization in the anthracite field in conjunction with three operators. Matters in dispute which the board finds itself unable to adjust are referred to an umpire appointed by the Presiding Judge of the Circuit Court.

"Our suggestion only embodied by way of change, therefore, the appointment of three umpires instead of one, in order that a matter so important as a general contract might receive that impartial consideration necessary to a proper acceptance on the part of those interested, including the consumers of anthracite coal.

"While we realize that the proposal now made may be considered defective in that the findings of the umpires are not binding, it is nevertheless hoped and believed that the findings arrived at under such circumstances would afford the basis for a peaceable and orderly settlement and tend to avoid suspensions of mining hereafter.

"The necessity for some method by which recurring periods of idleness in our industry may be avoided, in so far as possible, is conceded by all. The mutual responsibilities of the operators and the miners demanded the most serious consideration and prompt acceptance of this proposal. These responsibilities require that the production of anthracite shall be resumed at the earliest possible date, and that we shall at the same time remove the menace of another suspension next year.

"We are hopeful, in spite of the rejection of our last proposal, that wiser second thought will bring about its acceptance. Continued opposition on the part of the miners to any plan which seeks to avoid another suspension carries with it a heavy responsibility. It means that the officials of the United Mine Workers assume responsibility for the suffering on the part of the public and the miners themselves that may result from further delay in resumption of production. It means that rather than agree even to an advisory finding as to future wages the miners' representatives are willing to deprive the people of a large section of the United States of essential fuel. We cannot believe that this stand will be maintained. If it is, there can be no question as to where the responsibility lies for the consequences that may follow."

Central Pennsylvania Signs Agreement and Goes to Work; May Be Only a Truce

CENTRAL PENNSYLVANIA—that is, the strictly union part of that field—has reached an agreement with the United Mine Workers and gone to work. It took three days of fighting, arguing and the usual scale-meeting stuff to put it over, but on Wednesday night, Aug. 23, the contract was approved by both sides and the miners were ordered back to work. Prior to this there were several large companies, including the Pennsylvania Coal & Coke Corporation and the Clearfield Bituminous Coal Corporation, that had signed with the union at Cleveland as individuals and have been at work for more than a week.

But not all mines in the field are going. There are those operators who have both non-union and union mines. Several large companies are in this class, part of them with both kinds in Pennsylvania and some with union mines in other states or fields and non-union mines in this field. The union has adopted a policy of offering such operators the same contract for all their mines, thus forcing them to unionize their open-shop mines or leave the union mines idle.

The agreement is between representatives of the United Mine Workers of District No. 2, the Association of Bituminous Coal Operators of Central Pennsylvania and the Central Coal Association. In accordance with a plan adopted early in the week, a sub-scale committee was appointed to take up the wage question. On the part of the operators this committee was composed of Charles O'Neil, J. Webb Shillingford, J. R. Caseley, C. B. Maxwell, Rembrandt Peale and J. William Wetter. The personnel of the United Mine Workers was President John Brophy, Vice-President James Mark, Secretary Richard Gilbert, Harry Crago, Stanley Hudzinski, Herman Carletti and Reno Glaizzoni.

Agreements and counter agreements were presented. The sub-committee would meet jointly and then separately and vote down proposals. The whole question finally settled down to a rejection of the Cleveland agreement and the check-off system, which was vigorously attacked by the operators and just as vigorously upheld by the U.M.W.

The end came after a series of sessions lasting for six hours. The final agreement, accepted and signed by both sides, was presented by Charles O'Neil, secretary of the Central Coal Association. The agreement follows:

It is hereby agreed by and between the officers of District No. 2, United Mine Workers of America, the Association of Bituminous Coal Operators of Central Pennsylvania and the Central Coal Association that the working agreement terminating March 31, 1922, is hereby renewed and extended to March 31, 1923, in all of its provisions as to wages and working conditions, except that part of Rule 25 reading as follows:

"In the event of a new scale agreement not having been signed on or before March 31, 1922, then and in that event the U.M.W. of A. of District No. 2 will continue all men in mines regularly at work under the wages and conditions of this agreement for an additional thirty days after the date on which the scale committees of the operators and miners hold their first meeting for the purpose of negotiating a scale to succeed this present scale. On reaching an agreement to succeed this present contract the wages paid by the operators to the miners dating from April 1, 1922, for such portion of the thirty days' work as extend beyond April 1, 1922, shall be those that are agreed to in the next contract," is to be stricken therefrom in accordance with the policy adopted by the Policy Comittee of the United Mine Workers of America, Aug. 15, 1922.

An annual tonnage of 30,000,000 is represented in the settlement effected, which is about 75 per cent of the output of the union mines of the district. Most of the mines are in shape for immediate resumption. President John Brophy at once got in touch with the locals at each operation and ordered the resumption of work.

The general feeling is that as this agreement will terminate on April 1, 1923, it is but little more than an armistice and the mines will scarcely get into operation until the battle will be resumed.

Dr. W. Frank Beck, one of the leading operators, with headquarters in Altoona, puts much of the blame for fuel shortages on the large consumer. Dr. Beck declared that early last spring he begged a big steel company to stock up with coal as low as $1.85 at the mines, but it would not buy. He declared that after the strike had been in progress only a short time this same company came into the field and offered any price, paying as high as $8 for coal wherever it could get it.

In considering ways and means of checking the advance in prices at Ohio, lake ports and cities to the north of the state, George Poor, Fuel Administrator, certified to the Federal Fuel Commission that $4.50 seemed to be a fair price for Ohio coal on a run-of-mine basis. It is unlikely, however, that there will be regulation of prices, as operators have refused to take part in conferences on prices, fearing conflict with federal statutes.

Connellsville Goes Back to 1920 Peak Scale

In only one instance does the wage scale posted in the Connellsville coke region Aug. 23 differ from that of September, 1920, the highest war level. That instance is for outside labor. Whereas the rate for that class of labor under the 1920 scale was $5.40 the present scale calls for $3.40. The scale and the one it succeeds follow:

	Aug. 1, 1921	Aug. 23, 1922
Pick mining and loading room and rib coal, per 100 bu	$2.38	$3.24
Pick mining and loading heading coal, per 100 bu	2.63	3.56
Pick mining and loading wet heading coal, per 100 bu	2.77	3.85
Loading shortwall machine coal, per 100 bu	1.50	2.10
Drawing coke (hand) per 100 bu. charged	1.40	2.16
Drivers, rope riders, cagers, track layers, blasters, and timbermen (shafts and slopes) per day of 8 hours	5.05	7.55
Drivers, rope riders, cagers, track layers, blasters and timbermen (drifts), per day of 8 hours	5.00	7.50
Assistant tracklayers and assistant timbermen, per day of 8 hours	4.35	6.75
Fire bosses, per day	6.30	8.80
Mine laborers, per day of 8 hours	4.15	6.55
Leveling, per oven (hand)	.20	.31
Outside day laborers, per day of 9 hours	3.00	3.60

RAISE NEW RIVER WAGES, BUT NO UNION AGREEMENT

Although New River operators have declined to sign any agreement with the union, wages have been increased and the following scale of rates adopted:

Pick mining, room and pillar work	$0.8311
Machine cutting	0.1600
Loading and scrapping rooms and pillars	0.6603

Inside Day Wage Scale

	Per day		Per day
Motormen and machine runners	$7.18	Timbermen	7.05
Brakemen	6.77	Pumpmen	6.70
Trip rider, rope haulage	6.77	Bottom cagers	6.85
Skilled wiremen	7.18	Drivers, single mule	6.65
Wiremen's helpers	6.74	Drivers, two or more mules	6.77
Tracklayers	7.05	Couplers—boys	4.00
Tracklayers' helpers	6.65	Couplers—men	6.60
Slate shooters	6.89	Greasers—men	6.60
Slatemen	6 65	Greasers—boys	4.00
Bratticemen	7 05	Trappers	4.00
		All other inside day labor	6.60

Outside Day Wage Scale

	Per day		Per day
Dumpers	$6 65	Blacksmiths' helpers	$6.80
Top tipplemen	6.58	Car repairmen	7.06
Transfer operators	6.50	Greasers—men	6.50
Trimmers	6.50	Greasers—boys	3.85
Drum runners	7.10	Couplers—men	6.50
Car cleaners	6.50	Couplers—boys	3.85
Blacksmiths	7.50		

Sign Pact in District 18 Without Wage Cut; Western Canadian Men Take Reduction

The strike in District 18, which is composed of eastern British Columbia and Alberta, has been settled and the mines were opened for work Monday, Aug. 28. The terms of settlement practically mean that the Cleveland agreement has been accepted and that the men go back without a reduction in wages.

Miners and operators of western Canada have signed an agreement by which the miners will return to work at 15 per cent wage reduction from 1921 rates, it was announced by the Department of Labor Aug. 25. The operators had asked for a 20 per cent reduction.

Wage Increase for Alabama Miners

Wages of coal miners in the Alabama field will be increased 20 per cent on Sept. 1, according to an announcement from Birmingham Aug. 26. About 26,000 men will get the increase.

Coal-Commission Legislation, If Passed, Likely to Be Combination of Winslow and Borah Bills

Unless displaced by emergency legislation, it is believed that a bill to create the United States Coal Commission with authority to investigate the coal industry and report conclusions and recommendations to Congress and to the President will be enacted into law before another week has passed.

The administration has not indicated a preference between the Winslow bill, passed by the House, and the Borah bill, pending in the Senate. It is said that the President would be satisfied with either. It is probable that in its final shape the law will be a combination of the two bills, put together in conference.

The principal points of difference are that the Winslow bill provides a commission of not more than nine members, while the Borah bill provides for five; the Winslow bill carries an appropriation of $300,000 and the Borah bill, $100,000; the Borah bill goes further than the Winslow bill and instructs the proposed commission to report recommendations on standardization of wages and working conditions, standardization of work to be done for a living wage, standardization of mine efficiency looking to closing of those mines having low efficiency and high productive costs and the advisability or wisdom of nationalization of the mines together with advisability of governmental control and regulation.

The Winslow bill, favorably reported to the House the day after its introduction by Representative Winslow of Massachusetts, chairman of the Committee on Interstate and Foreign Commerce, which considered the measure, was launched with a stormy future due to the rules committee getting out of hand, but through quick work of administration leaders on the floor this was straightened out and the bill was passed the same day by the House. The vote was 219 to 55, with four Republications opposing it and 24 Democrats voting for it.

The bill was amended before passage on motion of Representative Bankhead, Democrat, of Alabama, to reduce the salaries of the commissioners from $10,000 to $7,500 annually and on motion of Representative Moore, Democrat, of Virginia, to reduce the appropriation for the commission from $500,000 to $300,000. Otherwise efforts to amend were rejected, excepting a perfecting amendment to make the intent clear.

In order to report a special rule setting the bill for consideration, the rules committee was called Wednesday morning. This committee, instead of voting a special rule for the Winslow bill, voted 5 to 3 to report a special rule setting the Bland investigation bill as a special order of business. The Bland bill was reported favorably by the labor committee some weeks ago, after extensive hearings. The administration objected to some of its features. Floor Leader Mondell, of the Republicans, had announced that the Winslow bill would be called for special order before he was informed by Minority Leader Garrett of the action of the rules committee. Representative Mondell hastily had a lieutenant make the point of no quorum and while the roll of the House was being called another meeting of the rules committee was summoned and a larger attendance was drummed up. At this meeting the earlier action was rescinded and a special rule was ordered out, setting the Winslow bill for consideration. Meanwhile, however, other administration leaders had succeeded in getting the Winslow bill reported in regular order, so it was under consideration when the special rule was brought out.

Representative Bland, Republican, of Indiana, made three separate attempts to substitute his bill for the Winslow bill, without success. He objected to the new bill mainly, he declared, because it had no "teeth" while the labor committee had given careful consideration for weeks to his measure. In the final vote Representative Bland voted for the Winslow bill.

Representative Denison, Republican, of Illinois, declared that the Winslow bill was not wholly satisfactory and made efforts to reduce the number of commissioners from nine to five, but without success.

The bill bore the stamp of approval of President Harding, declared Representative Winslow, having been submitted to the President less than two hours before it was introduced.

Minority Leader Garrett opposed the bill, declaring it to be "useless."

While the Winslow bill was being passed by the House the Senate Committee on Education and Labor was busily rewriting the Borah fact-finding bill, and reported it favorably to the Senate with various modifying amendments. The rewritten Borah bill provided for a commission of five members, with salaries of $7,500 each; the commission to exist a year and to report first within five months. An appropriation of $100,000 was provided. The Borah bill followed the same line of instructions as to the duties of the commission as contained in the Winslow bill, but went further in instructing the commission to report recommendations relative to standardization of mines upon productive capacity; standardizing cost of living for mine workers; standardizing the amount of work a man shall do for a reasonable wage, this latter having been put into the bill by Senator duPont; standardizing a basis of arriving at overhead cost of production and distribution of coal to the ultimate consumer; advisability or wisdom of nationalizing the coal industry, and feasibility or necessity of governmental regulation and control.

When the Winslow bill came from the House to the Senate it was referred to the Committee on Education and Labor, of which Senator Borah is chairman, which promptly struck out all after the enacting clause and substituted the Borah bill, with a favorable report.

On the floor the Borah bill was amended on motion of Senator Reed, Democrat, of Missouri, to provide that not only members of Congress be excluded from membership on the commission but that all federal government officials be debarred. This would exclude any members of the Cabinet.

Lively debate on the bill took place in the Senate. No Senator declared himself directly in opposition to the fact-finding commission bill, but many argued that additional legislation, to meet the immediate needs of the situation, was necessary.

Senator Sutherland, of West Virginia, assailed that part of the Borah bill directing the proposed commission to report on the advisability of nationalization of the coal mines. Senator Edge, of New Jersey, also criticized this same provision, while Senator Stanley, of Kentucky, attacked it caustically. Senator Borah declared that information on this question should be in possession of Congress and that no one should object to having information on any subject.

Senator Reed, of Missouri; Shields, of Tennessee, and Fletcher, of Florida, declared the fact-finding commission would "get nowhere" with the problem and while they did not directly oppose passage of the bill they characterized it as useless legislation and not what should be brought forward in the emergency.

Guard Remains in Pennsylvania Fields

NO CHANGE IN THE LOCATION of the Pennsylvania National Guard units now in the bituminous field are contemplated by Governor William C. Sproul. It is held that the resumption of work, urged as a reason by union men for the withdrawal of troops, is the best reason why the troops should be retained at their present stations.

A detail of state police was sent last week to Valley Camp, Westmoreland County, when the Valley Camp Coal Co. started operation recently under the Cleveland agreement. In a poll of the employees, according to word received by the state police, 180 voted to accept the agreement and return to work and 160 voted against resuming work.

Illinois at One-Third Full Speed in Four Days; Surrender Not Complete, Some Feel

On Saturday, Aug. 26, four days after the signing of the Illinois mine peace—a peace based on the Lewis terms as laid down in Cleveland but not pledging the operators to take part in President Lewis' coming wage conferences—the mines of the state had attained only about one-third their normal rate of production.

The first day or two of work in the mines was devoted to getting tools and machinery down into the ground and to cleaning up and inspecting. Actual mining of coal did not get under way until Friday. By Saturday the best report from any mine in the state showed that on the previous day—the last full day of the week—a 60-car mine had loaded and shipped 42 cars. Other reports ranged down to two or three cars and some mines failed to make a turn-in. It was estimated by experts that the output of the state was close to 30 per cent of normal. Railroads were able to supply cars in plenty at most mines but the inevitable shortage was said to be hampering a few mines near St. Louis.

A good deal of opinion is expressed as to the strength of the tactical position which the Illinois operators assumed when they framed up their peace with Farrington in Chicago, Aug. 22. It was authoritatively stated that the omission of clauses binding Illinois to take part in the Lewis plan for making the next wage scale practically amounts to a black eye for Lewis. It is said to put that state in a better position to assist in a possible federal investigation of the coal industry and that if enough union and non-union tonnage throughout the land is in a similar position, then an outside authority could more readily arrive at constructive conclusions that might be at variance with the autocratic ideas of John L. Lewis, president of the miners' union.

It can be calculated that about 320,000,000 tons of production might take the Illinois position, making the estimates thus: Illinois, 90,000,000; Pennsylvania, 50,000,000; West Virginia, 90,000,000; Kentucky, 31,000,000; Alabama, 19,000,000; Colorado, 12,000,000; Virginia, 10,000,000; Kansas, 7,500,000; Tennessee, 6,500,000; Missouri, 5,500,000; southern Ohio, 10,000,000. If this formidable total of 321,500,000 tons were to line up in full and free co-operation with such a coal commission as may be created under the Winslow bill, that commission might arrive at the facts about coal in such a way as seriously to hamper the Lewis program of wage making next winter and spring.

But there is a variety of opinion among Illinois operators as to the defensive value of their freedom from obligation to meet Lewis Oct. 2 and Jan. 3 in Cleveland. Some say that they were glad to see an opportunity to make peace without having the entire Lewis program shoved down their throats and that the form of Illinois peace at least gives them a little time to spar with the union before the next clinch but that they suppose when Oct. 2 comes around they will see that nothing better remains for them to do than attend the Lewis meeting and draw a hand in the new game as a matter of plain self-defence. Even W. K. Kavanaugh, president of the 5th and 9th District Operators' Association, said after the Illinois agreement had been signed that he supposed Illinois would take part in the Lewis conferences.

The form which was signed at Chicago follows:

It is hereby agreed by and between the officers of District No. 12, United Mine Workers of America, and..... that the working agreement which terminated March 31, 1922, is hereby renewed and extended to March 31, 1923, in all of its provisions as to wages and working conditions, excepting that the 32nd clause is to be stricken therefrom in accordance with the policy adopted by the policy committee of the United Mine Workers of America, Aug. 15, 1922.

The 32d section, referred to, is as follows: "The joint executive boards are authorized and instructed to arrange for negotiations for the formation of a new contract to begin at a date not later than the expiration of this contract."

Indiana Signs Cleveland Pact, but Refuses To "Approve" It in Peace Document

Most of the 30,000 striking union coal miners in Indiana are back at work again under the old terms and conditions, just as the men of Illinois are. The Indiana operators signed with their miners in Terre Haute on the basis laid down at Cleveland by President Lewis of the international union but they did refuse one demand of their men. The peace document as first spread on the table by John Hessler, president of District 11, called for the operators not only to "accept" but also to "approve" the Cleveland plan. The operators shied away from the dotted line until the offensive word "approve" had been scratched.

In its final form, the Indiana peace was made thus:

"That the terms, provisions and conditions of the Terre Haute agreement, which was in effect in District No. 11, United Mine Workers of America, on March, 1922, be hereby extended to April 1, 1923, and that the mines of the signers of the supplementary agreement shall be opened immediately upon the execution of this supplementary agreement.

"The signers of this supplementary agreement and those whom they represent accept the policy adopted by the joint conference of miners and operators held in Cleveland, Ohio, Aug. 15, 1922."

This agreement was signed by the Indiana Bituminous Coal Operators' Association and the Indiana Coal Producers' Association, which is the strip-mine operators' group.

Probe of Herrin Massacre Under Way

A grand jury in "bloody" Williamson County, Illinois, convened Aug. 28 to begin action against those responsible for the Herrin massacre, June 22, in which nineteen non-union men were killed and thirty wounded after they had surrendered to an attacking mob at a strip mine. It is a special sitting called by Judge Dewitt T. Hartwell, of the Williamson County Circuit Court, at the instance of Attorney General Edward Brundage. The session is in Marion, 10 miles from the scene of the butchery.

The court made it plain that there are two sets of killings to be investigated. The first is the shooting of three union miners by the strike guards at the Southern Illinois Coal Co. plant on June 21. The Cononer's jury put the blame for this on the coal company officials.

Receipts of All Coal by Lake in the Northwest

Figures Compiled by L. M. Mann, Assistant U. S. Engineer, Milwaukee District.

Locality	1917 to 1919 Inclusive Average	1920	1921	1922 to August 1	Per Cent of Amount Required	Remarks
Sault Ste. Marie Locks (1)..	16,685,138	13,947,062	14,763,155	745,047	4.4	Duluth District
Duluth-Superior only (2)..	°10,442,864	°9,030,696	°10,164,849	°397,210	3.8	Included in Duluth district
Milwaukee District.....	7,086,352	6,313,403	6,914,358	1,504,557	21.0	W. &. E. Shore, Lake Michigan
Milwaukee only (3).....	°4,367,911	°3,662,219	°3,993,913	°997,037	22.4	Included in Milwaukee district
Chicago District.....	1,898,880	2,002,799	1,667,665	617,138	33.0	Chicago to Michigan City incl. Gary
Detroit District (4).....	459,879	623,255	Not available	Not available	....	Except the "Soo"
Total.....	26,130,249	22,804,519	21,677,513	2,866,742*	11.0	

[1]Total passing the "Soo" (west bound) and therefore covers the Duluth district and shipments to Canadian ports.
[2]Figures marked (°) not included in totals.
[3]Including car ferries.
[4]Incomplete, port at City of Detroit not reported since 1920.
*About 11 per cent of annual requirements for the Northwestern district.

Price-Control Bills Favorably Reported in Both Houses; Hoover Urges Enactment of Winslow Measure

Regulation of the sale price of coal through denial of car supply to those who charge unreasonable profits and control of distribution of fuel are provided in similar bills introduced in Congress last week by Senator Cummins and Representative Winslow, chairmen of the interstate commerce committees of the two houses. It is said that the bills in general have the approval of the administration and that they were drafted with the co-operation of the Department of Justice and the Department of Commerce.

During consideration of the Cummins bill by the Senate Interstate Commerce Committee the question was raised as to whether the bill would be effective in controlling the retail price, and suggestions were made for an additional section to cover this point more specifically. Demand also was made that before legislation of such drastic nature be enacted, or recommended, parties at interest be called to give their views.

Both bills would amend the Transportation Act to enlarge the powers of the Interstate Commerce Commission to include authority to issue orders for priority or embargoes for or against any carrier or region or corporation or person, to assure equitable distribution of fuel and to prevent the purchase or sale of coal by any person, corporation, partnership or association at "prices unjustly or unreasonably high." There is to be created a Federal department of Fuel Distribution, with a Federal Fuel Distributor to be appointed by the President, who may appoint assistants and who shall investigate whether and where shortage of fuel exists, fields of production and markets, nature and location of consumers, prices normally charged and whether current prices, with fair profits, are just and reasonable, and make recommendations to the Interstate Commerce Commission.

Under the Cummins bill the act would expire whenever the President declares by proclamation that the emergency has ceased. Under the Winslow bill, the act would become permanent and would be suspended by Presidential proclamation at the end of the present emergency but remain on the statute books so that it could be invoked again should a similar emergency arise in the future.

Both bills carry an appropriation of $250,000. The Winslow bill would make not to exceed $50,000 of this sum available for payment of expenses incurred by governmental agencies in connection with the coal situation since May 15.

Without a record vote, the Senate Interstate Commerce Committee Monday ordered a favorable report on the Cummins bill, after it had been decided definitely not to hold public hearings on the measure. The bill was amended to provide that it shall expire at the end of a year and to make specific the fact that its provisions apply only to interstate commerce.

Favorable report on the Winslow bill was ordered by the House Interstate Commerce Committee Monday evening, with slight amendments in phraseology, and after four witnesses had been heard by the committee Republican Leader Mondell announced that he expected the bill to pass with two days' debate.

Appearing before the House committee, Secretary of Commerce Hoover urged enactment of the bill into law. He declared that the powers of the federal authorities are not sufficient to meet the situation despite the improvement by reopening of many bituminous mines. He declared that from 90 days to six months would be required to relieve the existing "coal famine." While the majority of the operators have held prices within reason by voluntary agreement, the Commerce Secretary declared that some weapon should be given the government to force fair prices upon those who would profiteer from the situation.

J. D. A. Morrow, vice-president of the National Coal Association, informed the committee that he believed most of the operators would oppose the bill. He did not believe it would accomplish any good purpose, he said, but would hamper operations by governmental interference with legitimate channels of trade.

C. B. Aitchison, member of the Interstate Commerce Commission, urged adoption of the bill as he said the commission needs added authority to accomplish what is now expected of it.

Edgar Wallace, a representative of the American Federation of Labor, told the committee that generally the bill was satisfactory to labor, but that price-fixing in principle is regarded as dangerous.

A bill giving the President authority to take over and operate mines during any emergency was introduced in the Senate on Aug. 25 by Senator Edge, of New Jersey.

Meanwhile, other bills, according to the ideas of individual members, are making their appearance. Representative Dickinson, of Iowa, has introduced a bill to create a coal commission of four members to fix wages and working conditions in the industry in the event of a disagreement and with broad powers to regulate prices on the basis of cost of production plus not more than 10 per cent profit. This bill was referred to the Interstate Commerce Committee of the House, where it is expected to die.

Representative Brennan, of Michigan, has introduced a joint resolution authorizing and requesting the Interstate Commerce Commission, Department of Commerce and other agencies to take steps to conserve coal by denying fuel to non-essential industries, by closing electric signs, and other means.

Ends Federal Control by Federal Agencies

"Because of the general resumption of bituminous mining, no more coal will be directed by the Federal Fuel Distributor to the different states—except the Upper Lakes—under emergency orders under class No. 1 unless the situation should again warrant such forced measures," says a formal statement issued Monday night by Mr. Spencer. Continuing it says:

"All coal will be permitted to move as far as practicable under the Interstate Commerce Commission classified priorities. Thus the Federal Fuel Distributor will issue no more No. 1 priority orders for coal to move to state organizations except possibly in connection with a plan for lake shipments.

"Coal shippers holding priority No. 1 orders placed through the Federal fuel distribution agencies are expected to complete shipments on such orders unless by mutual agreement between shippers and the consignee.

"The issuance of emergency priority orders of class No. 1 for railroads will continue until such time as the Interstate Commerce Commission has provided other plans for caring for the railroad requirements.

"A new plan is being worked out under the Interstate Commerce Commission to secure an assurance of reasonable lake movement up to the capacity of lake transport.

"The agreement as to price restraint with the non-union operators expires today with the resumption of the union bituminous mines. The various district and general committees will cease to function as of Sept. 2. About 70 per cent of the non-union operators have held to this agreement, and it is felt that the public has been saved a large sum.

"Pending the action of Congress and the state authorities, the only restraint upon price is the schedule of fair prices declared by Governors or state coal commissioners in some of the states, to which it is earnestly hoped the operators and dealers will conform.

"The legislation before Congress can only control the price of coal moving over state lines—that is, in interstate commerce. The price of coal produced and consumed in a state, together with the charges which wholesalers and retailers within the state may make, the latter including even interstate coal, should be controlled by the state authorities. Therefore, there can be no real control of profiteering unless the state authorities act."

Drastic Fuel Bill Presented in New York Legislature and Quickly Passed

Under the urgent insistence of Governor Miller that there exists an emergency directly affecting the public health and welfare requiring governmental regulation and control of the supply of fuel during such emergency and its equitable distribution to consumers at reasonable prices, the New York State Legislature on Aug. 28 introduced a measure intended to solve the fuel problem in New York State. The measure, known as the Hewitt-Jesse bill, was passed without change on Aug. 29.

The measure creates the office of state fuel administrator "to continue until by proclamation of the Governor the emergency requiring its creation is declared no longer to exist." It provides for general supervision over the receipt, transportation, distribution and allotment of fuel to various sections of the state; price fixing of fuel by the administrator; seizure and sale of surplus stock of coal held, contracted for or arranged for in excess of the average requirements of any individual, manufacturer, wholesaler or dealer, with a provision for the immediate payment therefore after its sale to the person from whom such coal is taken; the creation of a revolving fund for the purchase and sale of fuel by the state administration, if "the Governor by a certificate filed in the office of the Secretary of State shall declare that the emergency be so acute that the exercise of such powers is required."

For the purpose of creating the revolving fund and paying the expenses of the administrator the sum of ten million dollars is appropriated.

Others features of the bill include the right of municipalities to curtail the use of gas and electric signs, the right of the administrator to prevent the waste of fuel, the right of the administrator to adopt rules and issue orders with the same force and effect as law, the temporary suspension of that provision of law which calls for the purchase by municipalities of fuel after advertising for bids, etc.

A measure was also introduced authorizing the city of New York to increase from two to five million dollars the amount of money the city may borrow in one year on certificates of indebtedness and allowing such city to engage in the business of buying and selling fuel.

Southwest Also Settles on Cleveland Basis

The mines of the Oklahoma and Arkansas fields are resuming work following a settlement reached at Kansas City, Aug. 23, based on the Cleveland agreement. The wage scale and working conditions of 1920-22 are extended to April, 1923. The operators insisted upon writing into the agreement a clause aimed to guarantee that all miners who have been working in certain of the mines shall not be discriminated against. It will be several days before production reaches full speed in the field.

F. S. Peabody, Chicago Operator, Dead

Francis S. Peabody, chairman of the board of the Peabody Coal Co. and long rated as one of the ablest men and most striking figures in the American coal industry, died suddenly of heart disease Sunday, Aug. 27, while on a fox hunt on his estate at Hinsdale, Ill. He was 63 years old.

Mr. Peabody, who was born in Chicago, educated at Phillips Academy and Yale ('81), first was a bank messenger boy in Chicago and then, in 1883, a partner in the small retail coal firm of Peabody, Daniels & Co. This concern later became the Peabody Coal Co., which developed swiftly into the largest retail coal business in Chicago, out of which the present Consumers' company evolved. Branching out into coal mining, the company spread its network of mines until today it owns or operates for others a string of forty-six soft-coal mines from the Sheridan field of Wyoming to the newly controlled Erie mines of Pennsylvania. The stronghold of the company is in the central and southern fields of Illinois. The remarkable success of the Peabody Coal Co. and its subsidiaries is directly to be credited to the genius and resourcefulness of Mr. Peabody and of the group of men with which he surrounded himself. His only son, Stuyvesant, is president of the company.

Mr. Peabody was long active in Democratic Party politics nationally, once having been boomed for U. S. Senator from Illinois, and was chosen by President Wilson to direct the financial end of the party's 1916 campaign in the Western States. In 1917 he served in Washington as chairman of the Coal Production Committee of the Council of National Defense. He was decorated by the King of Italy for



F. S. PEABODY

his war work, which included strong support of the Salvation Army. Of recent years Mr. Peabody had been withdrawing by degrees from the more vigorous business activities and had been spending all the time he could on his model farm enjoying his hobbies, which were dogs, horses and the collection of original Robert Louis Stevenson manuscripts. The funeral was arranged for Tuesday, Aug. 29, with burial in Hinsdale.

U. S. Steel Corporation Advances Wages 20 Per Cent Beginning Sept. 1

An advance of 20 per cent in wages, to become effective Sept. 1, was announced Aug. 22 by the United States Steel Corporation. This is the announcement:

"The wage rates of day labor at the manufacturing plants of the Steel Corporation have been increased about 20 per cent, to become effective September 1. Other rates will be equitably adjusted."

Other wage announcements by the Steel Corporation have been as follows, according to the *Iron Age:*

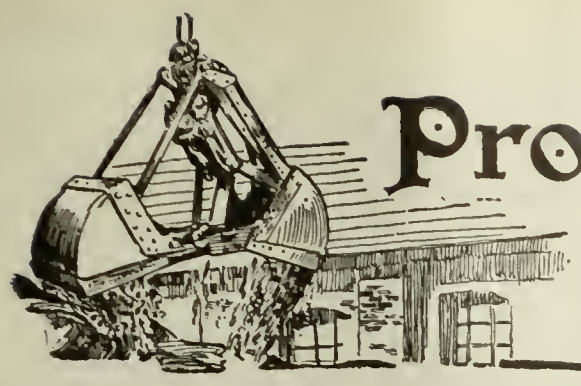
Jan. 6, 1916, 10 per cent increase.
May 1, 1916, 10 per cent increase.
Dec. 15, 1916, 10 per cent increase.
May 1, 1917, 10 per cent increase.
Oct. 1, 1917, 10 per cent increase.
April 15, 1918, 15 per cent increase.
Aug. 1, 1918, 10 per cent increase.
Oct. 1, 1918, 8-hr. basic day adopted.
Feb. 1, 1920, 10 per cent increase.
May 16, 1921, 20 per cent decrease.
June 6, 1921, basic 8-hr. day abolished.
Aug. 29, 1921, decrease to 30c. per hr.

The following table shows the wages of common labor after each advance or decrease in wages by the United States Steel Corporation:

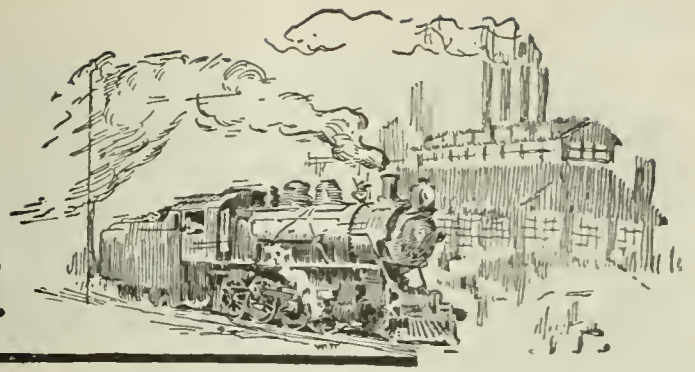
Date	Wages 10-Hr.	Date	Wages 10-Hr.
1915	$2 00	Aug. 1, 1918	$4 20
Feb. 1, 1916	2 20	Oct. 1, 1918	*4 62
May 1, 1916	2 50	Feb. 1, 1920	5 08
Dec. 15, 1916	2 75	May 16, 1921	†4 05
May 1, 1917	3 00	July 16, 1921	†3.70
Oct. 1, 1917	3 30	Aug. 29, 1921	3 00
Apr. 15, 1918	3 80	Sept. 1, 1922	3.60

* Eight-hour basic day established and time and one-half paid for overtime.
† Approximated.

Independents generally have announced that they will meet the advance made by the Steel Corporation.



Production and the Market



Weekly Review

AS PRODUCTION increases with mines opening under the Cleveland wage agreement more coal is beginning to flow in its accustomed grooves. Much of the output is still going on priority orders but the heavier production has permitted contract shippers to again supply some of their regular trade.

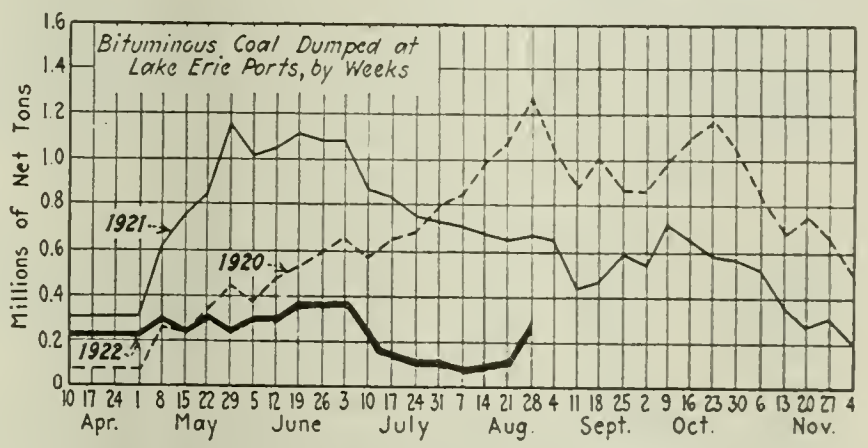
Spot offerings also have increased, but the rank and file of consumers are less anxious to buy. Railroads, utilities, steel plants, etc., are the heavier takers of spot tonnage but the high-priced demand has fallen off rapidly with the partial resumption of union mining.

Recession in Demand Only Temporary

Prices of spot coal reflect the weakened demand. *Coal Age* Index of spot bituminous prices dropped 93 points to 437 from 530 a week ago. The softening was most apparent in central Pennsylvania and in western Kentucky, while Pocahontas stood firm. The market range is gradually narrowing down to the Hoover basis, although a full dollar over the fair price is still a representative spot figure. The smaller consumer is badly in need of coal, but as he sees the market softening, is delaying entering his order from day to day. He has skated on thin ice for several weeks and is willing to take a chance for a while longer. As soon as improvement in production appears permanent he is bound to replenish his reserves and this buying rush will more than keep prices from dropping below fair-price levels.

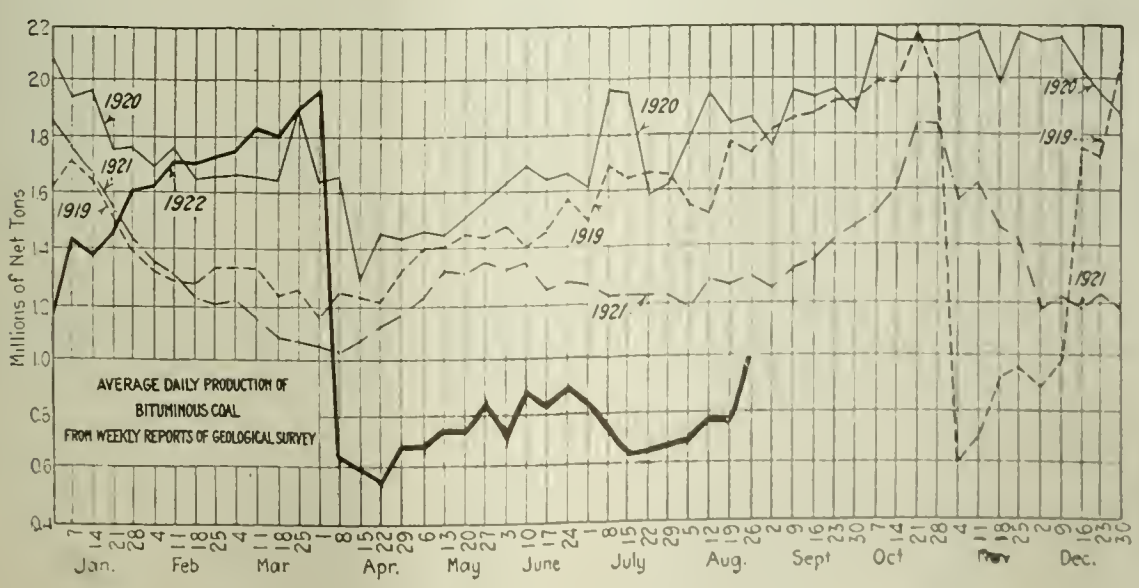
Meantime no-bills are appearing in Illinois and Indiana, where union mines have resumed, and it is evident that a four-day week is the best that can be expected, even were transportation facilities more adequate. The St. Louis fuel committee has ceased to function and the situation has lost its serious aspect. Throughout the Middle West the general steam demand is light, domestic call is leading, and Kentucky coals, caught en route by the heavier union mining, have sold off. There is much Kentucky and Alabama tonnage rolling and this must be absorbed before a healthy demand can develop for Illinois or Indiana coals. Ohio No. 8 mines are rapidly getting into operation but are hampered by the lagging demand and a car shortage on the B. & O. and W. & L. E. roads.

North Atlantic markets are easy. Heavier receipts via water and rail have taken the top off the market. British coals are flowing in, but are going at lower figures to meet domestic competition. There is little likelihood of a runaway market in New England. Reserves are comparatively heavy and buyers are banking on the steadily increasing production to lower their fuel costs. The railroad situation in this territory is well in hand and all-rail receipts are growing. Hampton Roads is in a priority tangle but shippers expect the situation to change for the better and that coal will soon resume its former course to contract consumers.



Federal price control and distribution of fuel by volunteer organizations ceased on Monday, pending the passage of emergency legislation by Congress. Until such action can be taken, price restraint is confined to the schedules declared by some of the states. The proposed legislation can apply only on interstate coal movements and without individual action by the states there can be no real control of profiteering.

Arrangements have been made to pool Lake coal as in 1920. The movement up the Lakes is increasing



Estimates of Production

(Net Tons)

BITUMINOUS

Week ended	1921	1922
Aug. 5 (*b*)	7,186,000	4,313,000
Aug. 12 (*b*)	7,771,000	4,605,000
Aug. 19 (*a*)	7,708,000	4,579,000
Daily average	1,285,000	763,000
Calendar year	247,394,000	216,794,000
Daily av. cal. yr	1,271,000	1,109,000

ANTHRACITE

Aug. 5	1,772,000	27,000
Aug. 12	1,772,000	29,000
Aug. 19 (*a*)	1,529,000	39,000

COKE

Aug. 12	50,000	112,000
Aug. 19 (*a*)	57,000	115,000
Calendar year	3,724,000	3,967,000

(*a*) Subject to revision. (*b*) Revised from last report.

and already the shortage fears of Northwestern consumers have been somewhat allayed.

All hope of any August resumption of hard-coal mining was blasted last week when the Philadelphia conference deadlocked. There is no surface indication of any early settlement and consumers are eagerly taking pea coal, the only size available, or are turning to substitutes such as coke.

BITUMINOUS

Additional production of mines opening up under the Cleveland agreement has caused a sharp upturn to the daily output as shown on the chart on the preceding page. According to the Geological Survey, an output of at least 6,000,000 tons for last week (Aug. 21-26) is assured by early reports, and additional tonnage from other districts that are known to have signed the agreement may raise the total to 6,250,000 tons.

On Monday mines in eastern Ohio and parts of central Pennsylvania were shipping coal, and the loadings for that day were 19,043 cars, an increase of 3,340 cars over the preceding Monday. Loadings on Tuesday declined somewhat but on Wednesday and Thursday increased again, and were greater than on corresponding days in any week during the strike. These increases were due to first shipments from Illinois and other Western districts, which carried the total up to 18,748 cars on Thursday.

DAILY LOADINGS DURING THE STRIKE

	1st week	12th week	17th week	18th week	19th week	20th week	21st week
Monday.....	11,445	15,311	13,267	15,102	16,229	15,703	19,043
Tuesday.....	11,019	16,622	11,571	11,446	13,729	13,032	17,772
Wednesday...	11,437	17,032	11,461	12,447	13,368	12,531	18,169
Thursday ...	11,090	16,432	11,028	12,380	13,277	13,521	18,784
Friday.....	11,296	16,073	11,142	12,669	13,539	13,718	...
Saturday....	8,888	13,993	11,336	12,405	11,009	13,524	.....

The increase came almost exclusively from mines formerly closed by the strike. In the middle and southern Appalachians transportation difficulties still limited output and shipments were but little larger than the week before.

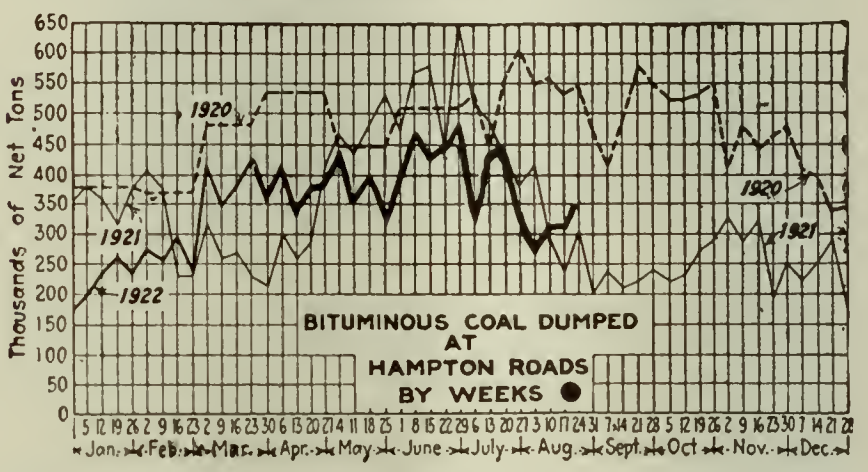
It is not possible to estimate shipments from producing districts for the week ended Aug. 26, as there is at hand no measure of the coal output which has been produced from mines beginning production after Wednesday. The average shipments during the first half of last week exceeded the average for the preceding week by 33 per cent and that for June 19-24 by about 15 per cent.

The increase in production is chiefly in central Pennsylvania, western Pennsylvania, the Fairmont and Panhandle districts of West Virginia, and Ohio, in which districts, collectively, the daily rate of production exceeds by 156,000 tons, or 130 per cent, that of the week before. The increase in central Pennsylvania is about 90 per cent; in western Pennsylvania, 40 per cent; in northern West Virginia, about 170 per cent and in Ohio, 115 per cent.

The middle and southern Appalachian districts show slight change. The region as a whole is producing a little more than last week but has not again reached the level of production attained before the shopmen's strike. The eastern Kentucky districts are still greatly handicapped by traffic congestion. While production there increased about one-third it is still less than half of the quantity mined weekly during June.

Even with an output of 6,250,000 tons of bituminous coal a week, present production is still below normal. In the corresponding week of 1921 the country raised 9,640,000 tons of coal, of which 1,890,000 tons was anthracite and 7,750,000 tons bituminous coal. The year before that the total raised was 13,250,000 tons. In comparison with these figures the present weekly output of all coal, anthracite and bituminous, is from four to six million short of normal.

Tidewater dumpings at Hampton Roads increased to 350,537 net tons during the week ended Aug. 24 from 307,182 tons in the preceding week. The tonnage at the piers is heavier and railroads are functioning better. Coastwise prices are somewhat softer, as receipts from other sources are more adequate at Northern points.



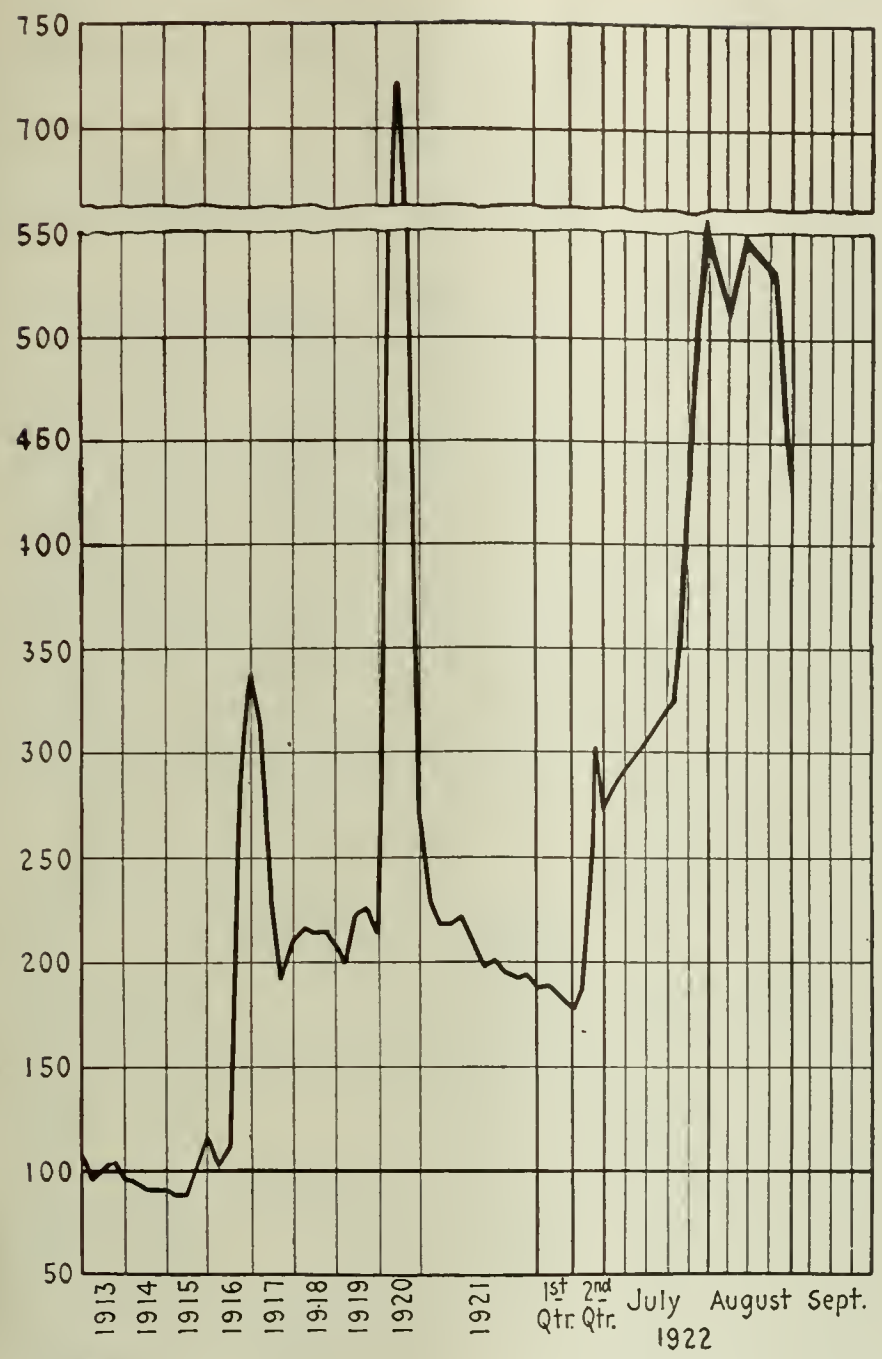
Michigan non-essential industries have been unable to obtain priorities for an adequate fuel supply. It is understood that Detroit consumers may form a pool and send buyers into the field in an endeavor to augment their receipts.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	July 31 1922	Aug. 14 1922	Aug. 21 1922	Aug. 28 1922†
Smokeless lump.....	Columbus...	$8.50	$6.15	$6.10	**$4.00@$8.50**
Smokeless mine run.....	Columbus....	8.15	5.75	6.00	*4.00@ 7.50*
Smokeless screenings.....	Columbus....	8.00	5.65	5.90	*3.75@ 7.50*
Smokeless lump.....	Chicago.....	8.10	5.85	6.85	*5.50@ 6.50*
Smokeless mine run.....	Chicago.....	8.10	5.75	6 25	*5.50@ 6.00*
Smokeless lump.....	Cincinnati...	5.90	5.60	5.75	4.75@ 6.75
Smokeless mine run.....	Cincinnati...	5.50	5.50	5.50	*4.50@ 6.00*
Smokeless screenings.....	Cincinnati...	5.15	5.40	5.15	4.25@ 6.00
*Smokeless mine run.....	Boston.....	8.15	10.15	8.70	**7.50@10.50**
Clearfield mine run.....	Boston.....	6.00	8.00	7.60	*5.50@ 6.25*
Cambria mine run.....	Boston.....	6.65	9.00	8.75	*5.50@ 7.00*
Somerset mine run.....	Boston.....	6.00	8.40	8.00	*5.50@ 6.50*
Pool 9 (Super.Low Vol.)..	New York...	.....	....	8 00	*6.00@ 6.75*
Pool 9 (Super.Low Vol.)..	Philadelphia..	8.25	8.25	8.25	*6.75@ 7.75*
Pool 9 (Super.Low Vol.)..	Baltimore....	7.25	7.50	....	5.75@ 6.75
Pool 10 (H.Gr.Low Vol)..	New York...	.....	8.15	7.50	*5.75@ 6.00*
Pool 10 (H.Gr.Low Vol.)..	Philadelphia..	8.00	8.00	8.00	*6.50@ 7.50*
Pool 10 (H.Gr.Low Vol.)..	Baltimore....	7.25	7.50	7.75	*5.75@ 6.00*
Pool 11 (Low Vol.).....	New York...	7.75	7.65	6.50	*5.00@ 5.75*
Pool 11 (Low Vol.).....	Philadelphia..	8.00	7.85	7.75	*6.00@ 7.00*
Pool 11 (Low Vol.).....	Baltimore....	7.75	7.10	7.75	*5.25@ 5.75*
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)..	New York...	7.75	7.60	.....	.....
Pool 54-64 (Gas and St.)..	Philadelphia..	8.15	7.75	6.60	*5.50@ 6.50*
Pool 54-64 (Gas and St.)..	Baltimore....	7.90	7.50	7.50	*5.25@ 6.00*
Kanawha lump.....	Columbus....	8.00	5.90	6.40	*4.00@ 8.00*
Kanawha mine run.....	Columbus....	7.75	5.50	6.25	*3.75@ 7.50*
Kanawha screenings.....	Columbus....	7.75	5.40	6.00	*3.50@ 7.50*
W. Va. Splint lump.....	Cincinnati...	6.40	5.60	5.35	4.75@ 6.00
W. Va. Gas lump.....	Cincinnati...	6.40	5.60	5.35	4.75@ 6.00
W. Va. mine run.....	Cincinnati...	6.00	5.50	5.50	*4.50@ 6.50*
W. Va. screenings.....	Cincinnati...	5.90	5.40	5.10	*4.25@ 5.50*
Hocking lump.....	Columbus....	8.15	6.15	6.65	*4.00@ 8.00*
Hocking mine run.....	Columbus....	7.75	5.75	6.25	*4.00@ 7.75*
Hocking screenings.....	Columbus....	7.75	5.35	5.75	*3.75@ 7.50*
Pitts. No. 8 lump.....	Cleveland....	8.50	7.25	6.10	*5.50@ 6.00*
Pitts. No. 8 mine run.....	Cleveland....	8.50	7.25	6.10	*5.00@ 5.50*
Pitts. No. 8 screenings....	Cleveland....	8.50	7.25	6.10	*5.00@ 5.50*

Midwest	Market Quoted	July 31 1922	Aug. 14 1922	Aug. 21 1922	Aug. 28 1922†
Franklin, Ill. lump.....	Chicago.....	.....	.....	.....	$4 90@$5.15
Franklin, Ill. mine run.....	Chicago.....	.....	.....	.....	4.50@ 4.75
Franklin, Ill. screenings....	Chicago.....	.....	.....	.....	4.15@ 4.35
Central, Ill. lump.....	Chicago.....	.....	.....	.....	4.90@ 5.25
Central, Ill. mine run.....	Chicago.....	.....	.....	.....	4.25@ 5.00
Central, Ill. screenings....	Chicago.....	.....	.....	.....	4.15@ 4.75
Ind. 4th Vein lump.....	Chicago.....	.....	.....	.....	5.00@ 5.50
Ind. 4th Vein mine run...	Chicago.....	.....	.....	.....	4.65@ 5.00
Ind. 4th Vein screenings..	Chicago.....	.....	.....	.....	4.50@ 5.00
Ind. 5th Vein lump.....	Chicago.....	.....	.....	.....	4.90@ 5.25
Ind. 5th Vein mine run...	Chicago.....	.....	.....	.....	4.50@ 4.75
Ind. 5th Vein screenings..	Chicago.....	.....	.....	.....	4.25@ 4.50
Standard Lump.....	St. Louis.....	.....	.....	.....	3.75@ 4.00
Standard mine run.....	St. Louis.....	.....	.....	.....	3.25@ 3.50
Standard screenings.....	St. Louis.....	.....	.....	.....	2.75@ 3.00
West Ky. lump.....	Louisville....	7 25	6.35	6.00	*4.50@ 5.50*
West Ky. mine run.....	Louisville....	7.25	6.25	6.00	*4.50@ 5.50*
West Ky. screenings.....	Louisville....	7 25	6 10	6.00	*4.50@ 5.50*
West Ky. lump.....	Chicago.....	7.60	7.15	6.00	*3.50@ 5.00*
West Ky. mine run.....	Chicago	7.60	7.10	6.00	*3.50@ 5.00*
South and Southwest					
Big Seam lump.....	Birmingham..	4.50	4.75	4.25	**4 50@ 5 00**
Big Seam mine run.....	Birmingham..	4.50	3.85	4.25	**4.00@ 5.00**
Big Seam (washed).....	Birmingham..	4.50	4.00	4.25	**4.00@ 5.00**
S. E. Ky. lump.....	Chicago.....	8.00	5.85	6.15	*3.50@ 6.00*
S. E. Ky. mine run.....	Chicago.....	8.00	5.75	6.00	*3.50@ 6.00*
S. E. Ky. lump.....	Louisville....	7.75	5.85	5.90	*4.50@ 6.00*
S. E. Ky. mine run.....	Louisville....	7.75	5.75	5.75	*4.50@ 5.75*
S. E. Ky. screenings.....	Louisville....	7.60	5.60	5.65	*4.50@ 5.00*
S. E. Ky. lump.....	Cincinnati...	7.75	5.60	5.90	*4.75@ 6.00*
S. E. Ky. mine run.....	Cincinnati...	6.00	5.50	5.75	*4.50@ 6.00*
S. E. Ky. screenings.....	Cincinnati...	5.90	5.35	5.10	*4.25@ 5.50*
Kansas lump.....	Kansas City..	5.00	6.00	.....	6.00
Kansas mine run.....	Kansas City..	4.75	6.00	.....	5.00
Kansas screenings.....	Kansas City..	4.25	6.00	.....	2.75@ 3.00

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in heavy type, declines in *italics*.
NOTE—Smokeless prices now include New River and Pocahontas.



Coal Age Index 437, Week of Aug. 28, 1922. Average spot price for same period $5.29. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the total output of the United States, weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. (Pittsburgh District prices not included in figures for last week.)

Lake dumpings reflect the governmental activities in behalf of the Northwest. During the week ended Aug. 28 the lower ports handled 253,024 net tons—223,361 tons cargo and 29,663 tons vessel fuel—as compared with 176,640 tons in the previous week. The season's dumpings to date are 5,208,479 tons; in 1921 they were approximately 16,000,000 tons. The Northwestern docks are bare of coal and are eagerly awaiting the arrival of these cargoes. From Aug. 1 to 15 the reserve of bituminous coal dropped from 661,000 to 303,000 tons, and of anthracite, from 170,000 to 92,000 tons. A year ago, when stocks were above the average, the dock operators had on hand between 5,000,000 and 6,000,000 tons of bituminous coal and about 600,000 tons of anthracite.

ANTHRACITE

Production remains at a standstill. The Philadelphia conference of miners and operators, while deadlocked, is still the center of interest and hope persists that an early settlement may be effected, although there are no indications of it at this writing. River coals continued to be dredged at the rate of 39,000 net tons during the week ended Aug. 19.

Pea coal is about all that is moving, either from mine storage or retail yards. Consumers are eagerly accepting this, as they realize the seriousness of the situation. About two weeks more will see the exhaustion of the companies' reserves of this size. North Atlantic centers are urging the use of coke or bituminous coal as substitute for anthracite and New York City has taken steps to abolish temporarily the smoke ordinance prohibiting the use of bituminous coal.

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 inclusive	April 3 to Aug. 12, 1922 inclusive	Week Ended Aug. 12
U. S. Total	45.6	55.7		
Non-Union				
Alabama	63.5	64.6	77.9	93.3
Somerset County	55.5	74.9	45.7	54.4
Panhandle, W. Va.	55.3	51.3	44.6	48.5
Westmoreland	54.9	58.8	83.8	86.9
Virginia	54.8	59.9	74.4	59.6
Harlan	53.3	54.8	No report	
Hazard	51.7	58.4	49.1	23.0
Pocahontas	49.8	60.0	68.9	58.4
Tug River	48.1	63.7	73.2	57.3
Logan	47.6	61.1	60.8	32.6
Cumberland-Piedmont	46.6	50.6	17.8	26.4
Winding Gulf	45.7	64.3	62.9	22.8
Kenova-Thacker	38.2	54.3	71.3	55.6
N. E. Kentucky	32.9	47.7	No report	
New River‡	24.3	37.9	30.1	33.0
Union				
Oklahoma	63.9	59.6	14.4	14.8
Iowa	57.4	78.4	0.0	0.0
Ohio, Eastern	52.6	46.6	0.0	0.0
Missouri	50.7	66.8	2.7	6.0
Illionois	44.8	54.5	0.0	0.0
Kansas	42.0	54.9	16.5	13.4
Indiana	41.4	53.8	0.0	0.0
Pittsburgh†	41.2	39.8	0.0	0.0
Central Pennsylvania	39.1	50.2	11.9	13.6
Fairmont	35.3	44.0	4.4	7.0
Western Kentucky	32.5	37.7	61.5	54.3
Pittsburgh*	30.4	31.9	0.0	0.0
Kanawha	26.0	13.0	6.2	11.3
Ohio, Southern	22.9	24.3	0.0	0.0

*Rail and river mines combined.
†Rail mines.
‡Union in 1921, non-union in 1922.

Car Loadings and Surplusages

Cars loaded:	All Cars	Coal Cars
Week ended Aug. 12	852,580	84,559
Previous week	851,351	79,246
Same week a year ago	808,269	156,891
Surplus cars:		
Aug. 8, 1922	153,880	118,044
July 31, 1922	174,927	131,267
Same date a year ago	297,784	152,774

COKE

Beehive coke production increases slowly. The output for the week ended Aug. 19 was 115,000 net tons, as compared with 112,000 tons in the week preceding. Demand wanes however, as coke buyers adopt the same waiting tactics as those in the coal market. Prices are softer but are still too high to warrant the operation of blast furnaces.

In the Connellsville region the H. C. Frick Coke Co., subsidiary of the U. S. Steel Corporation, has posted notices of an increase in the scale, offering a return to 1920 wages—the highest on record. The notice provides for an open-shop basis of work and while organizers are attempting to hold the union ranks firm it is now expected that the strikes will wane rapidly.

Kentucky Governor Drafts County Judges to Help Enforce Fair-Price Regulations

In anticipation of an early termination of the railroad strike, Governor Edwin P. Morrow of Kentucky has perfected an organization to prevent profiteering in coal in that state. The Governor has appointed every County Judge in the state a member of his Fuel Distributing Committee and sent letters requesting each one to inform him promptly of any individual paying more than $4.50 a ton in carload lots and of any local dealer charging more than a fair price. He also will write to chambers of commerce and boards of trade requesting them to advise him of any manufacturing plant or public utility which is charged more than $4.50 a ton at the mines.

"I intend," Mr. Morrow said, "to enforce the regulations by the fullest publicity and also by refusal of priority orders by withholding cars from operators who charge more than the Hoover price and by withholding priority orders from local dealers who profiteer. The cars will go to the dealers who charge fair prices."

Foreign Market And Export News

British Hold European Orders to Fill Strike Gap; Exports Equal Pre-War Record

British exports are still equaling pre-war records. The pressure at the ports is acute as emergency tonnage is being rushed to North America. European orders are strong but tonnage is being diverted to fill the gap made by the strike in the United States. With the exception of Best Admiralty large, however, export prices are showing softening tendencies. Production during the week ended Aug. 12 was 3,623,000 gross tons, according to a cable to *Coal Age*, the sharp curtailment being due to holiday interruptions.

So far no agreement has been reached on the question of trimmers working three shifts instead of two so as to relieve congestion at the British coal shipping ports. The operators and shippers have asked the unions to work three shifts so as to be able to employ more trimmers and also to permit of greater coal output, thus giving more employment to more miners.

Welsh coal fields are now operating at top pressure. Orders from the United States and Canada continue to arrive and a conservative estimate shows that Wales, at any rate, will continue at top speed well into October even if no further orders are forthcoming.

As a result of the American demand steam coal prices are strong but the best Admiralty coal is not above 30s. with other varieties in proportion. As a rule the colliery operators in Wales are taking the long view of the present revival, in that they are endeavoring to prevent undue inflation of prices.

Practically the same position is found in northern England. American and Canadian inquiries continue to arrive and the pits are operating at top pressure. At present, however, the north of England pits are finding difficulties in getting their coal shipped owing to the congestion at Newcastle.

French Mine Costs Still Too High

The French market is moderately active, but, with the huge mine stocks still existing and an increasing output from the gradually restored devastated mines, no true improvement of the situation is to be hoped for before a reduction in costs permits French collieries of the Nord and Pas-de-Calais to meet British competition. The difficulty of this task will be fully grasped if it is considered that, while their wages are three times higher than before the war, French workers are now individually mining 20 per cent less coal.

The miners are now said to be in a rather conciliatory mood. It is therefore to be hoped that they will voluntarily agree to extend their effective underground working time from 6¾ hr. to 7¼ hr. and thus enable the collieries to effect a saving of at least 10 frs. per ton of coal mined. Already now, collieries of the Nord and Pas-de-Calais are accepting forward contracts with a clause providing for an eventual revision of the selling price.

Germany, who was under an obligation of supplying to France, Luxemburg, Belgium and Italy a monthly quantity of 1,916,000 tons had asked the Commission of Reparations, under the fallacious pretext that she was importing coal from Great Britain, to reduce this quantity to 1,340,000 tons. The commission decided that from August to October Germany will have to deliver to these four countries a monthly quantity of 1,725,000 tons.

Coal Paragraphs from Foreign Lands

ITALY. — The price of Cardiff steam first is still quoted at 42s. 3d., according to a cable to *Coal Age*, unchanged from last week.

GERMANY.—Production in the Ruhr district for the week ended Aug. 12 was 1,778,000 metric tons, according to a cable to *Coal Age*. The preceding week's output was 1,731,000 tons. Miners are demanding an increase of wages amounting to 130 to 140 marks a shift.

SWITZERLAND. — British supplies of coal, which constituted 15 per cent in 1920 and 19 per cent in 1921 of the total coal imports of the country, are falling off, owing to the keen competition of German, French and Belgian coal on the Swiss markets. Out of a total importation during the first quarter of 1922 of 266,000 tons with a value of 20,000,000 fr., Germany's share was 108,000 tons, France's 56,000, Belgium's 55,000 and that of Great Britain only 31,000 tons.

Better Receipts at Hampton Roads

Business was more brisk at Hampton Roads last week, all piers increasing their dumpings. Supplies were slightly increased, due to a temporary improvement in transportation on the Virginian and N. & W.

Prices showed a downward tendency, due to reports that larger supplies were being received at Northern points. Demand remained strong, however.

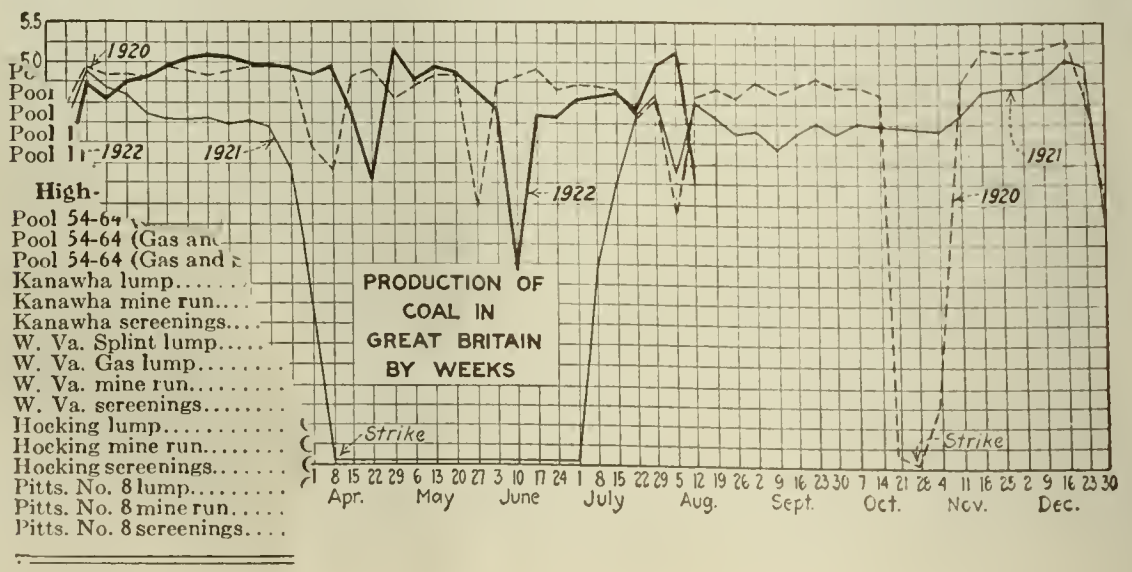
The outlook was somewhat more encouraging, although dealers did not hope for much relief from the stringency in the near future. Railroads were holding their own in coal movement, all reporting a slight improvement in condition of their equipment.

Hampton Roads Pier Situation

	Week Ended Aug. 17	Aug. 24
N. & W. Piers, Lamberts Point:		
Cars on hand	1,196	1,419
Tons on hand	64,710	76,031
Tons dumped for week	138,871	169,922
Tonnage waiting	101,375	80,175
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	502	722
Tons on hand	30,150	41,800
Tons dumped for week	53,065	70,155
Tonnage waiting	59,663	53,400
C. & O. Piers, Newport News:		
Cars on hand	323	280
Tons on hand	16,150	14,000
Tons dumped for week	82,334	72,903
Tonnage waiting	28,615	35,295

Pier and Bunker Prices, Gross Tons

	Aug. 19	Aug. 26†
PIERS		
Pool 10, Philadelphia	$11.50@12.00	$*10.50@11.00*
Pool 11, Philadelphia	10.75@11.25	*9.75@10.25*
Pool 10, New York	12.00@12.25	
Pool 11, New York	11.00@12.00	*10.00@11.00*
Pool 1, Hamp. Roads	9.50@10.50	*7.50@10.00*
Pools 5-6-7 Hamp. Rds.	9.50@10.50	*7.50@10.00*
Pool 2, Hamp. Rds.	9.50@10.50	*7.50@10.00*
BUNKERS		
Pool 10, Philadelphia	$11.75@12.25	$*10.75@11.25*
Pool 11, Philadelphia	11.00@11.50	*10.00@10.50*
Pool 10, New York	12.25@12.50	
Pool 11, New York	11.25@12.25	*10.30@11.30*
Pool 1, Hamp. Rds.	9.50@10.50	*7.50@10.00*
Pool 2, Hamp. Rds.	9.50@10.50	*7.50@10.00*
Welsh, Gibraltar	40s. 6d. f.o.b.	40s. 6d. f.o.b.
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	43s. f.o.b.	43s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	42s. t.i.b.
Welsh, Algiers	38s. f.o.b.	38s. f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b.	65s. f.o.b.
Welsh, Madeira	43s. f.a.s.	43s. f.a.s.
Welsh, Teneriffe	41s. f.a.s.	41s. f.a.s.
Welsh, Malta	44s. 6d. f.o.b.	44s. 6d. f.o.b.
Welsh, Las Palmas	41s. f.a.s.	41s. f.a.s.
Welsh, Naples	42s. f.o.b.	42s. f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore	52s. 6d. t.i.b.	52s. 6d. t.i.b.
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Welsh, St. Michaels	50s. t.i.b.	50s. t.i.b.
Welsh, Alexandria	44s. f.o.b.	*42s. f.o.b.*
Welsh, Port Said	49s. f.o.b.	49s. f.o.b.
Welsh, Buenos Aires	50s. f.o.b.	50s. f.o.b.
Durham, Antwerp	30s. 6d. t.i.b.	30s. 6d. t.i.b.
Durham, Hamburg	26s. f.o.b.	26s. f.o.b.



Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	Aug. 19	Aug. 26†
Admiralty, large	30s.@32s.6d.	**31s.@32s.6d**
Steam, smalls	22s.@22s.6d.	22s.@22s.6d
Newcastle:		
Best steams	25s.@26s.	25s.@26s.
Best gas	25s.	*24s.@25s.*
Best bunkers	25s.	*23s.6s.@24s.6d*

†Advances over previous week shown in **heavy type**; declines in *italics*.

North Atlantic

Consumers Seek Bargains As Coal Prices Recede

Offerings More Plentiful — Though Users' Stocks Are Low, Shipping Prices Tempt Buyers to Delay Further —Resumption of Buying Not Far Distant.

Buyers are hunting coal bargains as spot prices slip. Offerings are increasing as production has improved in the fields resuming under the Cleveland agreement. Priorities have taken a goodly tonnage but the remaining spot coal is not being snapped up as eagerly as before. Consumers' supplies are dangerously low but buyers have gone on a hand-to-mouth basis for so long that they are inclined to take a further chance and are delaying replenishing their stocks as prices slip gradually downward.

As soon as the buyer is satisfied that the improvement in production is permanent he is bound to enter the market and this buying rush is certain to stimulate staggering prices.

NEW YORK

The market was on an up and down basis last week. Quotations as well as demand changed frequently. Selling figures are gradually getting down to normal and buyers are bargain hunters.

The failure to bring about a settlement of the railroad difficulty caused some uneasiness but it was not believed there would be any serious delay in shipments. Continued idleness in the anthracite mines has already created increased demand for bituminous and with the suspension of the Board of Health law prohibiting the use of bituminous in this city still greater will be the demand.

During the last seven days there were nearly 125,000 tons of British coal reported as having arrived in this port in 22 vessels. Demand for foreign coals receded somewhat during the latter part of the week. Quotations for British Admiralty coals were around 42s.

Southern coals came forward in good volume. There was considerable free coal here at the end of the week, quotations ranging $11@$12, New York harbor.

Local users are satisfied they will be able to get coal at much lower than current prices. There were 558 cars at the local piers on Aug. 25 an increase of 158 cars over Aug. 21. Most of this consisted of Pool 11 quality.

Quotations for mine shipments were lower than on the Tidewater basis. Industries included in Class 2 of the priority orders were given quotations from $5 up on Morgantown district B. & O. coals. B. R. & P. coals were quoted around $5.50, with Ligonier and Latrobe coals holding about the same range. High-volatiles were quoted $5.50@$5.75 and Pittsburgh steam coals, Pool No. 34 quality, around $5.50.

FAIRMONT

A number of companies having signed the Cleveland agreement, northern West Virginia is partly unionized, but open-shop mines in operation greatly exceed the union mines in number. Naturally production has increased, but the bulk of the output during the week ending Aug. 19 was coming from non-union mines, most of which are adhering to the operating policy pursued during recent months. Much of the coal is going to the railroads, the open market price ranging $4.50@$6.50 a ton.

PHILADELPHIA

There has been a little freer offering of spot coal recently, but it seems that the more coal available for the market the less anxious the consumer is to buy. The cry all around is for lower prices, and each successive drop recently only seems to have encouraged the consumer to hold off longer.

Frequent reports are heard of small operators signing up on the basis of the Cleveland scale and the number accepting grows each day. However, it is a foregone conclusion that the big concerns who always operated non-union, will continue to do so.

Prices have fallen close to an average of a dollar all around and even lower figures are looked for, yet there is also a likelihood that there will be a considerable rebound. There is not the least doubt that the moment the consumer is convinced that mining has resumed at a greatly improved degree there will be a rush into the market, with only one result—increased prices.

Foreign coal is now arriving almost daily. Inasmuch as there have been some sharp price recessions in domestic fuels this has had the effect of slowing down orders for overseas fuel. In addition there is also a fair tonnage of Southern coal coming in, and many of the barges formerly in the anthracite trade are now being used for Southern loadings.

CENTRAL PENNSYLVANIA

As far as the union mines in central Pennsylvania are concerned, the strike is at an end for the present. Influenced by the settlement, prices have sagged. Spot quotations are $5@$6, but it is expected that the price will soon reach the fair-price level of $4.50 established by the Fuel Commission, and competition, as mining progresses, should bring it to the figure prevailing prior to April 1.

Before leaving Altoona following the agreement with the union operators, President Brophy declared that the entire force of the union will be concentrated on the fields remaining out of the organization.

Production in the non-union districts has steadily increased, the peak being reached last week, when 1,020 cars were loaded in one day. It is apparent that the union has a task before it, as the non-union fields are mostly paying a higher rate than the agreement with the union calls for.

BALTIMORE

With the increased production of soft coal prices have fallen off so that at this writing gas and steam coals are in the market at prices ranging $5.75@$6 a net ton f.o.b. mines. These prices apply in the majority of cases to both priority and other sales.

There is talk of the Hoover price of $4.50 but in most cases this is not an active binding figure even for priority selling. The demand from consumers, at least that kind of demand which was willing to pay up to $8 for quick deliveries, fell off rapidly with the reopening of the mines in the Cleveland agreement.

The question of profit-limiting is the principal one now agitating the Maryland Coal Commission and the solution has apparently not been found through the conference so far held with official Washington. In sales for domestic use, especially, there is great difficulty in arranging a price, as the cost of handling varies greatly.

UPPER POTOMIC

All but about 15 plants are now in operation and production is increasing daily. All the mines are running open-shop, the owners having refused to sign with the union though paying the 1920 wage scale. The tonnage now being handled by the Western Maryland is larger than at any time in recent months. There continues to be a strong demand from eastern markets, prices ranging $4.50@$7 a ton.

West

SALT LAKE CITY

Operators are still behind on their orders but prices have not increased. The car situation is satisfactory. A few more men have gone to work at the mines and production is holding up well. The strike situation is unchanged.

Prominent operators at Ogden, who have mines in Wyoming, have left for Rock Springs where they will be present at a meeting to consider the question of reopening the mines in that state.

KANSAS CITY

In spite of the settlement Aug. 23 of the strike in the Southwest field, the outlook for both operators and miners is poor. Competition of the strongest kind from Illinois coal on the East and Colorado coal on the West and with fuel oil from all directions will cut heavily into the business. Car shortage, predicted to set in about the middle of September, may interfere with the flow of Illinois and Western coal, but it will not greatly hamper oil which already has established itself well both locally and throughout the South, which is counted on normally to absorb about all the slack coal shipped from Kansas and Oklahoma fields.

A little new Kansas coal reached Kansas City by Saturday and was quoted as follows: Lump, $6; nut, $6, mine run, $5; slack $2.50@$3.

Anthracite

Substitutes Sought as Hard-Coal Famine Looms

Coke Being Used and British Coal May Be Pressed Into Domestic Service—Depletion of Pea Stocks in Sight—Stimulus to Output of River Barley.

Hope of any August resumption of anthracite mining has been blasted by the deadlocked Philadelphia conference. In the meantime the retail situation is being given much publicity by the daily press and all consumers now realize the gravity of the fuel outlook for this winter.

Coke is being substituted as an emergency fuel. There is some talk of using British coal for domestic purposes along the North Atlantic seaboard. Pea coal is still actively moving out, both at retail and from the mines, but at the present rate of distribution two weeks will see mine storage piles of this size fairly depleted. Production of river barley is stimulated by the steam shortage.

As it becomes certain that anthracite will be impossible to procure at the start of the winter, steps are being taken by New York City authorities to abolish the ordinance prohibiting the use of bituminous coal.

PHILADELPHIA

Just as everyone had begun to be hopeful that there would be some anthracite production in August, the miners and operators came to a deadlock, with absolutely no sign of their resuming negotiations.

Receipts of pea coal by the retailers have been up to the tonnage of the last few weeks, and it is believed that the next two weeks will see the entire exhaustion of the companies' storage piles. Consumers of all classes are now eagerly seeking this size, as it is the only coal now left on the market.

Dealers are fully convinced that they will have to handle bituminous coal this winter in order to serve the people, and in the meantime are seeking sized coke. They have found that the market is already sold up, as much of the product is going to iron furnaces. Their only hope in case of stress would be by the fuel commission ordering this fuel into domestic use.

One of the coal associations, in order to assist in the equitable distribution of such coal as comes to market, has suggested some rules to the fuel commission, as follows: The maximum gross profit on retail sales not to be in excess of that in March, 1922; delivery to consumers to be limited to 60 days' supply; operators shall not make sales to other than retail dealers; the commission shall do all possible to have coal kept up to the standard of preparation.

NEW YORK

The seriousness of the situation is being realized more each day. Hard coal is becoming scarcer and bituminous is being recommended for use as a substitute by the state fuel administrator. Since the breaking off of negotiations between the mine owners and workers the Board of Aldermen of this city has asked the Board of Health to suspend the ordinance prohibiting the use of bituminous coal in the city. Leave also has been asked of the State Legislature to issue bonds which will enable the city to go into the coal business.

There is little hard coal about the retail yards and none being offered for sale by producers and wholesale houses. Whatever of the larger sizes there are to be had are being doled out in small lots by retail dealers. Order books are filled and it is apparent that those house owners whose bins are empty are likely to have some sleepless nights soon.

About the only anthracite available is river barley, which is being offered in small lots. Quotations range $2.50 @$4 at the point of loading.

BOSTON

The retail price on pea has been lifted in Boston to $15 per net ton, sidewalk delivery. Prices on larger sizes are only nominal, no dealer having more than a very small quantity on hand.

Stray lots of pea are still coming forward from a few producers. The tonnage available, however, is very much reduced and several of the larger companies will have practically none in stock when mining is resumed.

BALTIMORE

Dealers are keeping one eye on the possibility of a settlement of the anthracite trouble, although they are not so much impressed with the thought that the government will actually operate anthracite mines, and the other on the class of distribution which they will undertake as an emergency pending the first receipts of hard coal. In this latter connection some will avail themselves of the domestic soft coal which is now offering, while others will take supplies of the English coal already in port.

In 1902 some English coal brought to this port in ballast was sold to local consumers at a price of $11, as a relief from the anthracite strike conditions at this time. A price of $13.50 at this time would certainly be considered conservative. Some tests of samples of the coal just brought in, a Welsh product, show that it burns with a good flame and with very little smoke or residue. Hard coal dealers, however, predict that as soon as anthracite begins to run again the demand for even the best kinds of soft coal for household use will come to an end.

BUFFALO

With the failure of the operators and the union authorities to arrive at an understanding all hope of a coal supply right away or of a sufficient output for the winter disappeared. The question now is what will answer as a substitute.

It is believed that natural gas will be in much larger supply than during the past few years. Still the problem is not an easy one. This city has about 110,000 families living in single houses to four family flats, of which it is estimated that 75,000 have no coal of account.

Meanwhile an enterprising Scranton coal man sends in an offer of coal "as soon as mined" at $17.50 for stove and chestnut, $10 for pea and $12.50 for washery, to which add $3.28 for freight.

South

BIRMINGHAM

Though the market is not as active as a week ago, business being offered is more than sufficient to take the comparatively small amount of free coal that is to be had. Inquiry from Western points has fallen off with the resumption of operations at mines in the union fields and other districts on the verge of strike settlements. The demand for industrial and utility use is good. The railroads and other contract consumers are taking the bulk of the output and the larger companies have little or no free coal to offer on the market.

Pressure has not been sufficiently relieved to restore differentials as to quality and preparation, and mine run and washed steam is selling at $4@$5 per ton mines, while spot domestic is reported around $5 and hard to obtain at this figure.

Mines on the Southern Ry. especially have suffered serious delays the past week account of shortage of cars, operations losing all the way from a few hours to as much as two days in the week. Conditions in this respect are not as bad on other lines, but all lines are short on coal-carrying equipment. Production for the week of Aug. 12 was approximately 390,000 net tons. Withdrawal of a large amount of equipment from foreign lines which have been taking coal in this district for some weeks pending the settlement of the strike, has been seriously felt.

VIRGINIA

Mines have not been able to reach higher than 60 per cent of potential capacity owing to lack of adequate transportation facilities, production not being above 150,000 tons a week. That section of the field served by the Norfolk & Western is producing about 75 per cent of capacity. C. & O. mines are producing at the rate of 64 per cent. Coke production remains at about 4,500 tons a week. Prices are on approximately the same level, with much of the output moving under contract. One hundred out of the 115 mines in this territory are in operation.

Chicago and Midwest

No Joyous Welcome for Fresh Midwestern Coals

Many Spot Buyers Withdraw from Market Hoping Prices, Now Seeking a Firm Level, Will Drop—Illinois Mines Reach 30 Per Cent Production.

If anybody expected the Midwestern market to get out the band and the town "hack" to welcome the return of Illinois and Indiana coal, they were disillusioned before the mines of the states had been producing four days following the end of the strike. Efforts to feel out the market at $6 were coldly received after the first day and by the fourth the recession in price had drawn quotations below $5. Steam demand was light except among railroads. In the markets the main interest was in prepared sizes. Steady customers in the retail trade got most of the first coal shipped. This situation is expected to reverse itself after a few days when it is definitely determined what the bottom price is to be.

A good deal of coal from Kentucky, en route for Midwest markets was caught by the end of the strike and is selling as low as $3.50. At certain Illinois mines, there were no-bills on the track the second day of operation.

INDIANAPOLIS

With the resumption of operations in Indiana, the retailer has come into the market and he wants coal badly. Prices show no change at the mines outside of Indiana.

The coal executive board of the state administration is arguing for a $3.50-price at the mines. Most of the operators believe when quotations are finally made, the price will be more nearly $4, at least for the time being. The governor, however, has authorized the payment of $5 for coal provided on a guarantee to the state institutions.

It is generally believed by operators in Indianapolis that a four day a week program will be all that will be permitted because of the rail situation. The rail officials here say they can provide cars for every pound of coal the operators produce, but as one aptly put it, "they never have."

WESTERN KENTUCKY

Although demand has slumped a little as a result of production starting north of the Ohio, and the Chicago market is weak and only bidding about $4.50@$4.75 for western Kentucky coal, it is claimed that the field will continue as busy as car supply will permit, as priority orders are taking production just now, and there is the great demand to be supplied through the retailers, and restocking of industries, etc., along with railroads, before any let-up is in prospect. Prices are working down to around the allowed figure of $4.50 a ton, but may remain firm at $4.50 @ $5, which will also cover brokerage in the latter instance.

Whether Chicago, Detroit and other Northern markets continue buying in large quantities or not will not make much difference for the time being, as St. Louis, Louisville, Nashville, Memphis and many other towns are needing considerable tonnage, and retailers do not expect to accumulate much stock.

LOUISVILLE

During the week prices have worked lower until there is but little coal quoted at more than $5@$5.25 for any size, from any Kentucky field. The allowed price of $4.50 a ton is being approximated at last. But it is reported that some producers are passing their coal through brokers, so that the latter may have an opportunity to collect their 8 per cent brokerage.

There are rumors to the effect that some producers are billing their output through newly organized brokerage offices, producer owned at the $4.50 maximum, thus keeping their own records clear while these subsidiaries rake in big profits.

It is feared that an already poor car supply to Kentucky will become worse now that Northern fields are producing again.

SOUTHERN ILLINOIS

Nearly every mine in the Carterville district started to work on Aug. 23. Some of them did not get any coal, however. Those mines that did not open began cleaning up preparatory to starting.

When it became known that Illinois had signed up there were parades in the mining camps all over southern Illinois, especially at West Frankfort and all Franklin County towns. There was general rejoicing everywhere, for the miners, it now develops, were practically convinced they were going to have a freezeout this winter.

Somewhat similar conditions prevailed in the Duquoin and Jackson County fields, with the exception that several of the smaller mines are not ready to open up. In the Mt. Olive district coal was produced the first day, but no shipments made.

Railroad buying was easy in the Standard and Mt. Olive fields, practically no railroad coal being loaded except that on overlapping contracts.

The Carterville prices seem to range about $5@$5.50 for domestic sizes, including No. 1, 2 and 3 washed. No. 4 washed is $4.75, No. 5, $3.90, 2-in. screenings, $4.50, 1¼-in. screenings, $4.35 and mine run, $4.65. Railroad coal seems to range $3.50@$4 for mine run on contracts.

Mt. Olive shipments to the country and Chicago range about $5 on domestic sizes down to $4.50 on steam. St. Louis prices on Mt. Olive domestic are $4.50 down to $4.25 on steam. Big Muddy and Murphysboro ranged around $6 for everything at the start. Standard opened up at $6 for lump and down to $5 for mine run, but this rapidly declined until the latter part of the week saw coal moving as low as $2.75 for screenings, $3 for mine run and $4 for prepared sizes.

CHICAGO

No liveliness of markets here followed the resumption of coal mining in Illinois and Indiana. Spot buyers appeared to withdraw with the expectation that if they stayed out for a few days coal would be down to $2.50. As it was, Illinois coal opened here at a little above $5 but did not move in any quantity at prices above $5 for lump, $4.50 for mine run and $4.25 for screenings, with the bulk of the demand for domestic.

Indiana coals were offered at figures above the Illinois levels. In the price jugglery which is now going on and may continue for a week or more until a firm level is reached, it is natural to suppose that most Indiana coal will drop below that from well-known Illinois fields. A good deal of Kentucky coal on the way here was caught short by the end of the strike, so that quotations on it dropped suddenly from around $6 the day of the settlement to less than $5. Very little smokeless coal reaches here.

ST. LOUIS

The end of the coal strike was not as hilarious an affair as might be expected in St. Louis. All buyers seem to figure that they have an unlimited quantity of Kentucky and Alabama coal in transit that is going to drag on for the next three weeks. As a result they are not in the market for Illinois coal. There seems to have been some sort of a well-formed plan not to buy Illinois coal when the mines started up, although the day before they started up these same buyers were paying $7@$8 for Kentucky coal. The result is that the Illinois Standard market is pretty well broken up and quotations range from $4 down to $2.75 and shipments are being diverted to the north. The same is true of Mt. Olive. On such Carterville as is coming in the price is being paid, but the tonnage is light.

The St. Louis fuel committee has ceased to function, but the State fuel commission will continue to keep in touch with the situation. A meeting was held in St. Louis on Aug. 24 in regard to this and it was decided to let the operators and the railroads take care of the situation until it developed that they were unable to cope with it

Canada

TORONTO

Fuel Controller Ellis strongly advises coal dealers to purchase Welsh coal, but so far there has been no move in that direction. Dealers profess to believe that plenty of anthracite will be available before winter, though the Controller is of the contrary opinion. J. Sanderson, representing the Europe & Asia Trading Co., is in Toronto with the object of opening up a market for British coal. He states that his company could supply the needs of a large city and has at present over 100,000 tons ready for shipment from Cardiff.

Eastern Inland

Output of Resuming Mines Hampered by Car Shortage

Large Consumers Now Buying, Smaller Users Holding Back for Lower Quotations—Shrinkage in Demand Softens Prices—Closing of Ford Plants Important Market Factor.

No. 8 operations have cleaned up and are resuming work under the Cleveland agreement. Production is seriously hampered, however, by a car shortage on the B. & O. and W. & L. E. railroads. The major portion of the output is going to the railroads, steel plants and other large users. Smaller consumers are awaiting lower prices, and the recession in demand has caused a softening, temporarily at least. The announced intention of Henry Ford to close down his plants Sept. 16 will have a pronounced effect on the market.

Ohio operators have refused to enter a state conference on price regulation, fearing the federal law on the subject.

PITTSBURGH

Operators now offer the men the 1920 scale, without union recognition or the check-off, and the men show little disposition to accept. The common belief is that the Pittsburgh Coal Co. will hold out indefinitely, but there is doubt as to some of the smaller operators. Published reports of Pittsburgh operators being disposed to sign the scale refer chiefly to operators in the Freeport vein.

Some observers are confident the Connellsville region will be fully at work in a few days and that this will shortly cause a break among the strikers in the Pittsburgh district.

The trading market in coal continues to be confined almost wholly to Connellsville steam, which has declined fully a dollar in the week, being now available at $5. Offerings have increased somewhat, but the decline was due chiefly to decrease in buying. The railroads seem to have been instructed to stay out of the market. Pittsburgh strip-mined coal has been offered down to $6 and experiences a limited demand. Westmoreland gas stands at about $6.

CLEVELAND

With the announcement of the acceptance of the Cleveland wage scale by additional important groups of operators, demand has eased off somewhat. Consumers apparently are convinced that supplies soon will be greatly increased. This view is not held by some operators, who depreciate stories that production will reach normal levels soon. Their experience is showing them that a shortage of cars at the mines is already seriously hampering the resumption of production. In the meantime prices have dropped. Threatened regulation may have had some influence in bringing these down, but it now appears that there will be little recognition of coal prices by the state. Operators have refused to take part in conferences on prices, fearing conflict with the Federal law.

At a meeting of the members of the Ore & Coal Exchange in Cleveland a few days ago, practically the same rules and regulations governing the coal pool of 1920 were adopted. The price arrangement, as in 1920, probably will provide for a settlement of balance price fixed by the committee at the end of the season, applying to all balances outstanding.

For the season to Aug. 20, shipments of coal up the Lakes to the Northwest amounted to 4,675,224 tons of cargo coal against 14,962,793 tons in the same period of 1921, and 9,055,834 tons in 1920.

COLUMBUS

Most of the mines are now getting down to business with a fairly good force of miners and output is growing daily. Car supply has been quite good up to the present.

The state fuel administration is functioning and priorities are taking care of practically all that is produced in the state. Railroads and utilities are still getting the bulk of the tonnage although some is going into other channels. Retailers have not been able to get much coal up to date and are booking orders for delivery later on.

Lake trade is showing some life although the movement to the Northwest is still small in comparison with previous years. Lake shippers have closed a few small contracts at $3.75 @$4.50.

DETROIT

With bituminous receipts averaging about 200 carloads daily, while between 500 and 600 are necessary to meet requirements, Detroit is steadily running behind on coal supply.

Priority orders for about 150,000 tons of coal for Michigan, which were sent forward to the Federal fuel administrator by the Michigan fuel administrator, have been approved only to the extent of about 50,000 tons.

The apparently ineffectual outcome of the efforts to obtain coal through the federal fuel administration has caused a revival of the previously discussed plan of organizing a local pool among Detroit coal men for the purpose of sending buyers into the producing districts in an attempt to get coal without assistance of the federal authorities.

Owing to diminishing coal supply, 85,000 employees of the Ford Motor Co. will be laid off Sept. 16. The company's Highland Park plant is reported to have installed oil-burning equipment in its furnaces. Whether the use of oil will be continued permanently is not announced.

BUFFALO

The trade has reason to feel that the worst is over. This market is not getting any new coal yet and some that was promised has been ordered to the Lakes, but there will soon be enough if things go right. Too much priority is likely to keep prices up, but consumers are waiting for them to come down.

Supply has been pretty good. Jobbers were active and their advice was heeded. Today there are plenty of consumers, large and small, with months of coal ahead of them. So there will be no rush for coal.

Bituminous prices now run from $7 for Youghiogheny gas, $6.75 for Pittsburgh lump and slack to $6.50 for the mine-run, adding $2.09 to Allegheny valley and $2.24 to other coal for freight to Buffalo. So far mining resumption in the Allegheny Valley is more general than in the districts further south.

NORTHERN PANHANDLE

So many companies are operating on an independent basis that the contract made with the union has not materially increased output. At mines where there never has been an agreement with the union, production continued at about the same rate, the field as a whole having an output of about 50,000 tons during the week ending Aug. 19. There is a heavy demand at the Lakes and in northern markets, with a large tonnage from the region being utilized by the railroads.

EASTERN OHIO

Operations have been slow in reaching capacity output because of transportation disability and preliminary cleaning up in some of the mines.

During the three days ended Aug. 19, the field loaded in the aggregate 1,010 cars, representing a production of 53,530 tons as against a potential capacity for these three days of 309,750 tons of the 140 mines comprising the field. While a greater number of mines have since gotten under way for much greater production, car shortage has appeared on both the B. & O. and W. & L. E. and is materially curtailing the output.

Inquiries are not numerous and buyers for the rank and file of industry are still in a position to withhold orders, anticipating that prices will react further when coal becomes more plentiful. Larger users such as railroads, steamship lines and steel plants are very much in need of fuel and the major portion of current output is going to that quarter. Spot prices have succumbed to reactionary tendencies and quotations are now $1@$1.75 less than a week ago.

Receipts of bituminous coal at Cleveland during the week ended Aug. 19 aggregated 636 cars and were approximately the same in quantity as receipts during the two weeks immediately preceding.

Arrangements have been made to pool Lake cargo coal effective Sept. 1, similar to the plan inaugurated during the season of 1920 when total movement up the Lakes exceeded 22,000,000 tons, of which 16,000,000 tons were floated after July 31. At a meeting of shippers, an executive committee was appointed to formulate rules and regulations to expedite the handling of this important traffic to the Northwest.

Northwest

Upper Lakes Region Now Frets About Anthracite

Most Coal Men Believe Adequate Soft Coal Supplies Will Be Shipped Up from Erie Ports but Lose Hope on Hard Fuel—Prices Flighty.

The Northwest is now morally certain it will get enough bituminous coal to meet all its crying wants. While cargoes have not yet begun to arrive under the new distribution plan in any great number, they are expected to begin this week. In spite of a good deal of bleating for priorities which may not be granted, it is generally felt that the Northwest's plight—even though partially brought down by Northwestern failure to conserve the dock coal it had early in the summer—will draw tremendous shipments from now until the freeze-up. But as to hard coal the feeling is different. Coal men are confident that the strike settlement in the anthracite fields will come so late that not a ton of output from those fields will reach here.

The Northwest's propaganda system is still working effectively. It has been so successful in setting forth the region's desperate plight that it may have had something to do with recent hoists in price on what little coal there is available.

DULUTH

The Northwest now feeling sure of plenty of bituminous coal for public utilities and industries is centering its interest upon the anthracite situation. Coal men here think the hard coal strike will not be settled until it is too late to ship much up the Lakes. This will mean that the Northwest will burn smokeless in its house furnaces.

Bituminous is steady and there is little quotation of prices as docks are busy filling past orders. It is said that 75,000 tons, outside of bituminous, still remain on the docks but this has been taken already.

Five cargoes came into port within the last week. This is Kentucky coal and is selling for around $9 for lump, with 50c. off for run of pile. It is expected that one or two cargoes will arrive daily from now until the first of the month, and that after that shipments will resume in force.

The order to pool coal at Lake Erie ports is causing dissatisfaction among dock men and dealers. Much money has been spent in advertising certain varieties of coal and the pooling will make this advertising ineffective. It is felt though that it is the only way to handle the situation, by the consumer generally.

MILWAUKEE

Watchful waiting is the order of the day. The settlement of the strike in the soft coal fields has eased the tension to some extent, but until coal begins to move and there appears to be some organized system of distribution both dealers and consumers will continue to worry.

Nobody has any idea as to how the apportionment of coal is going to be made, but everybody expects higher prices to rule. Many have switched from coal to coke to make sure of getting some kind of fuel.

Eleven small cargoes of soft coal were received here thus far in August, making the season's receipts of soft coal to date 827,212 tons, against 1,769,043 tons during the same period last year. Car-ferries brought 1,504 tons of anthracite and 54,373 tons of soft coal from the East thus far in August. The bulk of this coal goes direct to the interior, only a small percentage remaining here. Last year up to this time 618,067 tons of anthracite had been received here. Not a cargo of anthracite has reached port thus far this year.

MINNEAPOLIS

The problem of getting an adequate supply of some kind of coal into the Northwest before the close of navigation promises to be the hardest job yet encountered by the coal industry in this region. The fact that the Northwest had a good supply of coal on the docks last spring and did not take advantage of it, is working against all arguments as to its present and future needs. Minnesota state institutions are now low on fuel and authorities are wondering where they will get some within the next few weeks.

When Central Western railroads came to the Lake Superior docks during the summer and bought a big tonnage, shipping it down to Chicago and vicinity, Northwestern roads were utterly indifferent. True they did buy some tonnage, but far less than their neighbors to the South. Now these same Northwestern roads plead for the same priority that other roads get. So it remains to be seen how much real good priorities and similar documents are going to do. Not a few Eastern producers declare flatly that the Northwest will simply have to go into the market for coal in competition with other buyers,—pay whatever price they have to pay in order to get what fuel is available.

New England

Tension Is Lightened As Inquiry Slackens

Panic Demand Disappears—Comfortable Position of Railroads Will Facilitate Movement All-Rail—Large Output Expected in Next Thirty Days.

This week shows very much less tension. In contrast with a fortnight ago there is apparently no panic demand whatever and current inquiry is notably less than last week. The railroads are in more comfortable position as to supply and it is expected that coal on contracts will begin to flow all-rail as well as by water.

Most buyers are building large upon production the next thirty days, and while there might be danger in this if reserves were low, the fact is that stocks in this territory are adequate for some time to come. Consumers who have deliveries due them on contract are expecting that their September quotas will be filled, and apparently there is small chance now of any runaway market.

Several Pennsylvania operators are diligently seeking spot orders, and to such extent is this true that already quotations are lower than was the case a few days back. Grades roughly described as "Pool 10" that were offered at as high as $7.50 have been quoted recently at $6.50, and with the smokeless coals also easing off in price the trade looks for still lower figures in central Pennsylvania.

While Pocahontas and New River are much involved with priorities, and coal intended for New England has been diverted to railroad and other uses elsewhere, the Hampton Roads agencies are expecting the situation to change materially by the early part of September. There are still spot sales reported at around $10.50 f.o.b. vessel, usually for small tonnages to clear boats, but shippers will have their own coal restored to them in increasing volume and will be expected to resume shipments on contract.

The trade generally is much relieved over current news from Washington. Ordinary channels have been so upset and so many awkward situations have been created that everybody, the lay distributors included, are happy to see coal beginning to flow in accustomed grooves.

The New England railroads have made such good progress in replacing striking shop craftsmen that there is less anxiety here over equipment than is doubtless the case in other sections of the country.

Meanwhile, cargoes of British coal arrive from day to day and are likely to continue arriving for the next 60 to 90 days. Heavy purchases were made while the labor situation looked serious and doubtless there will be some shrinkages to be absorbed.

Already, British coal is quoted lower than a week ago.

Cincinnati Gateway

"Stand from Under" Policy Seen with Coming of Coal

Intermittent Flurries in Demand for Lake Cargoes Play Hob with Price Situation—Tidewater Reports Discouraging—Line-up at Hoover Prices Expected.

There is a well-defined effort on the part of certain wholesalers to "stand from in under" with the changes that have come through the possibility of more coal coming on the markets where extreme values have ruled for the past two or three weeks. The intermittent scrambles for coal to fill Lake cargoes has tended to keep up prices in certain quarters and then abruptly leave the situation up in the air. News from Tide, too, has been discouraging and there are those who profess to see the whole line-up back in the traces at the Hoover prices.

CINCINNATI

Retailers have been here in flocks during the week to pick up coal for customers other than domestic users. Most of them have found that the Hoover prices apply to their wants when they have permits and on all else they must pay premiums.

Smokeless prices have not deviated as much as the splints and gas coals from the values that were set in Washington. Out of the Pocahontas district there is little coal moving at other than the federal figures. Some New River has been taking the top of the market but the tonnage is small.

The local retail situation is the worst in ten years despite all of vaunted supremacy of the city as a point of coal origin. Many retailers are holding back on their orders for the simple reason that they have not coal to fill them. Splint lump has been boosted to $8.75 and the smokeless to $1 higher by others. Slack to some plants that have no priority orders has gone as high as $10.50. This is all-rail coal; the river failed when the test came!

HIGH VOLATILE FIELDS

Logan and Thacker

Logan mines are now producing at the rate of about 200,000 tons a week, There are still a good many mines not running because the car supply is not sufficient to enable the average mine to run more than three days out of the six. The agreement at Cleveland will have no other effect than to force the payment of the 1920 wage scale. Lake shipments were increased during the latter part of August.

Gains are being made in the Kenova-Thacker field in the volume of production under somewhat more favorable transportation conditions. More coal is finding its way to market and regular customers are being taken care of to a greater extent, although the output is by no means equal to the demand. More coal began moving to Lake points during the period beginning Aug. 18.

Kanawha

Signing of the Cleveland pact had a tendency to increase production somewhat but a shortage of cars is limiting output to about 80,000 tons a week. Even with more mines in operation it will not be possible to increase production unless railroad facilities are improved. Most of the mines in the field will continue to operate on an open-shop basis but the 1920 wage scale will be paid.

Northeastern Kentucky

With the car supply greatly limited and with only limited motive power available, northeastern Kentucky mines are not producing more than 30 per cent of capacity or about 90,000 tons a week. Car-shortage losses aggregate about 170,000 tons per week. The region is being called upon to ship more coal to the Lakes, and that is tending to cut down the fuel available for regular customers.

LOW-VOLATILE FIELDS

New River and the Gulf

Although handicapped by an inadequate car supply, mines of the New River field are producing more coal on an average than at any other time during the last three or four years. Most plants are limited to about four days a week and mine owners fear a more acute car shortage in view of the fact that there are more mines in operation. All plants in this region are being operated upon an open-shop basis. Operators have posted notices that the 1920 wage scale will be paid.

Gulf mines are managing to slightly increase their aggregate tonnage owing to a somewhat better car supply. This is making for a heavier movement to tidewater and other Eastern markets. The output is still approximately 50,000 tons short of the total attained before the railroad strike.

Pocahontas and Tug River

Conditions are beginning to approach normal once again in the Pocahontas district where with more cars available and motive power in better shape, production has again reached about 350,000 tons a week. Railroad disability losses still aggregate about 230,000 tons per week and some fear is felt lest the increased number of mines in operation and the general condition of equipment cut down the supply of empties in the next few weeks. Although some coal is moving under priority orders, regular customers are getting their share, the Tidewater movement being unusually large.

Tug River mines are able to work more regularly and hence to increase production, this field now producing at the rate of 90,000 tons a week—only about 10,000 tons under normal production. Under improved transportation conditions producers find it possible to take care of more regular customers than for a time.

Coke

CONNELLSVILLE

On the afternoon of Aug. 22 the H. C. Frick Coke Co., the fuel subsidiary of the U. S. Steel Corporation, informed other operators that it would restore the scale of Sept. 1, 1920, excepting on one point, effective the following day. The scale is the highest ever paid in the region, and represents an advance of between 40 and 50 per cent over the scale of Aug. 1, 1921, hitherto the official scale.

A number of meetings of men have been held, at which sentiment was expressed against going back to work without union recognition, but it is expected that the strikes will play out rapidly, the region having been entirely non-union for more than 30 years.

Foundry Coke is quoted at $14.50@$15, against $15@$16 a week ago, and while there has only been forced buying of late foundries seem to have acquired additional ability to stay out of the market. Furnace coke, quotable a week ago at $13.50@$14, is offered down to $11.50, there being scarcely any demand.

The *Courier* reports production during the week ended Aug. 19 at 68,430 tons by the furnace ovens, an increase of 3,480 tons, and 14,080 tons by the merchant ovens, a decrease of 850 tons, making a total of 82,510 tons, an increase of 2,630 tons.

UNIONTOWN

The wage scale of September, 1920, allowing increases of from 36 to 58 per cent, became effective in the Connellsville coke region Aug. 23, with the posting of the new scale by the H. C. Frick Co. and independent operators. The scale approximates the rates of pay provided by the Cleveland agreement.

Striking miners both in convention and by local union vote have rejected the wage increase and spokesmen claim that the miners will not return to work until their union is recognized. Imported labor is being brought into the region in great numbers accounting for the weekly increase in production. The new labor, principally Southern negroes, bring their families along and are given houses vacated by evicted miners.

The possibility of great coal supplies has softened the coal market considerably or rather has made buyers wary. Price is once more a big factor in determining sales.

BUFFALO

The market is not very active. Jobbers are able to obtain and sell a little at $15.50 for Connellsville foundry, $13 for furnace and $10.50 for domestic sizes. Increase of wages in the steel industry is held to mean more activity in the near future. Some furnaces here are rumored to have given the increase also.

News From the Coal Fields

DELAWARE

The duPont Company announces that effective Sept. 1, 1922, the smokeless powder division will be separated from the explosives department and will be operated as an independent industrial department, known as the smokeless powder department, under the guidance of Vice-President A. Felix duPont, as general manager.

ILLINOIS

Havens A. Requa, sales manager of the Columbus Mining Co., Chicago, is spending the latter part of August on a vacation.

C. M. Moderwell, of Chicago, recently returned from a business trip to the Pittsburgh region.

M. F. Peltier, executive vice-president of the Peabody Coal Co., has just returned to Chicago after completing arrangements for the operation of a group of Eastern mines by his company.

Howard Kerchner, mine engineer and vice-president of the West Side Improvement Association, Belleville, has purchased a controlling interest in the **Beatty Coal Co.**, Mascoutah, Ill. He has been elected president and treasurer of the company and Herbert F. Lill has been named secretary. It has been decided to repair the mine and to place it in shape for future operation.

The Shuler Coal Co., with a capitalization of $500,000, has been incorporated to conduct coal-mining operations on several thousand acres of land in Henry and Mercer counties. This new corporation is the first to go into these two county coal fields. The main office will be located at Alpha, Ill. Exhaustive tests made during the last eight months on the land leased has disclosed large quantities of coal. Shafts will be sunk as soon as the strike situation will permit. Charles Shuler, of Davenport, Ia., is the president and principal stockholder. Hugh Shuler, of Des Moines, Ia., and Jacob Scheib, of Rapid City, Ia., are the other stockholders.

Plans have been made to reopen the old Garvin mine, east of Paris, which has been abandoned for several years. Machinery is being assembled. The old shaft is to be repaired for use as an airshaft and as an emergency escape. A new shaft will be sunk for mining operations.

Two country coal mines near Cuba were damaged by dynamite exploded by unknown persons. The boiler of the **Murphy mine** was blown to pieces by a heavy charge and the slope of the **Rowden mine** was wrecked. No one was injured. The Murphy mine is located two miles southeast of Cuba and the Rowden mine about three miles south.

INDIANA

A company representing the Freeman interests of Terre Haute, Ind., which several months ago purchased extensive mineral holdings at the northwest corner of this city, is now sinking a new mine on the Coffman farm, east of Sullivan. A vein of No. 6 coal has been found. It is stated that the company will erect a modern top plant.

The New Coal Co. has been organized at Bicknell with a capital stock of $60,000 for the purpose of doing a general mining business. The organizers of the company are Leopold Escaffre, Louise Nocus, Lloyd Beggeman, William Bailey, Thomas M. Staley, Charles Thompson and Joe Bernardi.

The **B. & N. Coal Co.**, of Sullivan, has been organized with capital of $24,000 to operate coal mines. The incorporators are J. Bolinger, Ralph Butler, Fred W. Newton and J. W. Work.

KENTUCKY

The Coal Supply Co. has been incorporated. Capital stock is $15,000, debt limit, $100,000. J. H. Schneider, C. E. Roth and E. Schneider, are incorporators.

W. H. Barnes, 31, mine foreman for the Bennetts Fork Coal Mining Co., was caught in the electrical pump at the mine near Middleboro, Aug. 13, and crushed to death. Barnes is survived by a widow and a mother, Mrs. Ida Meyers.

A band of unidentified men made another attack on the state guardsmen stationed at the Sunlight Mine, near Madisonville, at dawn Aug. 16, and though a battle ensued no one was struck by the bullets. The attack was the third during the week and a determined effort was made to rush the machine gun manned by guardsmen.

The Apex Coal Co., operating at Apex, near Sergent, on the main line of the L. & N., is rushing work on a modern tipple. Bucket conveyors are also used there in running the coal from one side of the mountain to the other. Coal will be run through the tipple on the opposite side.

MISSOURI

The Big Four Mining Co. is opening mines near Carrollton. It is reported that three of these will be opened up at once, the first one on a shaft east of town.

The Johnson mine, on the Cox farm, 6 miles northeast of Meadville, is being reopened by Mr. Cox.

Work on sinking the Rye Creek shaft 3½ miles northwest from Kirksville on the Burlington is progressing. This mine will be operated by electricity and will be unionized. Several miners' cottages will be built to take care of the miners.

Work on the Mosby coal mine, near Excelsior Springs, is going forward rapidly. The shaft, 16x20, is now down 140 ft. with coal at 220 ft. From the present depth the shaft will be 14x18 and drifts with pumps are being installed at the 140-ft. level on account of quicksand.

The first sailing of the fleet of Edward F. Goltra was made on Aug. 7, when nineteen barges and four towboats left St. Louis for Caseyville, Ky., where twelve barges will be loaded with approximately 10,000 tons of coal for the **St. Louis Coke & Chemical Co.'s** east side plant at Granite City. The second towboat is being converted from a coal to oil burner and will take on a cargo of coal at Caseyville.

This fleet has a contract to carry 51,000 tons of gas coal for the public utilities at Quincy, Rock Island and Moline, Ill., and Muscatine, Burlington, Davenport and Dubuque, Iowa. This will all be loaded at Caseyville, Ky. It is understood that the first tow of coal has been accepted at a rate of 20 per cent below the rail rate, which is the same differential as that offered by the government river service.

NEW YORK

The Island Creek Coal Co. for the first half of 1922, reports net profits, after charges and taxes, of $1,978,427, equal, after allowing for the regular dividends on the preferred stock, to $15.39 a share on the 118,798 shares of common stock. In 1921 the net profits were $1,910,548, equal to $14.80 a share. Total earnings for the first half of the year were $2,697,780, and expenses, depletion, depreciation and taxes totaled $719,353.

The annual convention of the **New York State Coal Merchants' Association** will be held in Richfield Springs, Sept. 7-9. The long and varied program will include addresses on "Modern and Efficient Methods of Coal Handling," by Alexander Macomber; "Some Aspects of the Coal Situation," by G. N. Snider, and "Buckwheat Coal and Spencer Heaters," by Charles N. Tull. There will be the usual round of entertainment as well as a program of athletic events.

OHIO

New offices opened in Cincinnati by coal companies are: **Lake & Export Coal Co.**, in the Dixie Terminal Bldg., with E. L. Moses, formerly in charge of the retail department of the E. L. Frechtling Coal Co. Edward F. Gerber has opened an office there as agent for the **Superior Elkhorn and the United Coal Mines.**

Ray Alexander, who for a time was associated with the Boone County Coal Corporation, has become associated with the Ogle Coal Co. and will have his headquarters at Cincinnati.

OKLAHOMA

The Texas Pacific Coal & Oil Co., of Fort Worth, Texas, has been granted a permit to do business in Oklahoma. The company is capitalized at $500,000 with R. D. Hunter, of St. Louis; Edgar L. Marston, and Horace K. Thurber, of New York, as incorporators.

PENNSYLVANIA

The Northwestern Mining & Exchange Co. is about ready to operate its new property at Cramer, near Dubois, Pa. There are two shafts 300 ft. deep each with electric hoists; in fact the mine is thoroughly electrified. The operation represents an outlay of $2,000,000.

Construction of coal-loading docks in the Lehigh Canal, near Northampton, six miles north of Allentown, by the **Lehigh Coal & Navigation Co.**, preparatory to abandoning its large loading plant at Coalport, near Mauch Chunk, has been started. The company will spend $500,000 on the new undertaking. The transportation of coal by canal boats from Coalport to Philadelphia has been much handicapped, officials say, by spring freshets.

The docks will compel, it is said, the building of immense yards at Northampton by the New Jersey Central, which will bring the coal to that place instead of Coalport.

So far eighty-six anthracite producers of the state have appealed to the Dauphin County Court at Harrisburg from payment of the anthracite tax of 1921. This number includes practically all of the big producers and individual operators who are liable, if the act is finally declared to be constitutional, for the bulk of the State tax. **The Mill Creek Coal Co.** raised the question of ascertaining coal values for assessment purposes and the **Scranton Coal Co.** bases its objection to the law on the contention that the Auditor General cannot tax coal used in production, claiming that the tax should be levied only on that coal prepared for the market, deducting that coal used in the processes of mining. The dozen or more coal dredging firms will probably file another appeal, based on the claim that their business is not mining under the terms of the act and that the coal they get was once mined in anthracite counties. One hundred and niney-seven anthracite producers are listed on the books of the Auditor General's Department and all of these have received notices from the state regarding the collection of the coal tax. The records of the State Treasurer show that payments amounting to $7,464.26 have been made in anthracite tax so far, this money coming from but sixteen companies.

The Victory Coal Mining Co., operating the Haws mines at Holsopple, on the Somerset & Cambria branch of the B. & O., resumed operations recently on a non-union basis with its own men, at the 1917 scale, which is the same the company paid before the mines closed. The mines went out on a sympathetic strike on April 15.

Something new in coal mining in centrol Pennsylvania has been undertaken at Glen Campbell, where the Urey Coal Co. has started operations on a strip mine. The vein at Glen Campbell is 10 to 12 ft. below the surface and can be taken out more advantageously by this method. A. W. Riddell, of Altoona, is head of the Urey company. The tract covers approximately ten acres and approximately 100,000 tons will be recoverable by the method.

TENNESSEE

The West Virginia-Tennessee Coal Co. has been incorporated with capital of $15,000 by T. O. Busbee, Thomas Lockhart, W. H. Workman and Julius Kersten. The company will develop properties near Anderson.

An important coal development is that of **Pocahontas & Sewanee Coal & Iron Co.**, which has recently purchased 10,220 acres of Sequatchie County coal land, at a cost of about $400,000. Capacity will be 5,000 tons a day, when steel tipple and 1,000 ft. tunnel are completed. Mid-western capital is chiefly interested. Former Governor Harding, of Iowa, is president of the company.

TEXAS

The Texas Ice & Fuel Co. of Houston, Texas, has been chartered with a capital stock of $100,000. Incorporators are: N. L. Casperson, B. S. Beaman and A. J. Casperson. The company will conduct a retail coal business in Houston in connection with its wholesale and retail ice business.

WASHINGTON

D. C. Botting, for many years connected with the coal-mining industry in this state, returns on Sept. 1 to become manager of mines of the Pacific Coast Coal Co., Seattle. He has for three years past been general manager of the Vandalia Coal Co.

Mr. Botting was born in California fifty-one years ago, and when a boy worked in



Photo by Bushnell

D. C. BOTTING

the mines at Nortonville. In 1901 he was appointed state mine inspector in this state, in which capacity he served until 1912, when he resigned to take charge of the mining end of the government party which went to the Alaskan coal fields to determine the suitability of those coals for naval purposes. On his return he became commissioner of the Washington Coal Operators' Association and manager of the Producers' Association. During the latter end of the war period he was appointed coal distribution manager for the state under the U. S. Fuel Administrator.

WEST VIRGINIA

Preparations are being made by the **Acme Coal Co.**, of Shinnston, to develop coal lands in Harrison County, this concern having only recently been organized with a capital stock of $50,000. Offices of the company are to be at Shinnston. Leading figures in the new concern are: Basil H. Lucas, T. W. Brackman, of Shinnston; George W. Simpson of Johnstown, Pa.; L. C. Crile and A. M. Leonard, of Clarksburg.

The strike cut down the enrollment for the miners' short course of six weeks at the West Virginia University. Notwithstanding the strike, however, there were sixty-nine students enrolled.

Charleston people have organized the **Kanawha By-Product Coal Co.** for the purpose of operating in the Kanawha region, the offices of the company to be at Charleston. This company has a capital stock of $50,000. Having an active part in organizing this company were: G. K. Guthrie, A. S. Jenkins, J. W. Smiley, D. W. Orth, T. C. Patterson and R. R. Circle, all of Charleston.

Organization of the **Rosehill Coal Co.** by Philadelphia capitalists presages the further development of coal property in Taylor County. This company has been chartered with a capital stock of $100,000, headquarters to be at Rosemont. Principally interested in the new concern are J. H. Weaver, John E Cupp, C. M. Johnson, J. F. Macklin, James W. Birch, L. G. Ball and Stewart Frazer, Land Title Building, Philadelphia.

George S. Brackett has been named as the government's representative in northern West Virginia. Mr. Brackett is the secretary of the Northern West Virginia Operators' Association.

L. E. Wood, G. S. Patterson, T. H. Huddy, L. E. Armentrout and **George Bausewine**, of the Williamson Coal Operators' Association, have been named as members of a committee to distribute current coal production and restrict unfair prices.

The Kime Coal Co., Ellamore, capital $250,000, has been formed. Incorporators are A. Ward, Otis Reichsein, A. T. Kime, E. G. Zauner, Josephine, and Robert McFarlane, Buckhannon.

BRITISH COLUMBIA

The Chu Chua Coal Co., a Seattle concern, has restarted the development of its property near Kamloops, which it closed down at the end of last year, after producing several hundreds of tons of coal. The company has done a considerable amount of tunnelling, drifting and diamond drilling. **The Glenville Collins Engineers, Ltd.**, of Vancouver, also is doing a large amount of exploration work in this district. The coal field is described by Professor U. L. Uglow in Part A of the summary report of the Canadian Geological Survey, for 1921, which has just been issued.

ONTARIO

The Black Diamond Coal Co., Ltd., has been organized with headquarters at Toronto. The charter just issued authorizes the company to engage in the wholesale and retail coal business. The authorized capital is $40,000 and the provisional directors are J. L. Ross, L. V. Sutton and E. M. Carruthers, of Toronto.

E. J. Ryan, vice-president of the F. A. Fish Coal Co., Ltd., Toronto and Pittsburg, has resigned his position after seven years service with the company.

The government peat plant, at Alfred, which was tried out last year giving satisfactory results, is now in full operation. B. F. Haanel, of the Federal Mines Branch, states that the quality of peat being produced is first class and that large orders for it are being received daily. Its cost in Ottawa is $10 per ton.

WASHINGTON, D. C.

Senator Ladd, of North Dakota, has presented to the senate a petition of the Federated Shop Crafts of Mandan, N. D., asking that the government take over and operate coal mines and railroads to safeguard the welfare of the people.

D. F. Hewett is acting as chief of the section of metalliferous deposits of the U. S. Geological Survey.

Dr. Dorsey A. Lyon, chief metallurgist of the Bureau of Mines, after several months spent at western stations of the Bureau of Mines, has returned to Washington.

Harry E. Meyer, chief clerk of the U. S. Bureau of Mines, is visiting in the experiment stations with the idea of improving office management and standardizing office clerical procedure.

C. E. Augustine, a fuel engineer of the Bureau of Mines staff, at the request of the Veterans' Bureau, will visit all hospitals, making recommendations as to the improvements that may be made in fuel-burning equipment and in the selection of fuel.

T. P. O'Hara, who has served for many years as an assistant to the Director of the U. S. Geological Survey, has resigned to undertake the practice of law.

George S. Rice, chief mining engineer of the U. S. Bureau of Mines, is making a tour of the western mining states and will also visit British Columbia before his return to Washington.

Traffic News

Coal companies operating in the McRoberts region of Kentucky have asked the Interstate Commerce Commission for the same railroad rates as apply from mines in the Hazard group. It is contended that these mines are geographically and geologically a part of the coal region embraced in the Hazard group of mines and that the same rates should apply from the McRoberts group to Cincinnati and Louisville and to other points in Central Freight Association territory and to points in certain of the western states. The complaint is filed by the Commercial Coal Co., Blackey Coal Co., Marian Coal Co., Dudley Coal Co., Rockhouse Coal Co., and the Consolidated Fuel Co.

The traffic case of the **West Kentucky Coal Bureau** versus the Louisville & Nashville R.R. will be the subject of a hearing at Louisville on Sept. 16 before Examiner Fleming.

The traffic case of the **Virginia Coal Operators' Association** versus the Aberdeen & Rockfish R.R. will be the subject of a hearing at Washington Sept. 21 before Examiner Gerry.

The case of the **Gulf Coal Co.** versus the Virginian Railroad Co. will be considered at a hearing at Washington on Sept. 22 before Examiner Gerry.

Oral argument in the case of the **Clay County Coal Operators' Association** versus the C. & M. R.R. will be held at Washington Oct. 24 before Division 3 of the Interstate Commerce Commission.

In a complaint to the I. C. C. the **Sewell Valley Railroad** alleges unreasonable and inequitable divisions of rates on coal by the Chesapeake and Ohio.

Oral argument in the matter of rates on coal from the Southwest to Omaha, Neb., and related points will take place in Washington Sept. 14 before Division 2 of the Interstate Commerce Commission.

The case of the **By-Products Coke Corporation** versus the Director General of Railroads will be the subject of a hearing at Chicago on Sept. 14 before Examiner Hillyer of the Interstate Commerce Commission.

W. D. Robb, of Montreal, Can., has been made vice-president and general manager of the Grand Trunk Railway System. He is to "exercise the authority and perform the duties hitherto exercised and performed by the president," according to an official announcement. Howard G. Kelley, former president, has resigned and Graham A. Bell, deputy Canadian minister of railways, has been appointed titular head of the system.

Coming Meetings

New York State Coal Merchants' Association will hold its annual meeting at Richfield Springs, N. Y., Sept. 7-9. Executive secretary, G. W. F. Woodside, Arkay Bldg., Albany, N. Y.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

Alabama Mining Institute will hold its next meeting Oct. 3 at Birmingham, Ala. Secretary, J. L. Davidson, Birmingham, Ala.

Coal and Industrial Exposition under the auspices of the Huntington Chamber of Commerce will be held Sept. 18-23 in the Chamber of Commerce Bldg., Huntington, W. Va.

The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers will hold its annual meeting in connection with the Coal and Industrial Exposition at the City Hall, Huntington, W. Va., Sept. 19-22. Secretary, H. Smith, 212 Robson Pritchard Bldg., Huntington, W. Va.

National Exposition of Chemical Industries will hold its eighth national exposition at the Grand Central Palace, New York City, Sept. 11-16. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Mining Congress. Twenty-fifth annual convention and exposition of mines and mine equipment will be held at Public Hall, Cleveland, Ohio, Oct. 9-14. Executive offices, the Hollenden Hotel; E. C. Porter, convention manager.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Institute of Mining and Metallurgical Engineers will hold its fall meeting during the week of Sept. 25 at San Francisco, Cal. It is proposed to arrange for a party to leave New York on Sept. 10, stopping at different cities en route. Secretary, F. F. Sharpless, Engineering Societies Building, New York City.

American Chemical Society's annual fall meeting will be held Sept. 4-9 at Pittsburgh, Pa.; divisional meetings will be held at Carnegie Institute of Technology and general meetings at Carnegie Music Hall.

The Rocky Mountain Coal Mining Institute will hold its next meeting at Glenwood Springs, Col., Sept. 7-9. Secretary, F. W. Whiteside, Denver, Col.

National Safety Council. Eleventh annual Safety Congress at Detroit, Mich., Aug. 28 to Sept. 1. Executive secretary, W. H Cameron, North Michigan Ave., Chicago, Ill.

COAL AGE

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C. E. LESHER, *Editor*

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Wanted—A Policy

DAZED with the overwhelming defeat they have suffered, operators are asking each other: How in the world did it happen? How did Lewis do it? Look back over the past six months, check up this generalization. Lewis fused all the issues raised by the operators —the check-off, wage reductions, district vs. other forms of settlements, open shop, broken contracts— and made one issue to put before his men. He told them that all these things meant one thing and only one thing to them—disruption of their cherished UNION. He was on the defensive on every issue save one, that of the broken contract, yet by selling the idea to his members that the whole strike was precipitated by the operators for the purpose of tearing down the miners' defense, their organization, which alone stood between them and "poverty, suffering, degradation," he unified his ranks and won his fight.

The operators, on the other hand, scattered their fire. They divided at the start on the matter of whether to meet in a Central Competitive Field conference. Some posted notices of one wage reduction, some another, some none at all. Some stressed the issue of the check-off, others did not. A few groups of operators handled their own situations with finesse. They built up records that standing alone were unassailable. But no two built the same structure, and but the flimsiest liaison was maintained. There was no unity of action. There was not, and is not now, a leader around whom the operators could or would rally. No rallying cry was raised to hold them.

The story is not complete without mention of the very obvious fact that what has been said about the lack of unity among the operators can be said with equal truth with respect to the administration at Washington. Taken as a whole the administration offered no help. Of course it could not have been expected to take sides, but it might at least have been so led that it could have clarified the issues for the public whom the government represents. Instead there has been a policy of in and out and in again.

If the operators are dazed over the final outcome, the public is amazed. Slowly—only during the past few weeks—has the realization of what it means to the man on the street been dawning on that individual. The public is but now coming to appreciate what it portends to this country to have such arrogant power in the hands of one man. It is not that he is a labor leader— the reasoning and the attitude would and should be the same were that man on the other side. Therein lies the chief danger to Mr. Lewis. He has overstepped the bounds and it will be his undoing.

History has recorded more than one victory gained at the peace table by a contestant defeated on the battlefield. The peace table for the bituminous-coal industry is set for Cleveland and the date is Oct. 2, next. The program is that the United Mine Workers and operators from all organized soft-coal fields will there and then assemble to consider ways and means of negotiating their next working agreements and contracts. This much is specified in the arrangement to which Lewis fixed his signature at Cleveland on Aug. 15 and to which some of the coal operators have agreed.

Not all the operators have signed these terms. Illinois, central Pennsylvania and others have not so obligated themselves. Nevertheless they may attend, and to this end they have been careful not to go on record to the contrary. This much may be said for this prospective conference, the purpose of which is ostensibly to insure future peace in the industry—the operators may as well stay away as attend in their present disorganized state of mind. Unless the soft-coal producers at Cleveland next month present a solid front, unless they can match organization with organization, they go but to listen to terms.

Clearly enough if attendance among operators is confined to the few who actually signed a "Cleveland" agreement, Lewis will give it scant attention. To some among the operators this meeting offers high hope of constructive action, but to Lewis, an opportunist, it will be just what the developed circumstances may afford.

Should a substantial majority of soft-coal men elect to participate, and they doubtless will be encouraged so to do, the result will be a fiasco for them unless they go there united on a program, sufficiently cowed by their present defeat to accept national leadership. There is small chance that the operators can dominate the situation, but there is a chance to divide the honors.

Less than a month remains before this opportunity is opened. In a struggle of force, Lewis won hands down. Can he repeat in a battle of wits?

The Last Stronghold

WHEN last week the Pittsburgh Coal Co. signed the Cleveland agreement with the United Mine Workers the last of the opposition to the union in this strike was crumpled. The contest between these two has been a contest of force from the beginning, with the odds all on the side of the union. Fighting force with force is all right when the opponents are of comparable strength, but when the United Mine Workers matches strength with one coal company, even though it be one of the very largest, the ultimate end is never in much doubt.

The world loves a fighter, and it respects a fighter who knows when he is beaten. The Pittsburgh Coal Co. could have held out to the limit of its financial resources and the country have had all the coal it required this winter, since car supply and not mines and miners will set the total output. We will wager that the victorious union has a wholesome respect for the company that stood it off until there was no point in further fighting, even though the union deserves little credit for this particular victory.

Potentiality of the Anthracite Situation

NOTHING could be plainer, in the light of recent events, than the dynamite concealed in the anthracite situation. It required a sudden awakening on the part of the East to the hopelessness of the anthracite situation a few weeks ago to really arouse the public and Congress to the real facts of the coal strike. Hard coal goes to the homes and when their security is threatened the public wakes up and speaks.

Whatever form the wrath of the public may take and whatever legislation may be aimed at coal, the mainspring of motive may be traced back to hard coal. Immediately the majority of the bituminous-coal mines resumed operation and the hard-coal mines remained idle, the public grasped the significance of the situation. It was able for the first time to see behind the big talk of the union, which has pushed the anthracite controversy into the background for five months, and then to get a true perspective.

No single group of coal operators this year has kept its case so well in hand and the issues so clear as have the hard-coal men. The circumstances of the strike and the willful misrepresentation of the union have until recently prevented them from realizing the deserved benefits of their well-conceived efforts. When they narrowed the controversy down to an admission of defeat on the matter of wages and asked only that they and the public be protected from future disruptions to mining and be assured of continuity of household fuel supply, the public saw the point and rallied to their side. In a clear field, unencumbered by a nationwide soft-coal strike, the anthracite-coal operators could have won this year. But then had there been no soft-coal strike it is a fair assumption that the union would have refrained from a trial of strength in the hard-coal regions. They used anthracite as a sympathetic strike to help win the other.

What Will Happen in April

FORECASTS always are dangerous, and it would not be well to attempt to say just what will happen next April. Most persons are disposed to believe that by that time the market will be glutted with bituminous coal and that wages in the non-union regions being lowered it will be impossible for the operator in union districts to offer the 1920 scale, for without contracts and with lower wages in competing districts which are fully able to supply at least a large part of what coal is needed there will be no possibility of running the mines in union regions more than a day or so in each week.

Increasing business may by that time have modified the situation so that the prospects will be brighter for greater activity than has been outlined. Car and locomotive shortage and severe winter may prevent the accumulation of stocks by consumers. Business activity may prevent the non-union fields from cutting wage scales as low as in 1921, and the increased cost of living may make less forcible the call for deflation in mine wage scales.

The operators who have been calling for arbitration doubtless are perfectly willing to have the issue based not on present conditions but on those prevailing about the time of the proposed award. Arbitration of the bituminous scale is now, however, unlikely. The best we may expect to have is a report on the subject at issue, but when it comes it will give utterance as to later conditions than those now confronting the industry, and they, as has been said already, may be more favorable than those now being faced. The operators' proposal has been entirely equitable even if it should be found in 1923—which is perhaps not likely—that we are on the crest of an inflation wave as high as that in 1920.

Some increase in the demand for bituminous coal undoubtedly will arise from the displacement of hard coal with soft during the coming winter. British coal will hardly come here in quantity, as the price is likely to rise to such a height as to prove a deterrent. Efforts to place the domestic coal of Great Britain in the American market as a substitute for anthracite should and is likely to fail. The coal used for house heating in England is a fuel that will burn in an open grate. It is not what we would term anthracite, for among other qualities it has that of giving a plenitude of smoke. It also cokes like the bituminous or semi-bituminous coal that it is.

Unless the bituminous coal supply fails it is useless to bring coal from Wales or Durham to make up for the anthracite deficiency, except perhaps coal from Pembrokeshire. Better coal than most of it for domestic heating can be found in the New River, Pocahontas and central Pennsylvania regions. It must be remembered that more than 12 per cent of the coal in the United States other than anthracite—that is, that which in a broad classification is known as bituminous—is used for domestic heating. In fact large areas of the country have never used any other coal for that or any other purpose.

Is Henry Ford Learning?

IN THE boom year of 1920 the greatest scandal in coal prices was raised by the indiscriminate, wild bidding for coal, particularly in the eastern Kentucky fields, by the agents of Henry Ford. As many as five or six buyers representing this manufacturer were in each field, unknown to each other, commissioned to get coal and get it at any price. They bid against each other, and because they were after almost unlimited tonnage they put the price to the sky for other buyers. Coal producers will long recall the orgy of buying that Ford staged in that memorable year. For the heights reached then the responsibility is generally placed on Ford's practice of buying before the coal was dug and over the head of every other user.

Now comes the same Mr. Ford with the announcement that he will close his plants before he will pay the robber prices the coal men are asking, that he will cease the production of flivvers rather than take coal away from the needy people of the Northwest. Such compassion touches the heart. For one who has never hesitated to bolster the labor market with wage increases and who has hitherto been the support of high coal prices this change of heart is noteworthy.

One cannot help wondering whether the sagacious Mr. Ford has not again sensed a slump in demand for his product and is not taking this method of letting down from peak production. He has never been known to permit a matter as small as $1.50 in the cost of a single car to interfere with his operations.

TOO MUCH OF THE ENERGY of the business revival seems to be concentrated at the mourners' bench.—*Canton Repository.*

Haulage, Hoisting and Dumping Practices At Rosedale Mine

By George A. Richardson*
Philadelphia, Pa.



Largest Mine Locomotives Made Haul 145 Cars, Each Holding 1½ Gross Tons — Hoisting Shaft Has Coal Well Carrying Coal to Skip-Loading Level — Shaft Capacity 10,000 Tons Daily — Steel Guides — Hilted Sprags

A previous article† has described how trips of coal in the Rolling Mill mine of the Cambria Steel Co. are discharged by rotary dumps into a well in the Elk Run shaft which carries the coal from the Cement seam to the Miller bed, where a hopper delivers it in measured quantities to a trip of mine cars for delivery to the Rosedale coke plant.

FROM Elk Run shaft the coal is hauled directly to Rosedale through a heading 7 ft. high and about two miles long. An interesting feature of this heading is its wonderful roof, which is self-sustaining throughout its entire length. Not a piece of timber of any kind is used from one end to the other including the section under the Conemaugh River. It is one of the longest headings in the country to be maintained without the use of timber.

The track is laid with 70-ft. rail, and, as the loads are heavy, it is supported by wood ties. In every other part of the mine including the working faces steel mine ties are used. It is interesting to note that the latter were developed originally largely to meet the needs of the company's own mining operations. They are used wherever rail sections not heavier than 60 lb. per yard are required.

The trips are hauled by electric locomotives, two of these being the largest of their type that have been built to date. They are of the following general specifications: Weight, 35 tons; gage, 45 in.; motors, three 250-volt, each of 125 hp.; height over all exclusive of trolley, 4 ft. 1½ in.; wheelbase, 10 ft.; length over all excluding bumpers, 22 ft.; width overall, 6 ft.; driving wheels, cast iron with steel tires, 36-in. diameter; wheel tread, 3½ in.; wheel flanges 1x1 in.; gear ratio, 15 to 74; control, pneuma-electric and arranged for dynamic braking; brakes, hand and "straight air"; ventilation of motors, forced. Each of these two 35-ton locomotives will haul a trip of 145 cars, all of which have a capacity of 1½ gross tons.

At the Rosedale end of the heading are two shafts

*Midvale Steel & Ordnance Co., Cambria Steel Co.

†"Cambria Steel Co. Drops Coal Down Well, Loads It at Bottom and Hauls It to Ovens," *Coal Age*, pp. 313-317.

NOTE—The illustration which forms part of the title of the article shows the "bottom," or landing, of the manway-supply shaft at Rosedale No. 5, which is 180 ft. deep. The roof is so exceptionally good that it stands unsupported over two tracks as adamant as if arched with concrete.



MILLER-SEAM ENTRIES GO FOR MILES UNTIMBERED

One of the most reliable of roofs, if not the most reliable of any, is that surmounting the Lower Kittanning or Miller seam. A little "buckwheat" slate near the outcrop is the only trouble, and the Miller seam in the Rosedale mine does not outcrop. Hence miles of heading like this without timber or supporting steel can be seen in the mines in that seam around Johnstown.

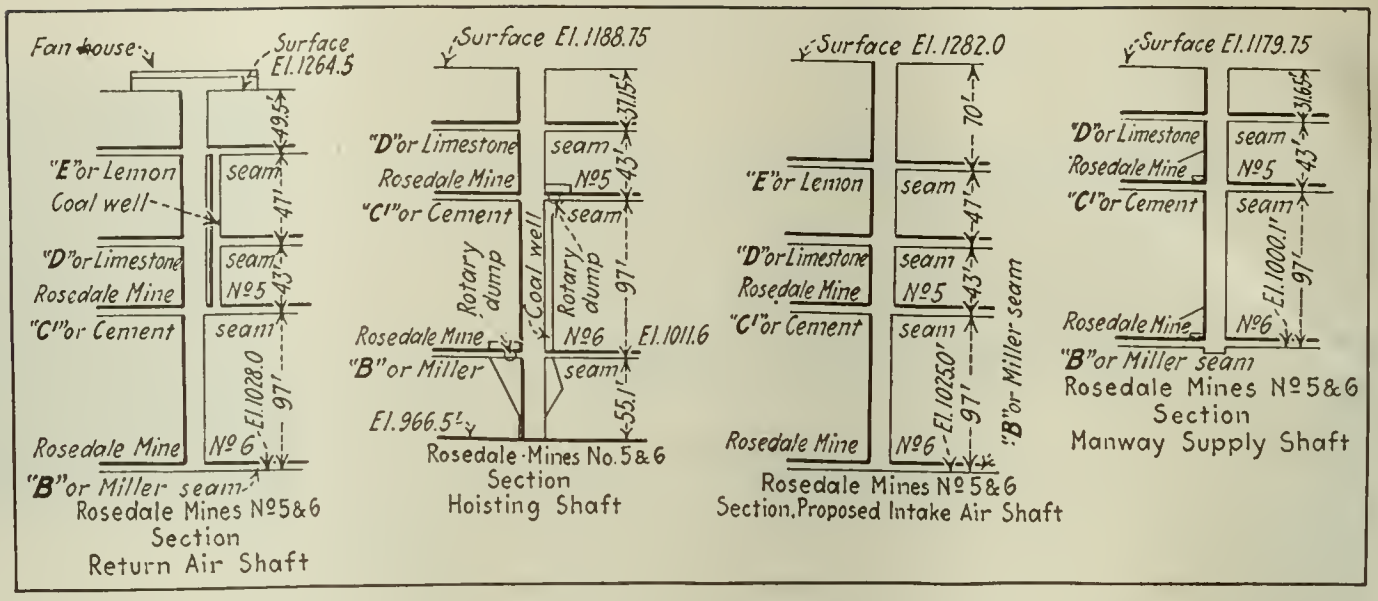


ROTARY DUMP IN MILLER SEAM No. 6 SHAFT.

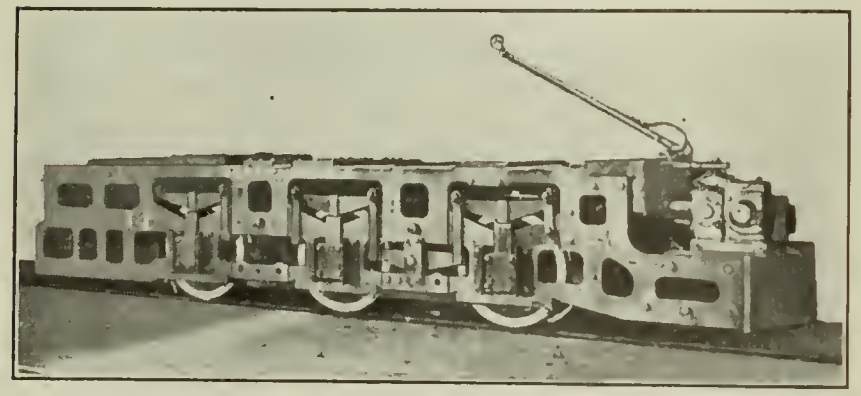
Here the cars from the Elk Run shaft are dumped in a tipple of the pneumatic rotary type at a speed of 8 cars per minute. In one hour 480 cars can be discharged. Each dump holds two cars. The dump is tilted to the dumping position and back in 6 seconds, the stroke being cushioned on air. Four pneumatic cylinders actuate this dump.

Shaft Cross-Sections

The coal well in the hoisting shaft is, it will be noticed, dug into the side whereas in the Elk Run shaft the shaft itself was used for the passage of coal.



known as Nos. 5 and 6. No. 5 shaft is the man-and-supply shaft. No. 6 is used for hoisting coal. The dumping equipment at the latter shaft is of the pneumatic rotary type, the specifications being quite different from those at Elk Run. Before considering them,



THIRTY-FIVE TON ELECTRIC MINE LOCOMOTIVE.

This is the largest locomotive of its type ever built for mine service. It is used for hauling trips of 145 cars holding 3,360 lb. each from Elk Run shaft to the Rosedale shaft. It runs on 70-lb. rail, the weight being distributed over six wheels. The gage of the locomotive is 45 in., the wheelbase 10 ft. and the over-all width 6 ft.

however, it is well to mention the conditions at the point of discharge.

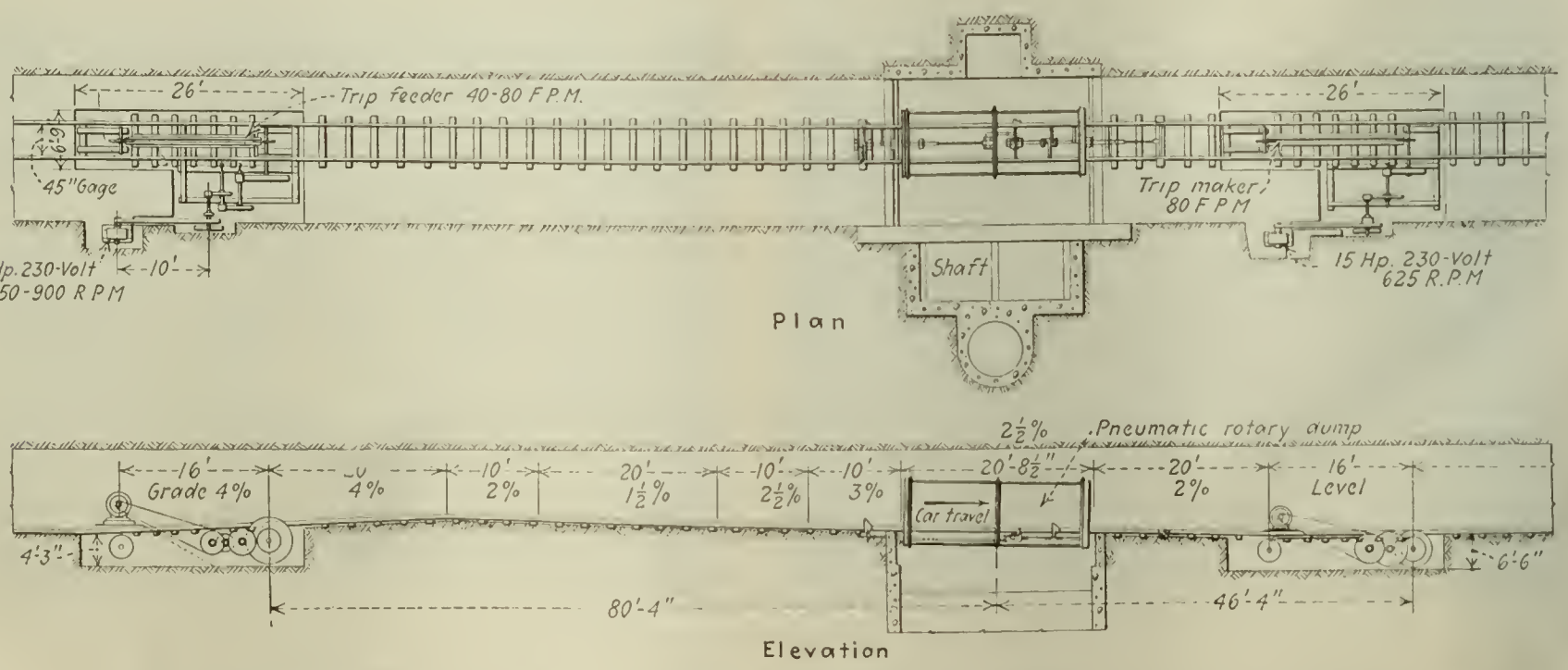
Provisions have been made for receiving coal from both the Cement and the Miller seams in the Rosedale field. Hence two rotary dumps have been provided. The first or upper one in the Cement seam dumps into a coal well which allows the coal to drop down into a storage bin below the level of the Miller seam as shown in a cross-section of the shaft. The dump in the Miller seam discharges directly into another storage bin on the opposite side of the hoisting shaft.

These dumps hold two cars and are designed to operate at such a speed that 8 cars per minute can be dumped continuously, or 480 cars per hour. The actual time necessary for dumping the loads and returning the empty cars to an upright position is 6 sec. Air is used to operate these dumpers, four pneumatic cylinders being provided which permit of the rapid and positive operation of the dump. They are so constructed that each stroke is cushioned on air.

The car hauls used for delivering cars to these dumps are designed each to handle trips of 120 loaded cars. They are able to start a trip from rest and bring it to a speed of 72 ft. per minute, maintaining that speed on a 1 per cent favorable grade. They are operated by a 20-hp. motor. Similar equipment is used for handling the empty cars when they leave the dumps.

The coal from the dumps goes into two weigh pans, one for each dump, each consisting of two units, and is weighed by automatic recording scales.

Cut-off gates control the flow of coal into the measuring pockets. Each dump has two of these. They are

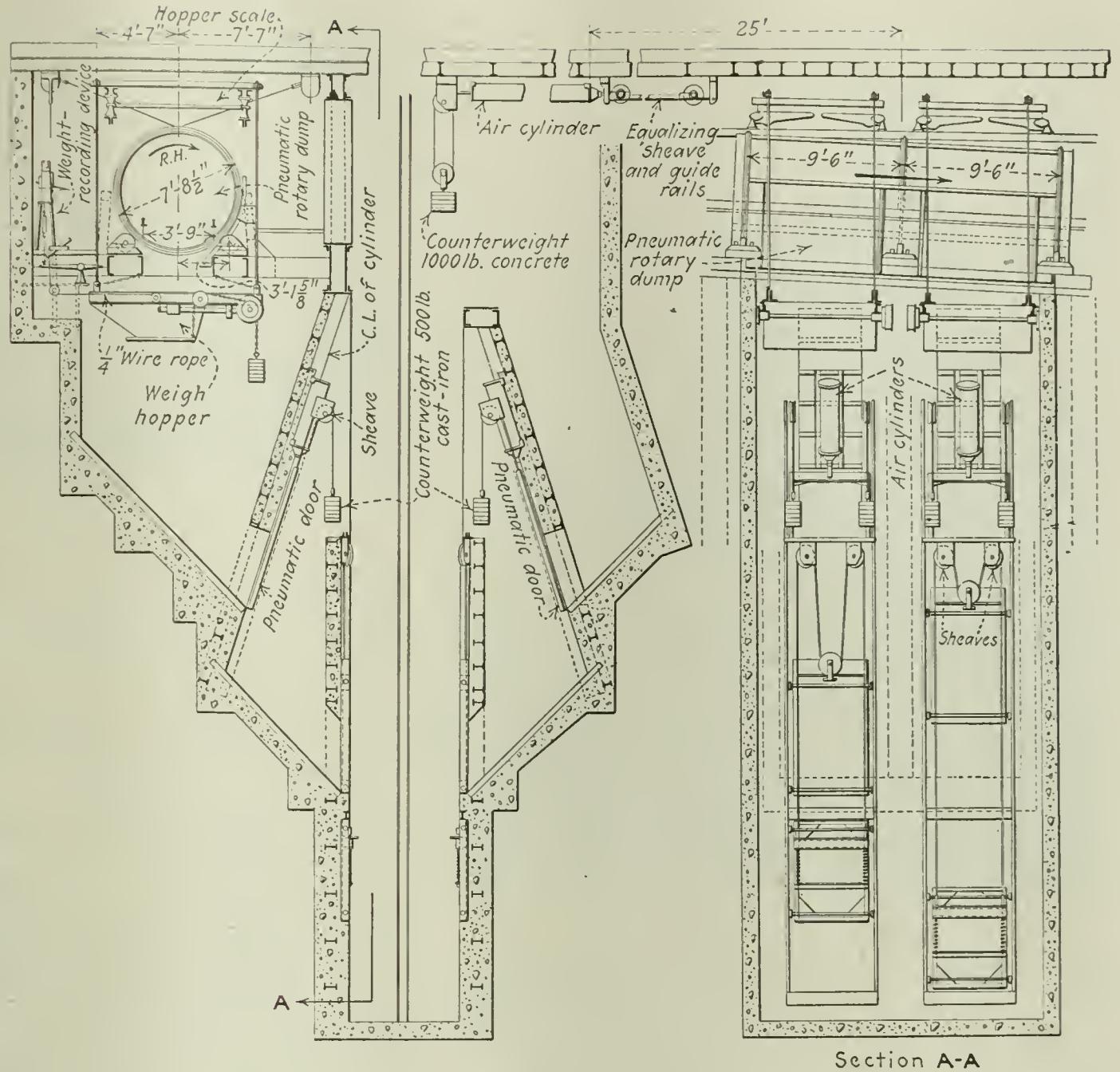


TWO-CAR ROTARY COAL DUMP AT FOOT OF MAIN HOISTING SHAFT (ROSEDALE NO. 6.)

The dump is operated by air, four pneumatic cylinders being provided which permit of its rapid and positive operation. Each stroke is cushioned on air. The car hauls placing the cars at the opening of the dump will handle 120 loaded cars, bringing them to a speed of 72 ft. per minute. The trip feeder is driven by a 20-hp. and the trip maker by a 15-hp. motor.

Skip-Filling Arrangements

Coal comes to the skips from two sources, the rotary dump on the left and the coal well on the right. The former is fed by cars filled for the most part at the Elk Run shaft (Rolling Mill mine) and also from the workings in the Miller seam at Rosedale (Rosedale No. 6). The latter takes care of coal from the Cement seam at Rosedale (Rosedale No. 5). Arrangements are made to weigh the contents of each car separately. For this purpose weigh hoppers or pans are placed under half of the rotary dump.

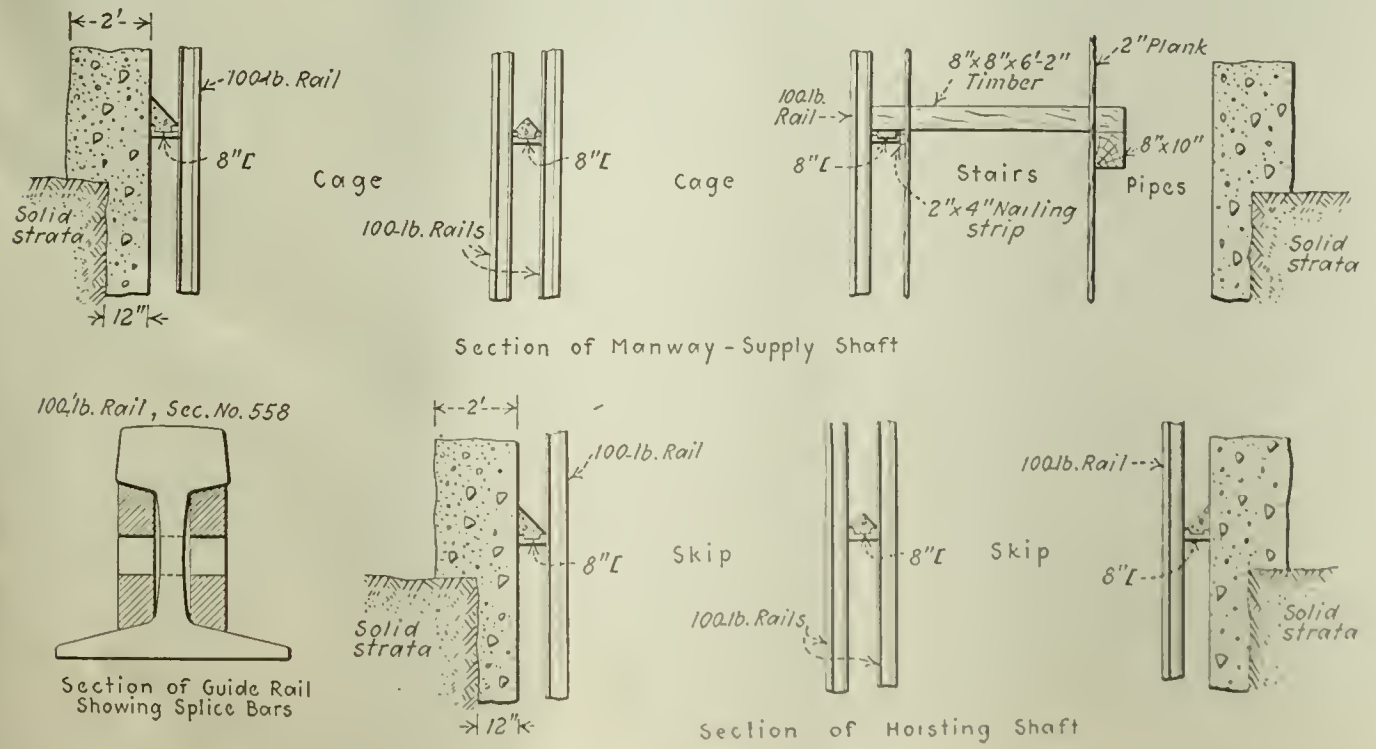


operated by air, the controls being at the mine level.

Each dump has also two loading gates to control the flow of the coal from the measuring pockets into the hoisting skips, which have a capacity of 8 tons. These gates are of the safety type and so designed that they stand open only when the skip is in the loading position at the bottom of the hoisting shaft. The weight of the skips and counterweights operate the gates automatically so that each skip loads itself when it lands at the bottom. If by any chance the counterweights should become loosened, the gates would drop to the lowest position, closing the openings.

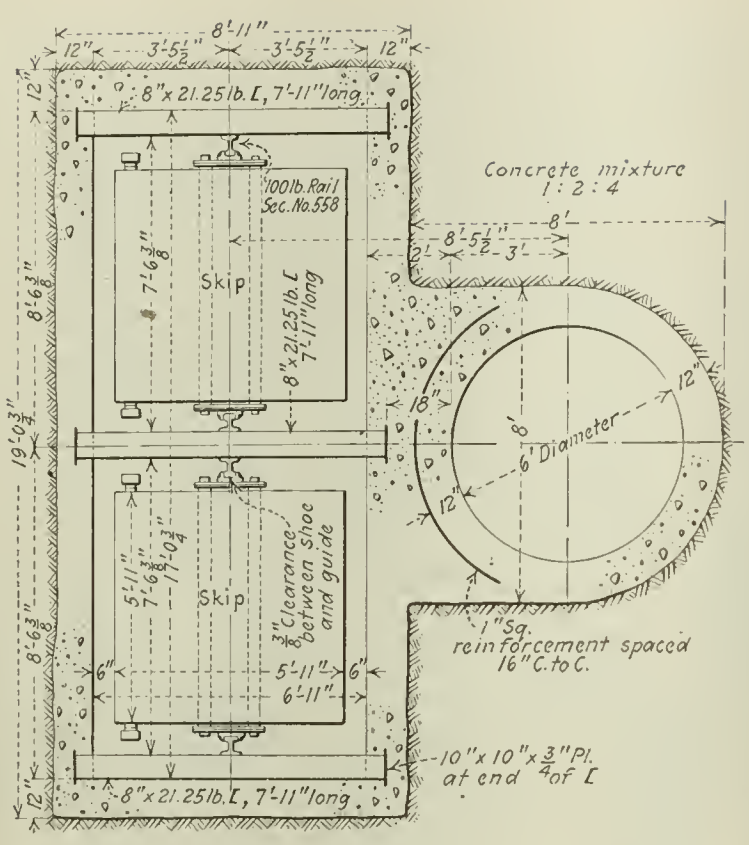
No. 6 shaft is 232 ft. deep. Over it stands a steel headframe 175 ft. high. The coal is hoisted up this shaft and dumped into a large storage bin at the top of the building which houses the coal-washing apparatus. The handling of the coal from this point on will be treated in a separate article to appear at a later date.

The shaft has two compartments so that the hoisting is balanced, the empty hoist aiding in the raising of



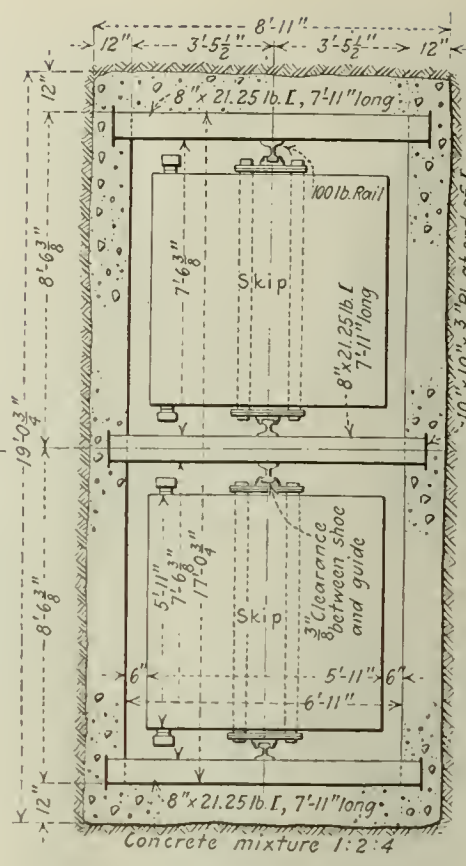
Rosedale Shaft

Vertical sections of manway-supply shaft and hoisting shafts showing manner of placing guide rails. Splice bars are used to connect these rails as in railroad service. Sections are given for shaft both in solid strata and in surface material



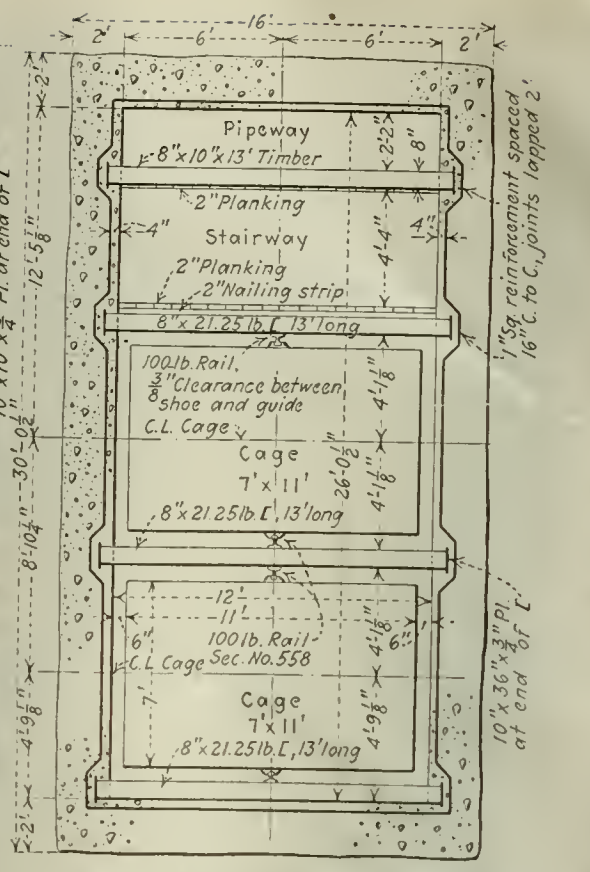
MAIN HOISTING SHAFT WITH COAL WELL

From a point below the Cement seam to a point above the Miller seam. Note the 100-lb. railroad guides, two to each skipway.



MAIN HOISTING SHAFT

Mines 5 and 6. Cross-Section of shaft through solid strata above Cement seam.



MANWAY SUPPLY SHAFT

Through surface soil. In solid strata concrete is only 1 ft. thick and mix 1:2:4.

the full skip. The hoist, itself, having a cylindro-conical drum is located in a building at one side of the shaft and is operated by a 1,000-hp. motor working on a 2,200-volt 3-phase 25-cycle current at 370 r.p.m.

The original specifications called for equipment to handle 17,000 lb. (8 long tons) of coal per trip at the rate of 36 sec. per trip, or 100 trips per hour, totalling 750 tons. The delay allowed for dumping and loading was 10 to 12 sec. This capacity has been greatly exceeded, and the skips are able to handle 20 tons per minute, or nearly 10,000 long tons per day of eight hours. The level of the skip dump is 125 ft. above the ground, making the total approximate travel a little more than 350 ft.

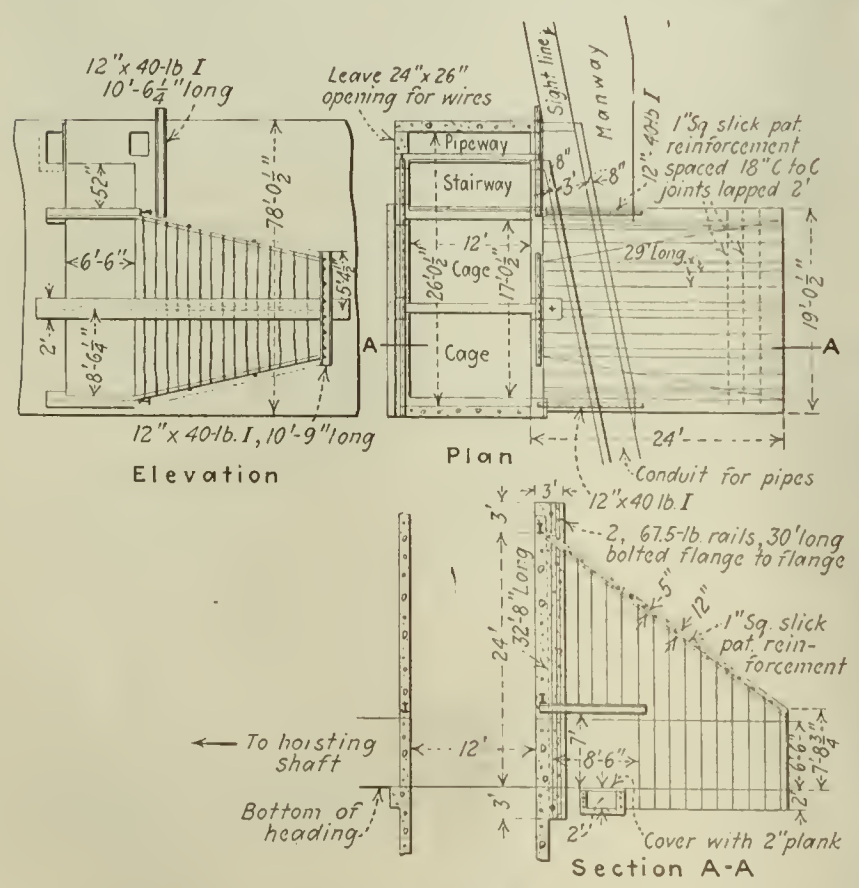
The man-and-supply cages operate in a double-compartment shaft, 170 ft. deep. The hoists each have cylindrical drums 7 ft. in diameter driven by 250-hp. motors operating on a 2,200-volt 3-phase 25-cycle current. The cages have been designed to handle a load of 11,000 lb. and can raise 600 cars of rock per day. The hoist will also lower approximately 11,000 mine props daily (25 in a car) in addition to rails, men and miscellaneous supplies.

One of the most interesting features at these shafts is the installation of 100-lb. standard-rail steel guides. This may be said to be a revolutionary development, for up to the present time it has been thought that it was not safe to use steel for this purpose.

In the past it was believed that safety catches could not take a tight grip on the guides if made of steel, and this objection was raised when the use of them was first broached by the Cambria Steel Co. It was only after exhaustive tests had been made which showed conclusively that a cage could be stopped on steel guides in a distance of 1½ to 2 in. that the installation finally was approved. These guides have given absolutely no trouble, and they have never failed. Any mining man knows the heavy costs of replacements where wooden guides are used, whereas steel guides will last as long as the mine opening itself. Another interesting feature in the construction of this shaft is the use of steel buntons.

At No. 5 shaft, rock cars are landed about 30 ft. above the level of the ground and are discharged by a hand-operated rotary car dump. The car runs into a spring-operated mechanism which clamps it against the bumpers or horns that are permanently attached to the ends of the rails. After a car is dumped and restored to the upright position, a trip releases the spring clamp, and the car is backed out to make room for the next one.

The rock which is brought up out of the shaft at this place is dumped into railroad dump cars and taken to the slag dump. The rotary dump just described is not



LANDINGS IN ROSEDALE MANWAY-SUPPLY SHAFT

Openings have been made both at the Cement and Miller seams for the unloading of rails. These openings are 24 ft. high at the edge of the shaft and taper down to 7 ft. 8¾ in. They do not at the top extend the full width of the shaft but only 4 ft. on each side of the shaft center line. They increase as they leave the side of the shaft, the width being 7 ft. 6½ in. in the clear where the taper ends.



FEW IF ANY SHAFTS HAVE STEEL GUIDES BUT STEEL GIVES GOOD RESULTS AT ROSEDALE.

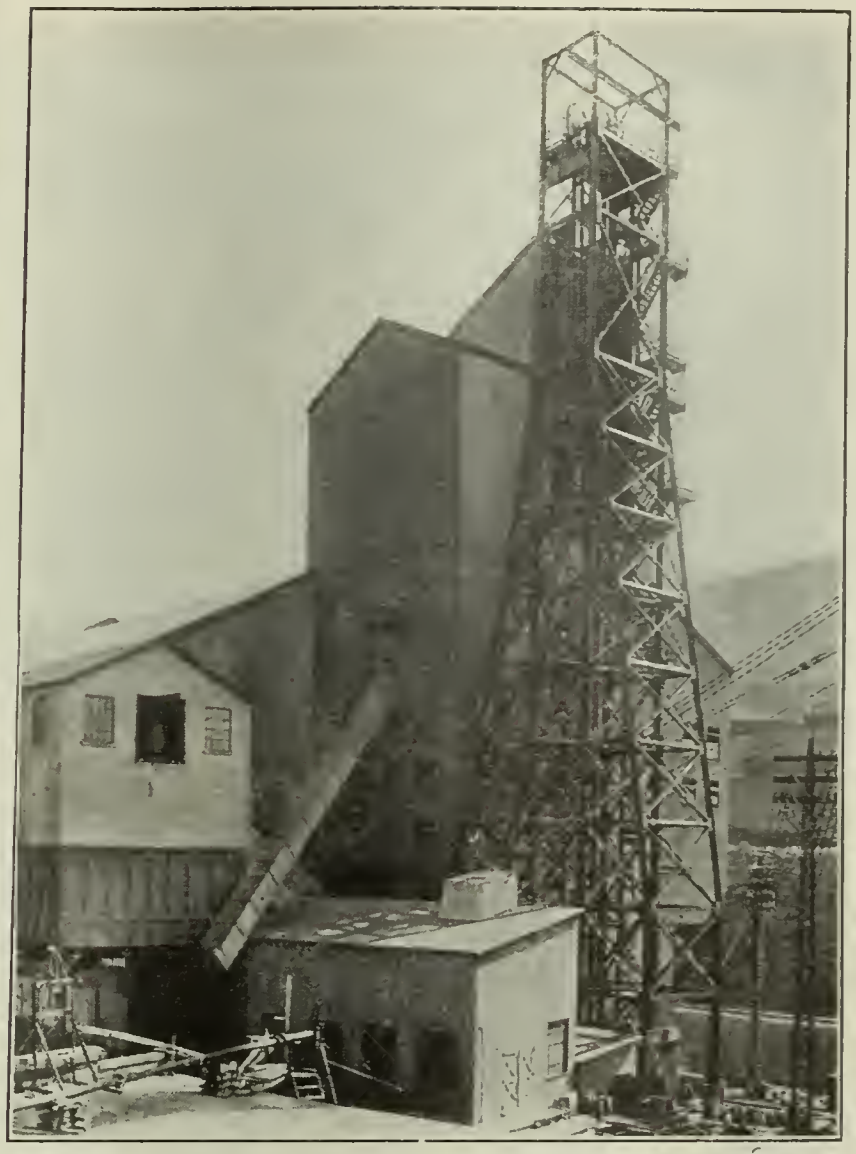
Many have declared that safety catches will not hold heavy cages effectively unless wood guides are provided into which the sharp edges of the clutch would effectively enter. Experiment has shown that catches can be installed that will grasp the 100-lb. railroad-iron guides at this shaft with such force that the cage detached from the rope would stop in 1½ to 2 in. without fail. The rails once placed will give unimpaired service as long as the shaft remains in use. The use of steel buntons also is shown.

much used as little rock is brought out of the mine, most of it being stored inside.

The mining methods at this colliery are much the same as those in general use, room-and-pillar methods being employed. Owing to the exceptionally good top, falls of roof give no trouble.

Drainage likewise presents no special problems. A pump house and sump are located near the bottom of No. 5 shaft. This sump will hold 360,000 gal. of water. Under present operating conditions a three-stage centrifugal pump of horizontal type with direct-connected motor is used, the pump being operated only about 2½ hours in every ten to eleven. Another pump is being installed to be used in case of necessity.

Steel sprags of 1¼ and 1½-in. pipe are used almost exclusively. These are of two types, one plain with a ring on the end, the other with a hilt. Where the hilt is used it is shrunk and welded on the pipe.



HEADFRAME AT NO. 6 SHAFT, ROSEDALE MINES.

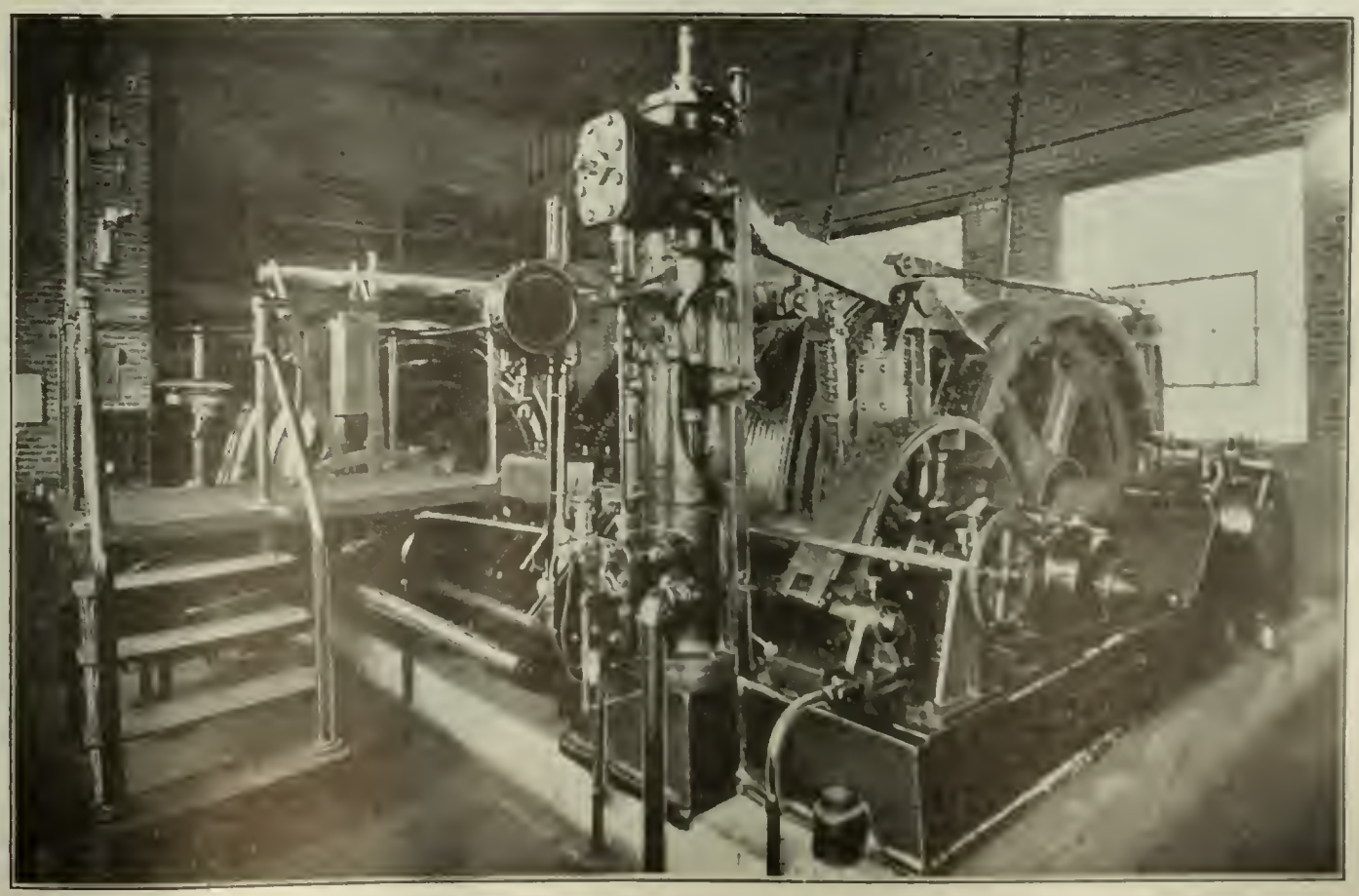
This tower is 175 ft. high and is located with the coal washery, a short distance from one end of the coke ovens. The shaft is 232 ft. deep. The coal is dumped into a large storage bin at the top of the building.

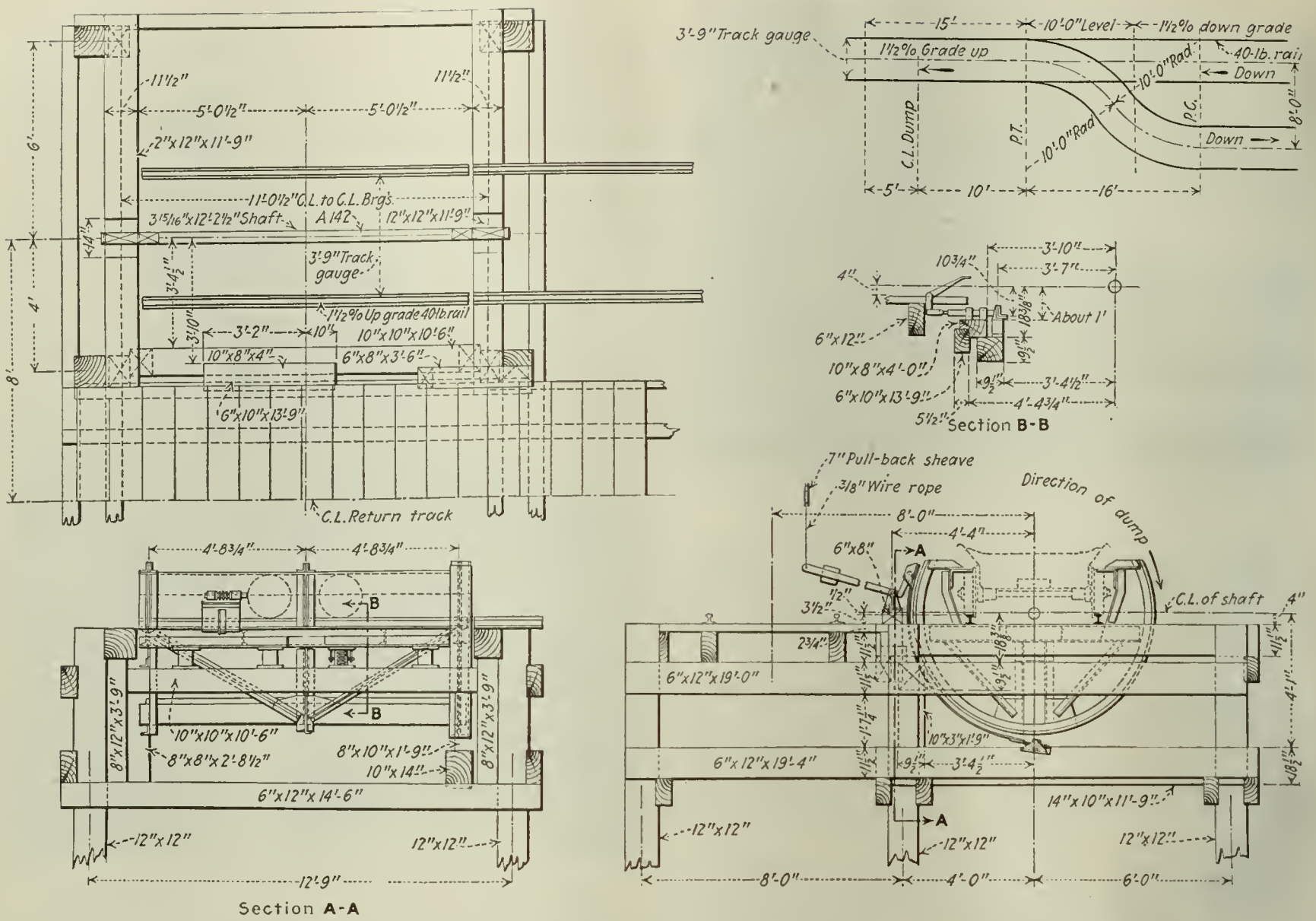
Steel sprags are a safety provision as they eliminate many thumb injuries. They are especially suitable for use in rooms but are not so necessary where the cars are spragged by men who are experienced in the work, for, owing to their experience and skill, regular spraggers seldom have accidents of this kind.

The motor barn is a large brick structure built in the

Hoisting Engine

This is the main hoist by which all the coal produced in the Rosedale and Rolling Mill mine is lifted. Coal from the Cement bed at Rosedale is dropped down a coal well to a point at which the skips are filled. That from the Rolling Mill mine is dropped down a well at Elk Run shaft to the Miller seam and is hauled to the Rosedale shaft, where it, with the Miller seam coal removed at Rosedale, is also dumped down to the skip level.

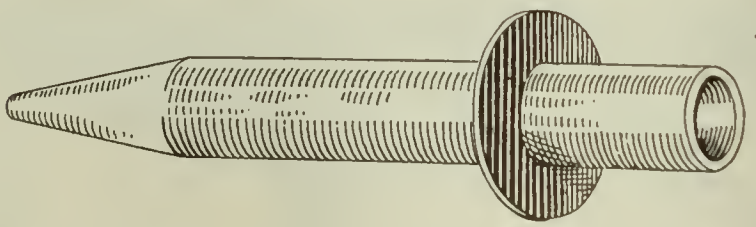




ROTARY CAR DUMPER USED AT SURFACE FOR DISCHARGE OF SLATE INTO RAILROAD CARS.

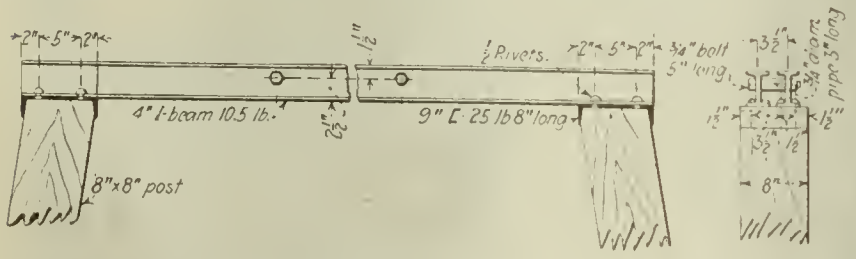
Only coal is brought up by the main hoist and it is raised in skips. The rock is brought up in the car by the cage hoist in the manway-supply shaft and is elevated to a point only 30 ft. above the level of the ground. The car is run into a rotary dump which is actuated by springs. Bumpers, or horns, attached to the dump hold the car when it reaches the right place on the rails in the tippler, which then revolves enough of a revolution to discharge the rock. The dump is on an upgrade of 1½ per cent so that the car when released will run out of the dump toward the shaft switch by gravity. A 1½ per cent grade leads down from the shaft landing to the switch so that the loaded car reaches the dump at some speed, running thereto by gravity. Much of the rock is stored in the mine, and the dump therefore is not kept very busy. What is dumped is taken to the slag pile.

Miller seam, near No. 5 shaft. It is sufficiently large to house the 35-ton electric locomotives. It contains a drop pit and a chain fall and a trolley capable of lifting any motor up to and including the 35-ton size.



STEEL SPRAG WITH GUARD FOR FINGERS.

Inexperienced spraggers using sprags without a guard are likely to catch their fingers. These sprags are used mostly in the rooms where men inexperienced at spragging are at work. The hilt is shrunk on and welded to the pipe.



CROSS BARS OF DOUBLE I-BEAMS ON WOOD POSTS

Rarely does the roof need timbering in the Rosedale mines. When heavy timbers are needed 4-in. 10-lb. I-beams are used. As these are deficient in width they are put in pairs and connected by ¾-in. bolts with pipe separators. The beams rest on short channels which fit over the tops of wood posts. As the posts can be sawed to any needed length, they can be readily fitted by the use of nothing more elaborate than a saw which the timberman can readily carry with him.

A separate room adjoining the barn is used as a supply room for motor parts. It is provided with steel bins, racks and other conveniences in accordance with the best modern practice.

Sand for locomotives is dried at the surface with the aid of steam. It is then passed down boreholes that have been drilled through the overburden to both seams.



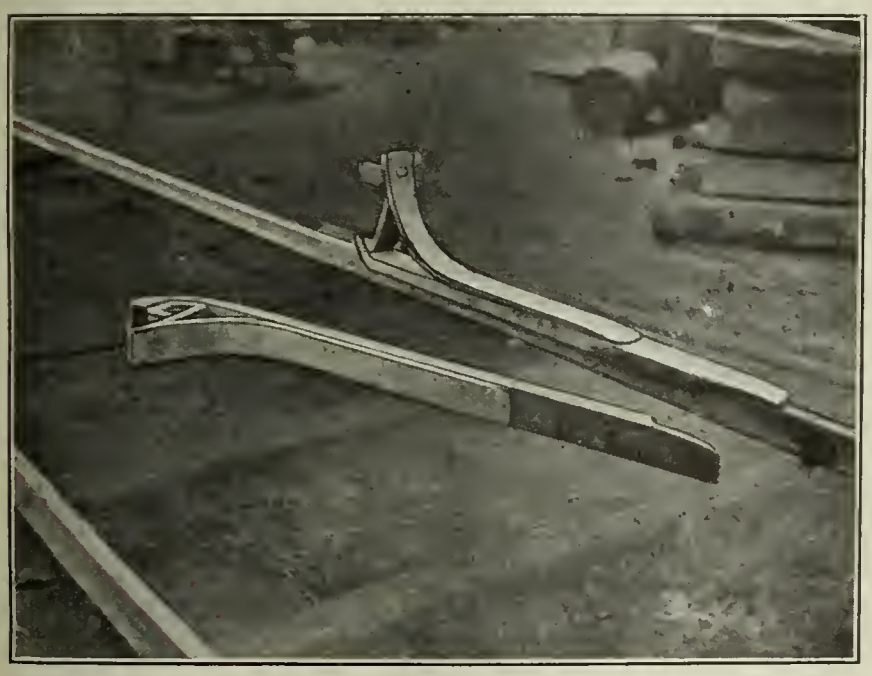
BRICK MOTOR BARN BUILT IN MILLER SEAM.

This garage for mine locomotives has been erected near No. 5 shaft. It is large enough to house the big 35-ton mining locomotives and has a drop pit, a chain fall and a trolley capable of handling the motors of this unusual equipment.

The skids which on heavy grades are used under the cars are in many ways original, though the basic idea has been used before. The illustrations clearly show the way in which they are made and applied. They have been used with the greatest success, and they are especially needed where trips of the length of those in this mine have to be handled.

Where timbering is necessary steel mine timbers with wooden legs are used. These are made up of a pair of 4-in. 10-lb. I-beams riveted at the ends to short pieces of channel which serve as caps for 8x8 in. posts. The I-beams are separated by spacers and bolted together. These are known as double cross bars. The diagram shows further details. By this arrangement most of of the advantages of all-steel timbering are obtained. Wood posts can be fitted more readily than steel legs as they can be trimmed to the required length by a saw.

The cars at the mine are of unusual construction. They were designed by the general superintendent of coal-mining operations of the Cambria Steel Co., who has patented the form of construction used. The main claim for these cars is that they are unusually strong particularly in a longitudinal direction which is that in



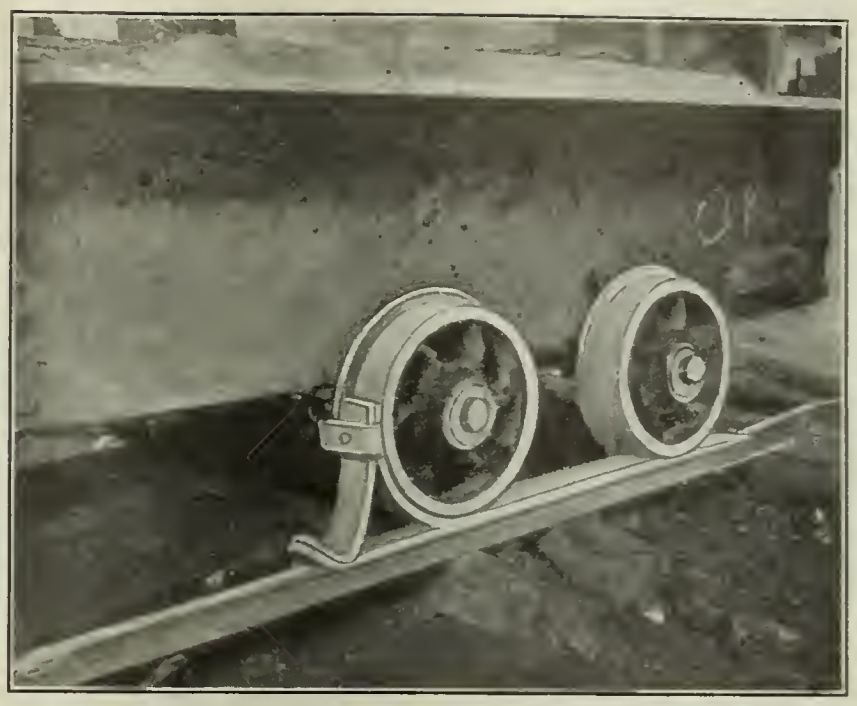
SKIDS FOR LOWERING CARS DOWN HEAVY GRADES

Johnstown is located near enough to the line of Appalachian uplift to have heavily rolling measures. Furthermore the trips hauled are long. In consequence these skids are quite necessary. They are found to give excellent service.

which the greatest shocks are usually sustained. In case of accident the wood shock absorber and the method of its reinforcement make it practically impossible to telescope the cars.

An inverted channel section is pressed in the bottoms of these wagons so that it projects upward into the car. On the underside and in the channel section is placed the wooden shock absorber which is a piece of plank 3x9 in. and 9 ft. long. When bolted in place it is flush with the bottom of the car. The ends of this plank are capped by bumpers. The plank cushions any shock the car may receive, and the channel section by its stiffness provides the wood filler with the required strength. Tests have been made which show the greatly increased strength obtained by this method of construction. Two types of cars were tested with identically similar impacts. One of these, an ordinary car, was practically destroyed whereas the other, one of the type just mentioned, received practically no injury.

From the foregoing descriptions it will be seen that these mines are excellent examples of modern and advanced coal-mining practice. Every effort has been made to increase production and at the same time add to the safety and economy of the methods used. Even laymen who visit these mines are conscious of the fact that they are well equipped.

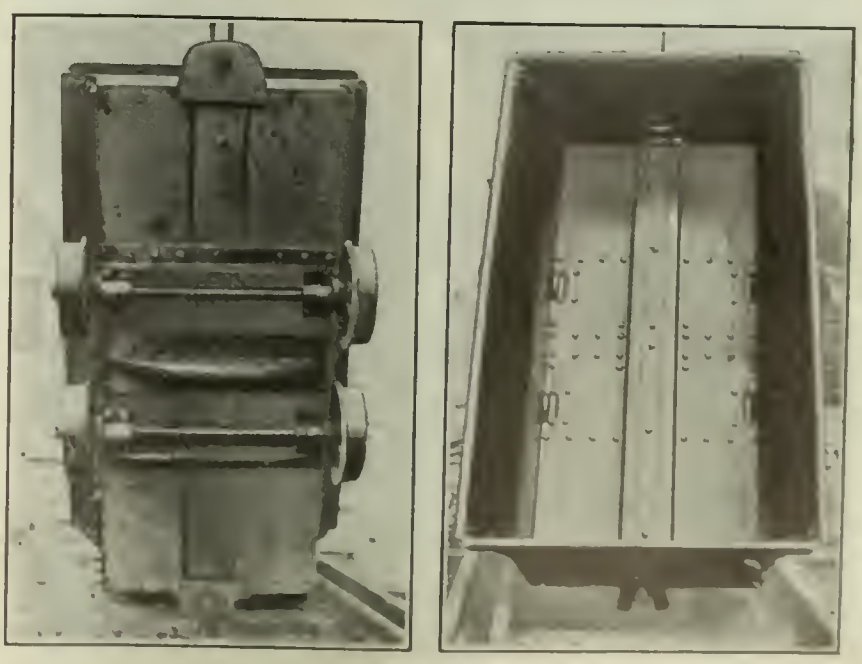


SKIDS IN PLACE UNDER WHEELS OF MINE CAR.

Skids replace rolling by sliding friction, and yet the sliding does not flatten the wheels, the wear being taken by the skid. the sliding surface being long enough not to make this excessive.

The Cambria Steel Co. operates its mines solely to take care of its own needs and most of the coal produced is converted into coke. The coal from the mine described does not, of itself, coke readily, and it is necessary to mix it with coal obtained from other of the company's mines. This will be taken up in greater detail in a future article dealing with the Rosedale coal washery and the byproduct coke oven equipment, which represent the last word in equipment of this kind.

In conclusion it may be said that one is at no time more struck by the tremendous strides that have been made in coal-mining methods than when one compares the present plant at this mine with those that preceded it. From the days when hand drills, mule-drawn equipment and manual labor sufficed to the present time with its improved methods and tremendous production is indeed a far cry.



LONG TRIPS DEMAND THE MOST RUGGED OF CARS

Two views of a specially designed steel mine car with riveted body. The bottom along the axis of the car is pressed into a channel shape to accommodate a shock absorber made of plank, forming a combination which, while stiff, has enough "give" to satisfy the most severe service requirements.

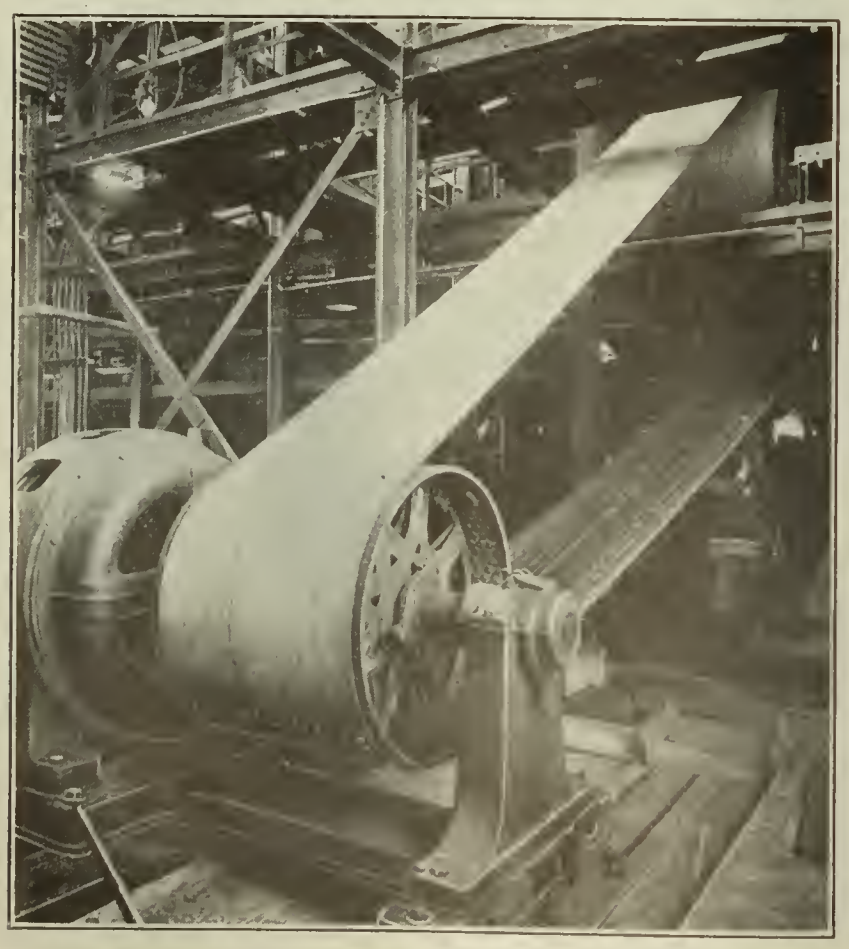
Pulleys Having Cork Inserts Set in Face Are Used to Keep Belt from Slipping

A SLIPPING belt on a heavy drive makes trouble, which may be of several different kinds. In the first place the driven shaft or machine is not operated at its calculated speed; second, the belt is subjected to heavy wear and, third, the squeak or squawl developed is likely to be highly objectionable. Various palliatives may be applied. Many belt dressings have been placed on the market that are said to work wonders. Particularly if the drive be at high speed, drilling holes in the face of the smaller pulley (drilling out from 10 to 25 per cent of the area is usually sufficient) may accomplish the desired result and stop slippage.

Still another means of increasing the adhesion of a belt to a pulley is to cover the pulley face with a strip of belt, which should be neatly lapped and riveted or cemented in place. If the emergency is dire and requires immediate correction, even though this be only temporary, sifting powdered rosin between the belt and the wheel usually will stop slipping at least for a time.

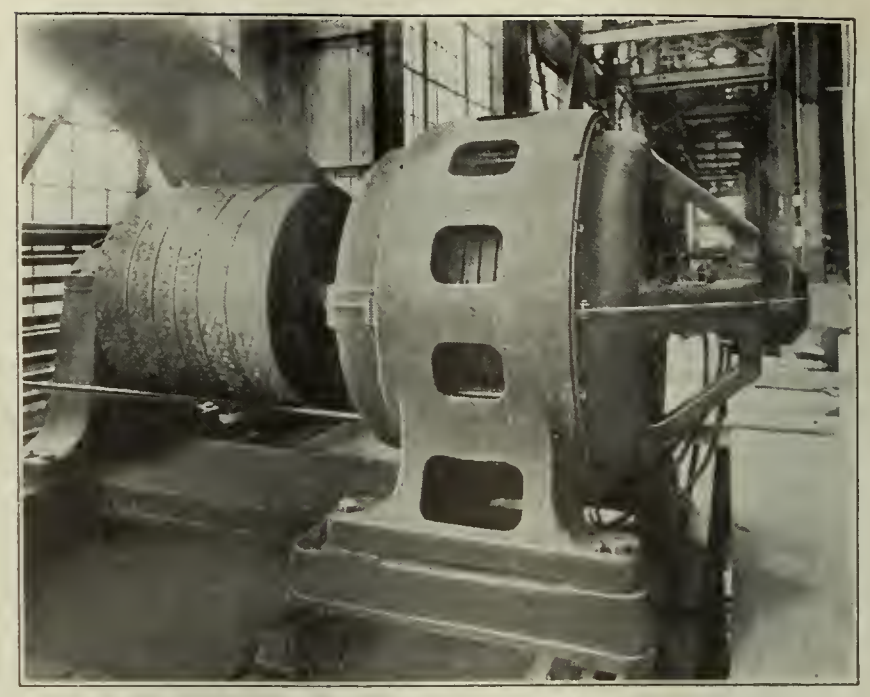
All of these expedients, however, are open to many objections. The time to prevent a belt from slipping is when the machinery is first installed—before slippage has had a chance to start. On straight belt drives—that is, those where the belt is not crossed—other things being equal, slipping will take place at the smaller pulley, as this has the lesser arc of contact. The logical method of preventing slipping is to increase the adhesion of the belt to this pulley to such an extent that it will at least equal its adhesion to the larger pulley.

The accompanying illustrations show a 300-hp. belt drive installed in the Coaldale breaker of the Lehigh Coal & Navigation Co., where an attempt has been made to obtain the results just outlined. Here a 44½ in. diameter by 38 in. face split steel pulley provided with



CORK-INSERT PULLEY MOUNTED ON 300-HP. MOTOR

Careful observation will show the indentations on the inside of the driving pulley, the way in which the pulley is constructed and the manner in which both pulley and motor are placed on one baseplate and moved backward or forward as the belt requires.



ANOTHER VIEW OF THE MOTOR AND PULLEY

This is taken so as to show the exposed face between the upper and lower halves of the belt. The cork inserts are staggered so that every element in the belt width will have contact with the cork and do its part in transmitting power. Here also may be seen the guide rails on which the motor and pulley baseplate is mounted and along which it is moved.

cork inserts is mounted on the shaft of the driving motor. This machine has a rated speed of 365 r.p.m. and drives a 12-ft. line-shaft pulley, also of 38 in. face. The motor shaft, as may be seen, is extended to an outboard pedestal bearing mounted on the same bedplate as the motor and moving on guide rails with it. This makes an extremely simple and "husky" drive and one that should give both extreme positiveness and a minimum of trouble. At first sight it would appear that the cork inserts would not be durable but it is said that they wear indefinitely and are practically unaffected by dust, oil or water.

The breaker in which this drive is installed, it may be said in passing, is one of the largest and most modern in the entire anthracite region. The former structure occupying this site burned, and to prevent a recurrence of such a loss the new building has been made as nearly fireproof as possible. Approximately 2,500 tons of structural steel has been used in its construction. It is seven stories high and has about 50,000 sq.ft. of concrete floor and 200 ribbed wire-glass windows in steel frames each 11x12 ft. in dimensions. Pipe coils spreading 30,000 sq.ft. of radiating surface will heat the building in cold weather. Ample toilets, lavatories and drinking fountains also have been installed. These are somewhat of an innovation in breaker construction. All jigs and other machinery are driven electrically, and a central control station has been provided.

A BUSINESS OPPORTUNITY of unusual promise has opened to the byproduct coke industry. Substitutes for anthracite coal must be found. Were production to start immediately, there would not be enough anthracite coal available this winter to go around. Large stocks of byproduct coke are available, thus offering that industry an opportunity to prove that coke is as satisfactory a fuel as is anthracite and can be had at less price. It remains to be seen whether the industry can resist the temptation to exact the highest possible price and sell its product at a small margin of profit with the idea of popularizing the fuel. Under present conditions the industry can get fancy prices for its product. The hope is expressed by federal officials that the industry will show enough collective sense to sell coke at the lowest possible price and will send out a large force of men to show how coke may be burned to the greatest advantage.



By Uniting Two Collieries and Building a New Breaker Operating Cost and Degradation Will Be Reduced

On an Output of 430,000 Tons per Annum Madeira-Hill Interests Expect to Reduce Their Operating Force by Between 150 and 255 Men Exclusive of Eight Pumpers

By DEVER C. ASHMEAD*
Kingston, Pa.

IN THE early days of anthracite mining a breaker was built at almost every mine opening. Originally these structures were of small size and when their capacity reached 200 tons per day they were considered large installations. It was found, however, that much labor was required to operate these many small plants and when this became expensive and difficult to procure consideration was given to the consolidation of the many small breakers into a few of much larger capacity.

By building larger and more efficient breakers it was possible not only to make one new breaker take the place of two or more, simultaneously reducing the number of men employed in actual preparation, but also to cut down the outside force. A specific example will illustrate this general principle.

Two anthracite companies, known as the Greenough Red Ash Coal Co. and the Colonial Collieries Co., are each subsidiary to the Madeira-Hill Co. The breakers of these two firms are now about 5,600 ft. apart. The two properties under operation were separated by a tract of land 1,400 ft. wide, controlled by another company. The Madeira interests accordingly obtained possession of this piece of ground, and the two properties were thus consolidated.

DOUBLE PLANTS AND FORCES NECESSARY

The annual output from one of these collieries totals about 250,000 tons, and that of the other reaches approximately 180,000 tons. Under present arrangements two breakers are required to prepare this coal. Consequently two distinct forces of breaker and outside employees as well as two breaker and two outside foremen are necessary. In addition to this, six pumping stations are required underground to handle the water produced each day.

All told, about 400 men are employed in and about these surface plants, 145 of whom are used in actual coal preparation. Furthermore, the breaker at the Greenough colliery is somewhat behind the best modern practice, and although the resulting product is of good quality, breakage and waste is excessive. At Natalie the breaker is more modern, but it is located well away from the center of the property as now constituted.

After careful investigation of existing conditions and the savings made possible through a consolidation of preparation operations, a point approximately midway between the present breakers was selected as the site



BREAKER OF COLONIAL COLLIERIES CO., NATALIE, PA.

The improvements being effected joining this operation with that at Marion Heights will make it possible to dispense with this breaker as soon as the new one is finished.

NOTE—The frontispiece shows the surface plant of the Greenough Red Ash Coal Co. colliery at Marion Heights, Pa., which will be abandoned as soon as the new plant is completed that will combine the workings of this mine with those of Natalie.

*Anthracite Editor, *Coal Age*.

of the new shaft and preparator. This shaft will be sunk to the coal bed, a distance of 450 ft., and from its foot tunnels will be driven to connect with the present workings of both the Greenough and Natalie collieries.

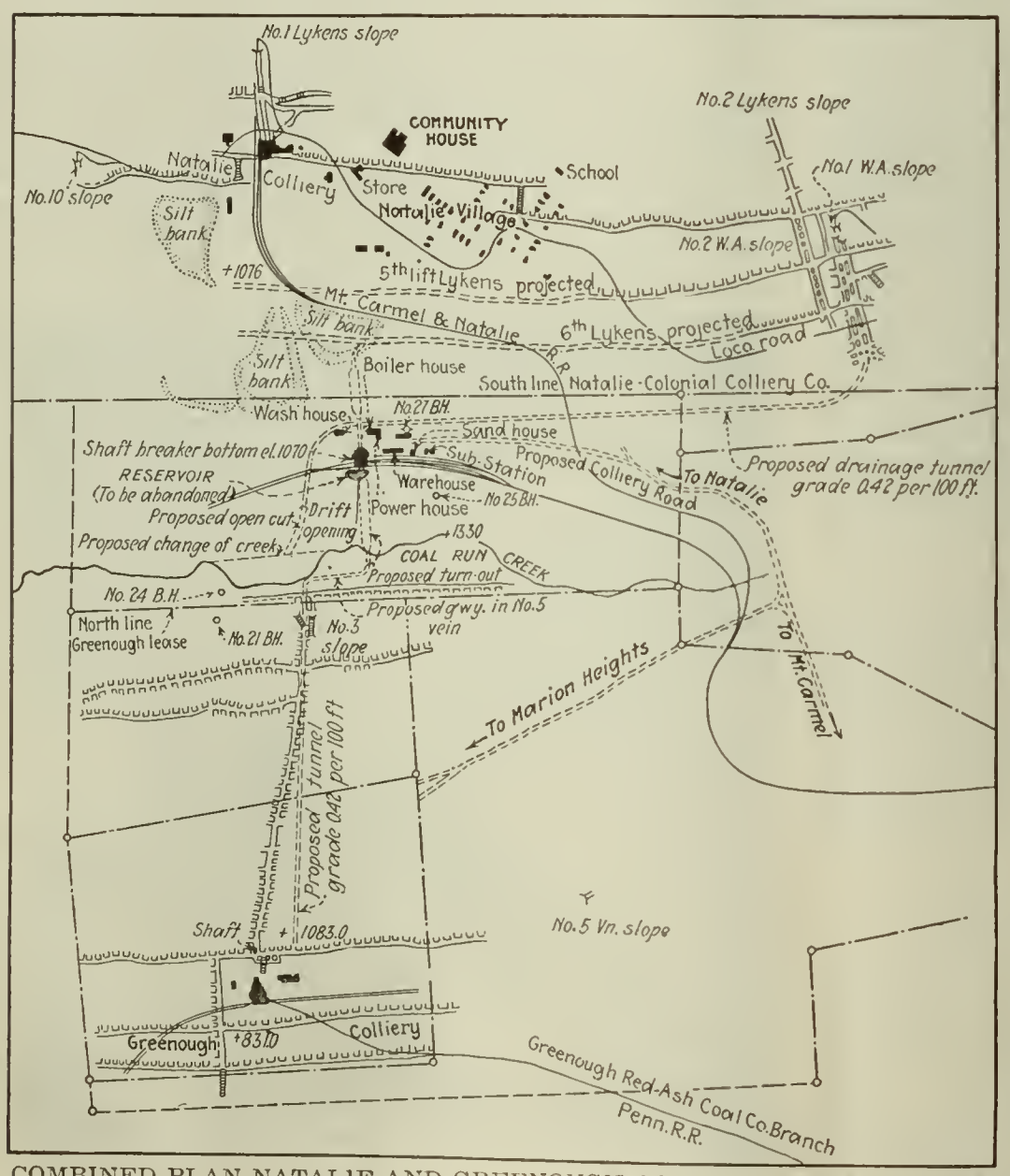
This arrangement will present many advantages. All the surface haulage with which the present plants have to contend will be eliminated. By the time the new plant is completed the two or three small slopes now tributary to these breakers will be worked out and the roads leading to them will no longer be needed. Difficulties incident to transportation on the surface during the winter will be overcome, and the haulage, being entirely underground, will be conducted under more nearly uniform conditions. The six pumping stations now in operation will be consolidated into one. At present eleven men are required to take care of the pumps whereas under the new arrangemnt only three will be necessary.

In order to make the requisite underground connections it will be necessary to drive approximately 6,300 ft. of tunnel exclusive of the sixth lift in the Lykens bed. At present three slopes and one shaft are employed, requiring the services of eight hoisting engineers. Under the new scheme only one shaft and one slope will be used, for the operation of which only four hoistmen will be required.

At present the existence of two collieries signifies that two complete outside and two office forces must be maintained. Combining these plants will permit a similar combination of these organization units with a corresponding saving in expense. It is possible that the services of as many as 150 men will be dispensed with, as at present 260 employees are required for this work. Breaker, or preparation, forces might also be reduced as the result of such a consolidation. At present an aggregate of 145 men is required to prepare the coal. In the proposed new structure on account of improved equipment and processes now developed and available, forty to fifty men will be enabled to prepare the mine product effectively.

From the above estimates it will be seen that theoretically at least the services of 267 men may be dispensed with. It is hardly to be anticipated, however, that this saving will be realized fully. If, however, the consolidation of operations results in a saving of necessary labor amounting to the services of only 150 men and that their average wage is only $3.50 per day, the total saving in wages would be $525 daily. Assuming that these men normally would work for 265 days per year, an annual saving would be made in labor alone totaling approximately $140,000.

In addition to this labor saving, the cost of preparation could be lowered, for in a new breaker of this kind better design and improved methods of treatment will reduce the degradation of the coal. The figures presented above are not actual as will be promptly recognized by all those familiar with the conditions existing throughout the anthracite region. Thus the rate of $3.50 per day is too low but is here presented to show the obvious possibilities involved.



COMBINED PLAN NATALIE AND GREENOUGH COLLIERY SHOWING NEW DEVELOPMENTS AS PLANNED

A shaft will be sunk and a breaker with all the structures essential for the operation of an anthracite mine will be erected. Gangways will be extended and two large turnouts provided. A long tunnel will take the water from a low point in the Natalie mine to the surface along the course of Coal Run Creek.

The new headframe and breaker will be of steel and as nearly fireproof as they can be made. The rest of the new buildings about the plant will be of hy-rib steel lath covered with stucco. This building group will consist of a combined machine, blacksmith and carpenter shop, a supply and office building, a house over the mine hoist, a motor-generator set and a compresser, a substation, a boiler plant (used for heating only), a locomotive barn, an oil house, a magazine, a local-sales scale house, and a modern timber yard. Of course a thoroughly modern wash house also will be provided. This building will be of sufficient size to accommodate 350 to 400 men.

Preparation within the breaker will be of the "wet type, and all sizes of two distinct kinds of coal will be prepared. That is, the Red and White Ash coals, both of which will be produced at this operation, will be prepared separately. All machines will have individual motor drives, but these will be controlled from a central switchboard.

The advantages to be derived from the proposed consolidation are manifold. They may be stated as follows: (1) Several miles of surface transportation now necessary will be entirely obviated; consequently no delays can be caused by inclement weather. (2) One breaker employing forty or fifty men will replace two requiring 145 men. (3) One outside

force consisting of only about 110 men will be employed in place of two organizations numbering 260 men. (4) Hoisting will be concentrated at one point. (5) One pumping plant will do the work formerly performed by six, with a corresponding or nearly corresponding reduction in the pumping cost. (6) Degradation will be lessened and less power will be required to treat a given tonnage.

Inasmuch as the plans for the proposed alterations have not been finally developed in detail, they cannot be even outlined here. Thus it has not yet been decided definitely whether cages or skips will be used in hoisting. If the latter are chosen the most advanced bituminous practice will have found its way into the production of anthracite.

How to Find Economical Size for Airshaft

By M. H. Hall*
Coalwood, W. Va.

When determining the size of an airshaft to serve a proposed mine it was customary until recently to make it conform exactly with the two hoisting compartments of the main shaft. These latter are usually designed to accommodate the mine car to be hoisted or are made similar to other shafts operating satisfactorily under like conditions in the same region.

Such airshafts are not in accordance with good engineering. In many cases openings so proportioned have to be enlarged after a few years in order to decrease the pressure necessary on the air current, for a sufficient volume cannot be forced through the mine without an unreasonable expenditure for power.

The factors governing the economic size of an airshaft are as follows: The estimated life of the mine, the cost of sinking and lining, unit power cost, volume of air required and the interest rate on money invested.

The following table has been computed, assuming a depth of shaft of 100 ft., a coefficient of air friction $k = 10^{-8}$ and the following assumptions concerning costs, life of property, etc.: The estimated life of the mine is taken as 50 years, the cost of excavation at $15 per cubic yard, the cost of concrete lining as $30 per cubic yard in place, the volume of air required as ranging from 100,000 to 600,000 cu.ft. per minute, the unit power cost as 2c. per kilowatt-hour, and the interest rate on the investment as 6 per cent.

In the left-hand column the sizes of the assumed square shafts are shown, in the second column is placed the sinking or first cost. This includes the excavation and the concrete lining, both at the rates assumed. The third column contains the annual interest charge at 6 per cent on the first cost of the shaft, plus the sum that must be placed yearly at 6 per cent compound interest in order to amount to the first cost of the shaft at the expiration of 50 years or the life of the mine. This sinking fund or extinguishment charge is absolutely necessary in order that the original capital be not impaired.

The next and succeeding columns showing the assumed volumes of air to be circulated per minute are double. The left-hand half shows the power cost per year. This is the cost of maintaining the ventilating current continuously for one year at the assumed rate of 2c. per kilowatt-hour, based on an over-all mechanical efficiency for combined fan and drive of 66⅔ per cent. This is probably somewhat higher than is commonly attained even in first-class installations.

The total annual cost will obviously be the sum made up of the figure shown in column 3 plus the power cost for a given volume. This sum is tabulated in the second or right-hand half of the double column under the subhead "Total Cost, Year." Inspection of the total annual costs set forth in this column shows that a small shaft entails a high annual expense. This gradually decreases as the cross-section of the shaft increases until a size of maximum economy is reached, the increased fixed charge of which equals the decreased power cost.

In each total yearly cost column a horizontal line is drawn below the minimum cost for each assumed volume, making a broken or stepped line across the table. Following any horizontal portion or step of this line back to the first column the most advantageous size of square shaft to pass any assumed volume of air will be found.

The process involved may well be illustrated with an example. Suppose that it is desired to ascertain the economical dimensions for a shaft to pass 500,000 cu.ft. of air per minute. In the column subheaded "Total Cost, Year" under the volume heading of "500,000 cu.ft. per minute" the lowest cost is found to be $3,225 for a shaft 100 ft. deep. Following the line below this figure to the first or left-hand column the cross-section of the shaft is shown to be 20x20 ft.

Again suppose a comparison is desired between the relative economies of shafts of correct and incorrect cross-sectional areas. Assume that the proposed shaft will be 600 ft. deep and that 500,000 cu.ft. of air will pass as before. From the table, under the volume heading of "500,000 cu.ft. per minute" and the subheading "Total Cost, Year" a minimum of $3,225 for each 100 ft. of shaft depth is found. As the shaft is to be 600 ft. deep the total expense obviously will be six times this amount or $19,350. Now suppose that an attempt is made to ventilate the mine with a shaft that is 10x10 ft. in section, involving, of course, a greatly decreased

*Chief engineer, Carter Coal Co., Inc.

TABLE FOR DETERMINATION OF ECONOMIC SIZE FOR AIRSHAFTS

Size of Shaft, Ft.	Sinking or First Cost	6% Int. and 50-Yr. 6% Sinking Fund	100,000 Cu.Ft. per Min. Power Cost, Year	100,000 Cu.Ft. per Min. Total Cost, Year	200,000 Cu.Ft. per Min. Power Cost, Year	200,000 Cu.Ft. per Min. Total Cost, Year	300,000 Cu.Ft. per Min. Power Cost, Year	300,000 Cu.Ft. per Min. Total Cost, Year	400,000 Cu.Ft. per Min. Power Cost, Year	400,000 Cu.Ft. per Min. Total Cost, Year	500,000 Cu.Ft. per Min. Power Cost, Year	500,000 Cu.Ft. per Min. Total Cost, Year	600,000 Cu.Ft. per Min. Power Cost, Year	600,000 Cu.Ft. per Min. Total Cost, Year
6 x 6	$6,600	$423	$3,050.00	$3,473	$24,400	$24,823	$82,300	$82,723	$196,000	$196,423	$382,000	$382,423	$658,000	$658,423
8 x 8	9,400	596	722.00	1,318	5,760	6,356	19,400	19,996	46,200	46,796	90,200	90,796	155,000	155,596
10 x 10	12,860	816	237.00	1,053	1,895	2,711	6,400	7,216	15,200	16,016	29,600	30,416	51,200	52,016
12 x 12	16,570	1,051	95.00	1,146	762	1,813	2,570	3,621	6,100	7,151	11,900	12,951	20,600	21,651
14 x 14	20,870	1,326	44.00	1,370	352	1,678	1,188	2,514	2,820	4,146	5,500	6,826	9,500	10,826
16 x 16	25,550	1,620	23.00	1,643	181	1,801	610	2,230	1,450	3,070	2,820	4,440	4,880	6,500
18 x 18	30,650	1,946	12.50	1,958	100	2,046	337	2,283	800	2,746	1,560	3,506	2,700	4,646
20 x 20	36,220	2,300	7.40	2,307	59	2,359	200	2,500	474	2,774	925	3,225	1,600	3,900
22 x 22	42,220	2,680	4.60	2,685	37	2,717	124	2,804	294	2,974	575	3,255	992	3,672
24 x 24	48,700	3,080	2.98	3,083	24	3,104	80	3,160	191	3,271	372	3,452	643	3,723
26 x 26	55,470	3,520	1.98	3,522	16	3,536	53	3,573	127	3,647	248	3,768	428	3,948
28 x 28	62,860	3,980	1.37	3,981	11	3,991	37	4,017	88	4,068	171	4,151	294	4,274
30 x 30	70,700	4,480	.97	4,481	8	4,488	26	4,506	62	4,542	121	4,601	210	4,690

first cost. Under "500,000 cu.ft. per minute" and opposite a 10x10 ft. shaft a total yearly cost of $30,416 is found for each 100 ft. of depth, or a total cost for the shaft in question of six times this amount or $182,496. Subtracting the total yearly cost for the 20x20 ft. shaft from that of the 10x10 ft. shaft we have $182,496 — $19,350 = $163,146. This sum represents the annual loss chargeable to lack of knowledge or to failu e to apply the principles of engineering economics.

This sum if placed at interest at 6 per cent and compounded annually will amount at the expiration of 50 years to approximately $47,367,8_0. On the o her hand the saving effected by sinking a 10x10-ft. shaft in preference to one 20x20 ft. in dimensions, or $140,160 if also placed at interest at 6 per cent and compounded annually will amount to approximately $2,581,800 at the end of the 50-year period.

Evidently the ultimate economy obtainable from the larger shaft will amount to $47,367,800 — $2,581,800 = $44,786,000 at the expiration of 50 years or the estimated life of the mine.

All figures here set forth are the results of slide-rule calculations. They probably are sufficiently accurate. however, for all practical purposes.

Speed-Reducing Gear Lowers Headroom Needed for Loading-Boom Hoist

NECESSITY, in a low-roofed machine shop exercising her well-known maternal instinct toward invention, has produced a new type of electric hoist which conserves room, is rapid in operation and readily spots a loading boom or other load. The machine is expected to reduce the degradation of coal during loading for those who supplant hand power with mechanical for the raising and lowering of loading booms. For two years this machine has been in every-day use, several sizes having been employed for various purposes in shops and foundries. Some months past three units were installed by the Sincerity Coal Co. at Marion, Ill. This hoist, known as the McCollum, is now being formally introduced to the coal industry by Roberts & Schaefer, engineers and contractors, of Chicago.

The Sincerity Coal Co. has three double-chain hoists of this type, attached to an equal number of shaking loading booms. The capacity of each of these hoists is 2 tons but machines are made in 2-, 3-, and 5-ton sizes. They are applicable to either the shaking or the apron type of loading boom; the double-chain hoist (Fig. 1) is especially adapted to the shaking type, and the sin-



FIG. 2. SINGLE-CHAIN BOOM HOIST
This type of hoist may be hung from any convenient point. The fallacy of relying on hand raising or lowering of the boom has long been recognized.

gle-chain machine (Fig. 2) to the bottom of apron type.

The new hoist is simple, compact and rugged. All these desirable qualities are made possible by the use of a special annular gear reduction interposed between the motor and the chain sheave. By the use of this gearing a high ratio of speed transformation is obtained efficiently and in a small space. This makes it possible to employ a high-speed motor, one of 1,800 r.p.m. being generally used. Such a motor is lighter, less cumbersome and cheaper than one delivering the same power at a slower speed.

This speed-reducing mechanism can be driven only from the motor end. As a result the torque produced by a suspended load has no tendency to cause the mechanism to rotate and allow the load to descend. This feature makes it possible to do away with the strong electrical and mechanical brakes heretofore essential in hoisting apparatus. A small friction brake is employed to check the momentum of the motor rotor when current is shut off. This permits accurate placing of the load.

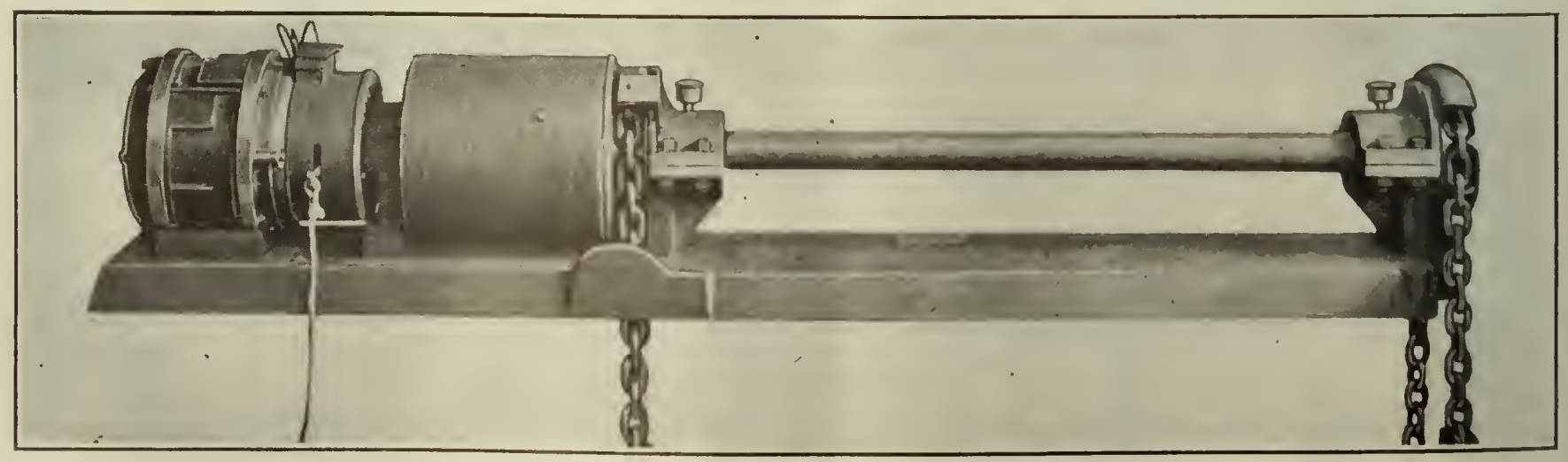


FIG. 1. DOUBLE-CHAIN BOOM HOIST OF SIMPLE DESIGN
One chain is attached to each side of the boom or chute and passes over a suitable sheave on the main shaft. Thus as this shaft is revolved both sides of the car-loading device are raised or lowered evenly. Motor control is obtained by means of a rope hanging within easy reach of the car trimmer.



Problems of Operating Men

Edited by James T. Beard



Safety-First Instructions Much Needed In Mining

Disregard for Safety-First Rules Causes Accidents—Miners Not Wholly to Blame—Safety Instructions Needed to Reduce Accident List

READING the interesting letters that have appeared in *Coal Age*, discussing the accident that occurred when a miner was burned by going over or around a fall of roof, in his working place, in attempting to see if the fireboss had marked the face of the coal, I have been impressed with the thought that there must have been a lack of suitable safety instructions in that mine, either that or the miner wholly disregarded the instructions given him.

In the first place, let me say that I do not approve of a fireboss marking only the face of the coal to indicate that he has examined the place and found it safe for work. That is not to say, however, that a fireboss should not mark the coal face; but I contend he should also leave a mark at the last breakthrough, unless it is understood that the miner, not finding any mark back from the face, can assume that the place is safe for him to proceed to his work.

Lack of Safety-First Teaching Responsible for Accidents

In my opinion, the lack of safety-first teaching in that mine, had more bearing on this accident than anything else. I feel that if men are properly taught, along the right lines, they will not attempt to go over a fall to hunt a supposed mark made by the fireboss.

Finding a mark on the face of the coal, beyond the fall, would only show that, either the fireboss had made a very hasty and careless examination of the place, or that a condition had developed since and the fall had taken place after the fireboss had gone.

Taking all into consideration, I cannot say, as many have already claimed, that this miner was wholly to blame for the injury he received when he went beyond the fall. My thought is that some blame attaches to all concerned. It seems to me that there could not have been sufficient interest taken by those in charge and whose duty it was to give the men the necessary safety-first instructions.

After an accident has happened, it is always easy to tell how it might have been avoided. I wonder how many mine officials, who have read these letters, have similar conditions now existing in their own mines and, yet, give the matter little further thought, passing this warning by as of little importance.

That, to my mind, is our worst trouble. We read an account of what happened in the other fellow's mine; but it does not occur to us that the same thing is liable to happen in our own place. If the same thing should occur with us, however, we would at once get busy and do what was necessary to avoid its recurrence.

There are roof conditions that make it impossible for any man to examine and say with assurance that it will not fall within two or three hours, though there may be no signs of weakness apparent at the time the examination is made.

For this reason, I do not feel that a fireboss can be held responsible for such an occurrence as the one mentioned. However, to make myself clear on the situation, I believe that should such a thing happen—it ought to make a fireboss more cautious and thorough in his future examination of places. In other words, the lesson should not be without its moral effect.

My observation proves to me that many accidents in mines result from the lack of interest on the part of both the men in charge and the workers; and this applies to other industries as well as to coal mining. The men in charge too often pose as leaders while their acts belie their claims to leadership.

Certified Men Mistaken Who Think They Know It All

Speaking of certification, I cannot but think that many of our certified men feel as if they knew it all, and have done and are doing all that is required of them as officials. Here, let me say, is where they are all wrong. When a man receives his certificate he has only just started; stopping there, he will certainly prove a failure.

When a man is placed in charge of a mine is the time he should start to study and train others in regard to the meaning of safety-first. He should organize safety-first meetings, with the aim of giving instruction along lines that will make work safer for the men and more effective.

Any mine superintendent or foreman who regards such efforts as a waste of time is unworthy of his calling and unfit for the position he holds. A good rule for any man to follow is to try to teach other men what he has been taught and what has helped him. It is no waste of time for a man to be a booster of safety-first. It pays.

It has always been a surprise to me that mine officials, whose companies are spending large sums of money for safety, rarely talk safety to their men, or give them needed instruction along that line. Let us hope that a deeper interest will be taken by mine officials everywhere in starting and maintaining safety-first and institute meetings, for the benefit of their men.

E. P. McOlvin,
Coal Mine Superintendent,
Alpha Portland Cement Co.
Wolf Summit, W. Va.

Teach Rudiments of Mining in the Common Schools

Decrease of American miners—Cause found in lack of early education—Effect shown in accident list.

ONE of the outstanding features in the mining of coal that is apparent to even the casual observer is the rapid decrease of American miners employed in our mines. Other writers have drawn attention to this matter and numerous remedies have been suggested, such as courses of training for miners and other incentives to the study of mining.

It is generally conceded that the employment of so large a class of foreign labor, ignorant of the principles of mining and unable to speak the English language, is responsible for the high accident list. Closer supervision of the work has been advocated as a means of eliminating many preventable accidents. It appears to me, however, that we have not as yet gotten at the root of the matter.

In seeking to ascertain the cause why young men, born and bred in mining communities, drift into other occupations, I am led to conclude that the underlying cause for their choice is the lack of early education in mining and its allied subjects.

In our school system, even in mining communities, it would seem that little, if any, attention is given to the teaching of the rudiments of mining in the common schools. Children are taught almost everything bearing on other callings and industries. But those subjects that deal with underground conditions, the study of the coal for-

mations, methods of getting out the coal, properties and behavior of gases, and the ventilation of mines are almost completely ignored.

It is not strange that this manner of teaching the young has its effect in shaping their future course. There is nothing so receptive and retentive as a boy's mind, at the age of from 12 to 16 years. The information that is imparted to him in that period is undoubtedly retained.

Rudiments of Mining Should Be Taught in the Common Schools

My though is, if more attention was given to the rudiments of mining, in our common schools, the occupation of mining coal as a life work would appeal to a larger class of young men, who would come to view the coal industry in a more favorable light than is possible at the present time.

In closing, let me say that the effect of encouraging American-born young men to choose the occupation of mining would be shown quickly in the decrease of the accident rate in mines. Instead of choosing a clerical position in an office or behind a counter, at $75 a month, more ambitious young men would seek the higher wages and greater opportunities for advancement that are open to them in coal mining.

Mt. Harris, Colo. Thomas Allen.

Firebossing

Time and distance important factors in firebossing—Fall may occur in a place examined shortly before—Miner foolhardy to attempt to pass beyond a fall.

SPEAKING of firebossing and the possibility of a fall taking place after the examination is made and before the men enter for work, I am of the opinion that such a thing is liable to happen at any time and when the fireboss is most conscientious and careful in his work.

It must be remembered that time and distance are two important factors in the work of a fireboss. In many of our large mines, it is not uncommon for a fireboss to have to travel a mile or more underground, before he can reach his section of the mine where his work begins.

Firebosses Ordinarily Given Too Large a Territory

Perhaps, the section in his charge may include two pairs of headings 450 ft. apart. We will say there are twenty places, ten pillars and ten rooms driven to an average depth of 200 ft. on 50-ft. centers, in the first pair of headings and the entries are advanced, say 400 ft. beyond the last room.

It is easy to see that by the time this fireboss has reached the main entry again, he will have traveled at least a mile. He must then go 450 ft. to the mouth of the second pair of headings where, we will say, he has ten more places to examine. The rooms, here, may be driven to an average depth of 150 ft. It is clear that by the time the man has returned to the shaft bottom, he will have traveled between four and five miles.

Fireboss Must Enter Report in Book After Examination

Even walking at the rate of 6 ft. a second, or four miles an hour, more than half his time will be consumed in walking. In the meantime, he has examined for gas and other dangers between thirty and forty places in his section and is fortunate indeed if he gets back in time to enter his report in the book kept for that purpose, before the men enter the mine for work.

In many instances, a fireboss' work is harder and his route longer than what I have mentioned, and he is often obliged to save time by passing through the breakthroughs, at the faces of the rooms, which is a common practice.

Let me say, in closing, that it would be foolhardy for a miner, on entering his place and finding a fall had occurred, to attempt to pass beyond the fall. A person who would deliberately do this and be burned by the gas ignited by his lamp, would deserve all he suffered by reason of his foolhardiness.

Gans, Pa. R. W. Lightburn.

Explosibility of Gaseous Mixtures

Experiments of Bureau of Mines show explosive range of methane and air in presence of carbon dioxide—Influence of other gases not determined.

KINDLY allow me to express my opinion in reference to the explosibility or non-explosibility of the mixture of gases, described in a question given in a recent firebosses' examination, in Indiana, and which was answered in *Coal Age*, Feb. 9, p. 252.

The question stated that a chemical analysis of mine air showed the following composition: Nitrogen, 80 parts; oxygen, 12 parts; marsh gas, 3 parts; carbon dioxide, 3 parts; carbon monoxide, 1 part; hydrogen sulphide, 1 part. The answer given to the question states that this mixture is highly explosive.

In the issue of March 16, p. 455, in reply to a correspondent who expressed doubt as to the mixture being explosive, the editor shows that but eight volumes of oxygen are required to consume the three volumes of methane and one volume, each, of carbon monoxide and hydrogen sulphide; while there are twelve volumes of oxygen present in the mixture, or half again as much as is needed.

Explosion Determined by Trial

My belief is that the question as to a mixture of gases being explosive can only be fully determined by experiment. Not having the necessary equipment for doing this, however, I have examined results of similar experiments performed by the Bureau of Mines, as published in Technical Paper No. 43 entitled "The Influence of Inert Gases on Inflammable Gaseous Mixtures," by J. K. Clement.

The paper describes a series of experiments performed to determine the explosive range of methane when mixed with varying proportions of oxygen, carbon dioxide and nitrogen. For that purpose, mixtures of these gases were introduced into a Hempel explosion pipette and its ignition tested by an electric spark.

A similar series of experiments were performed, on a larger scale, in a steel explosion cylinder, with the result that a wider explosive range of the gas was determined in the larger apparatus. With pure methane and air, no carbon dioxide being present, explosions ceased when the oxygen content fell to 14 per cent, the methane ranging from 6.5 to 6.9 per cent. Under the same conditions in the steel cylinder, explosions ceased when the oxygen content fell to 13 per cent, the gas then ranging from 6.3 to 7.1 per cent; while a 14 per cent oxygen content gave an explosive range of the gas from 6.2 to 8.2 per cent.

Influence of Carbon Monoxide on Explosion of Firedamp

My conclusion is that with an oxygen content of 12 per cent, as stated in the question to which I have referred, there would be no explosion of the mixture. As to the influence of the other two explosive gases, carbon monoxide and hydrogen sulphide, in this mixture, I can only refer to Technical Paper 134, published by the Bureau of Mines and entitled "Explosibility of Gases from Mine Fires."

In that paper, page 13, speaking of the influence of carbon monoxide on the inflammation of methane, after showing that, as the precentage of methane decreases, an increased percentage of carbon monoxide is required to produce inflammation in the mixture, the authors state: "When about 3 per cent of methane is present, there is needed about 6.5 per cent of carbon monoxide to produce an explosion."

Calculation shows that such a mixture contains $(100 - 9.5)0.209 =$ say 19 per cent of oxygen. No experiments are shown with a lower oxygen content; but I am sure that with only 12 per cent oxygen, as in the question to which I have referred, no explosion could occur.

No Reports on Influence of Hydrogen Sulphide

No experiments are available showing the influence of hydrogen sulphide, in mixtures with reduced oxygen content. Although I realize, as stated in the reply to the inquiry (page 455) that both carbon monoxide and hydrogen sulphide are more readily ignitable than methane, and both of these gases are present in this mixture; I fully believe that, while the mixture may be inflammable, it will not explode.

Many factors will modify the ignition and explosion of a gaseous mixture, which depends on the chemical heat of the reaction, the pressure, the source of ignition and its duration, as well as the velocity at which the mixture is moving and other items. Our

technical literature is extremely poor on these matters. MAX SUTER.

Herrin, Ill.

[Experiments under the conditions that prevail in the mine must always throw much light on the question of the inflammation and explosibility of gaseous mixtures. The laboratory experiments referred to by this correspondent have their value; but they fail to even approach the conditions that prevail in practice in the mine. As the correspondent has stated, many factors modify the results obtained.

Referring to Technical Paper No. 43, it should be remembered that the experiments there described relate to mixtures of methane, air and carbon dioxide. The author states (p. 21) as follows: "The results apply to mixtures of these four gases only and not to mixtures containing appreciable quantities of carbon monoxide." It must be remembered, also, that besides carbon monoxide, there is also present hydrogen sulphide, both of which gases materially widen the explosive range of methane, which makes this reference not applicable to the present mixture.

The fact that there is 50 per cent more oxygen in the mixture than is required for the complete combustion of the explosive gases present, inclines one to the belief that the mixture is explosive.—EDITOR.]

Analyzing the Foremen

Need of disinterested inspection of mines—Characteristics of good and bad foremen—Protection of company interests.

AMONG the many interesting points brought out in the discussions that have appeared in *Coal Age* is a remark of George Edwards, in the issue, May 18, p. 845, to the effect that a competent and disinterested person should be employed to inspect the mine and report direct to the management regarding its condition.

I am much in sympathy with this writer's suggestion that such an inspection and report is important in order to maintain a uniform production at a mine. The smaller mines, in particular, have only the report of the mine foreman, and if that is biased the management may be in total ignorance of the true condition existing underground.

CHARACTERISTICS OF DIFFERENT TYPES OF FOREMEN

As is well known, there are foremen and foremen; and the problem of the operator is to know that he has the right man—one on whom he can depend. My impression is that there are three classes of mine foremen, namely: good, medium and bad.

Each of these types or classes have their characteristics. A good foreman is a man who works hard to develop a good mine for the company. Naturally, he meets with difficulties that increase the cost of production. He does not pretend to hide or misrepresent the facts.

This foreman is not noted for his ability to make things appear better than what they are. He is on the job to work and not to spend time and effort in an attempt to deceive or mislead his employers. His thoughts are given to the improvement of the mine and for this he works hard.

In contrast with this type of official, there is the foreman whose chief characteristic is the regard he has for his own interest even to the neglect of the welfare of the company who employs him. His only thought is how to make things appear well to the company as long as he is with them. He gives less attention to maintaining roads and aircourses in good condition, because these items increase the showing on his cost-sheets. His chief efforts are expended in putting out the coal, which he thinks will please the management best.

The report of conditions in the mine, by this type of foreman, is flowery indeed. He always dwells on how much lower he can make the cost-sheet the next month. He continues in this course of deception as long as he feels it is safe and then begins to look for another place where he can play the same game and get away with it, which he always hopes to accomplish.

Midway between these two types of foremen, there is a third class, best described as plodders. They are not particularly dishonest and, perhaps, do not intend to deceive. But, they are wholly unsuccessful in their management of the mine. In a few words a man of this type is not fitted for the position he holds.

KNOW YOUR MINE FOREMAN

In the foregoing, I have attempted to analyze typical mine foremen as we find them in charge of mines. With larger coal companies, the problem of knowing the exact condition of the mine is not as acute as with smaller operations. Many large companies employ private inspectors, besides having other means of knowing the progress and condition of the work underground through their engineers.

Employment of private inspectors is, of course, out of the question with the small operator, which makes it all the more important that he should select and hold the right man in the position of foreman. It goes without saying that such operators should be more than ever cautious in the selection of the foreman; or be, themselves, thoroughly familiar with the conditions inside of the mine. On that, more than on anything else, depends the ultimate success of the operation.

Mayport, Pa. JAMES THOMPSON.

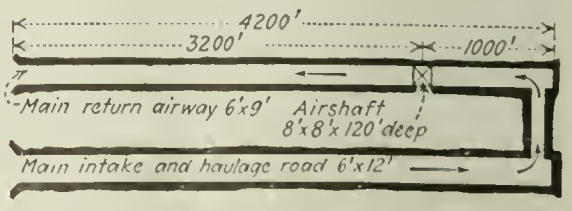
Inquiries Of General Interest

Increasing Ventilation in a Drift Mine

Drift Mine Opened on Hillside—Main Entries Driven Nearly a Mile—Ventilation Becomes Poor—Shaft Sunk One Thousand Feet from Head of Entry

SOME time ago we opened a drift mine on a hillside. The main intake entry and haulage road is driven 12 ft. wide and 6 ft. high. The air-course is 9 ft. wide and 6 ft. high. These entries have now been driven a distance of 4,200 ft. The mine is ventilated by a fan, which produces 40,000 cu.ft. of air per min., at an expenditure of 8 hp.

In order to improve the circulation of air in the mine, it has been proposed



to sink an air shaft at a distance of 1,000 ft. from the face, on the 6x9-ft. air-course. This shaft will be 8x8 ft. in section and 120 ft. deep, measured from the surface to the coal. The question I want to ask is the following: Estimating on an outside temperature of 54 deg. F., and a mine temperature of 60 deg. F., what horsepower will be required to produce a circulation of 60,000 cu.ft. of air per minute in this mine after the change is made?

Pittsburgh, Pa. A. M. ANDERSON.

In replying to this question, we will assume that the two main entries 6x12 ft. and 6x9 ft., in section, respectively, are driven into the hill a distance of 4,200 ft. and practically level. Though not so stated, it is assumed that the fan is located at or near the mouth of the main return air-course and operated on the exhaust system.

We understand that it is proposed to sink an 8x8-ft. shaft, 120 ft. deep, at a point 1,000 ft. from the head of the air-course, as indicated in the accompanying diagram. When this change has been made, it is assumed that the fan will be moved to the top of the air shaft and operated, as before, as an exhaust fan.

The new arrangement will cut out 3,200 ft. of the 6x9-ft. airway and the resistance of the shaft will be added, which is very slight. It is not clear, however, how a circulation of 40,000 cu.ft. per min., can be produced in this

mine by an expenditure of 8 hp. Calculating the power on the air in the usual manner, using the modified Atkinson co-efficent (0.00000002), the horsepower on the air is

$$H = \frac{0.00000002 \times 4{,}200 \times 40{,}000^3}{33{,}000} \left(\frac{36}{72^3} + \frac{30}{54^3}\right) = 46.7\ hp.$$

Then, assuming the combined efficiency of the fan and engine as 60 per cent, the indicated horsepower of the engine driving the fan is 46.7 ÷ 0.60 = say 80 hp., which the correspondent may have intended to state, instead of 8 hp.

In order to ascertain the power required to increase the circulation from 40,000 to 60,000 cu.ft. per min., by sinking the shaft and cutting out 3,200 ft. of the old air-course, as stated, it is necessary to calculate the potential factors of the main intake, 4,200 ft. long; the return air-course, 1,000 ft. long and the shaft 120 ft. deep, as explained under "Tandem Circulations," Mine Gases and Ventilation, Second Edition, p. 214. The summation of these potential factors gives for the corresponding relative mine potentials, before and after the change, $X_1 = 0.9397$; and $X_2 = 1.179$.

Then, since the power on the air varies as the cube of the quantity and inversely as the cube of the potential factor; and taking the original power as 80 hp., the power required after the change is made will be.

$$H_2 = 80\left(\frac{60{,}000}{40{,}000} \times \frac{0.9397}{1.179}\right)^3 = 136.7\ hp.$$

In other words, in order to increase the circulation from 40,000 to 60,000 cu.ft. per min., in the manner proposed, will require, say 140 hp.

Examination Questions Answered

Alabama Mine Foremen's Examination, Birmingham, July 24-27, 1922

(Selected First-Class Questions)

QUESTION—*Give your ideas fully as to how and in what parts of a mine sprinkling and spraying should be done and state what are the comparative advantages of each plan.*

ANSWER—Much will depend on the character of the mine, method of working and means employed for mining the coal. In a large mine, particularly when mining a soft, friable coal and using machines for that purpose, an effective spraying system should be installed throughout the mine. This is more important where the coal is highly inflammable and blasting is performed. All roads, travelingways and working places should be thoroughly sprinkled, or sprayed by installing a pipe system extending throughout the mine. Under less dangerous conditions, water cars or lines of hose can be used in place of installing a pipe line. The use of water cars and hose has the advantage of requiring but a small outlay, while a pipe system for spraying is more efficient and water is then always available where it is needed.

QUESTION—*What gases are found in bituminous coal mines? Give the symbol, specific gravity, composition and properties of each gas, its effect on combustion and state where you would expect to find it.*

ANSWER—The principal mine gases are methane (CH_4), specific gravity 0.559; carbon dioxide (CO_2), specific gravity 1.529; carbon monoxide (CO), specific gravity 0.967; hydrogen sulphide (H_2S), specific gravity 1.1912. Besides these, there are the heavy hydrocarbon gases, olefiant gas (C_2H_4), specific gravity 0.978; ethane (C_2H_6), specific gravity 1.0366. The composition of each gas is made known by its symbol.

Methane, carbon monoxide, hydrogen sulphide and the heavy hydrocarbon gases, associated with methane are all combustible and form explosive mixtures with air. Carbon dioxide is an extinctive gas, half again as heavy as air, at the same temperature and pressure. Both carbon monoxide and hydrogen sulphide are extremely poisonous when breathed. Carbon dioxide, though not a poisonous gas produces a strong toxic effect on the system, causing headache, nausea and finally death.

In mining practice, these gases are found mostly where they are generated, the hydrocarbon gases issuing from the pores of the coal and from the strata adjoining; carbon monoxide being generated wherever slow combustion is taking place in abandoned workings, or produced by mine fires or the explosion of powder or gas; and hydrogen sulphide resulting from the disintegration of pyrites in damp places in the mine. The gases lighter than air tend to accumulate at the roof and in other places, while those heavier than air, chiefly carbon dioxide, are to be found accumulated in dip workings and on the floor or other low places in the mine.

QUESTION—*What dangers may arise from the use of electricity in mines? Give your recommendations for avoiding each.*

ANSWER—Mines equipped electrically present the danger of possible contact of men and animals with live wires; possible ignition of gas by the sparking of wires, blowing out of fuses and breaking of incandescent lamps. The first danger mentioned should be avoided by employees being carefully warned by the instructions given them and the notices posted where danger exists; also by properly safeguarding all live wires at points where men and animals must pass under them or near them. The danger of fire, by reason of electrical installations, can only be avoided by all such installations being made by a competent engineer and electrician who understands mining conditions and has every regard for the safety of the men employed in the mine and the security of the property.

QUESTION—*What general conditions would determine the size of pillars and what points should be considered in the removal of pillars?*

ANSWER—In general, the size of pillars in mines is determined by the depth of cover, character of the roof, floor and coal, thickness and inclination of the seam, method of working employed, presence of gas or water in the strata and, lastly, any restrictions relating to damage on the surface due to the extraction of the coal.

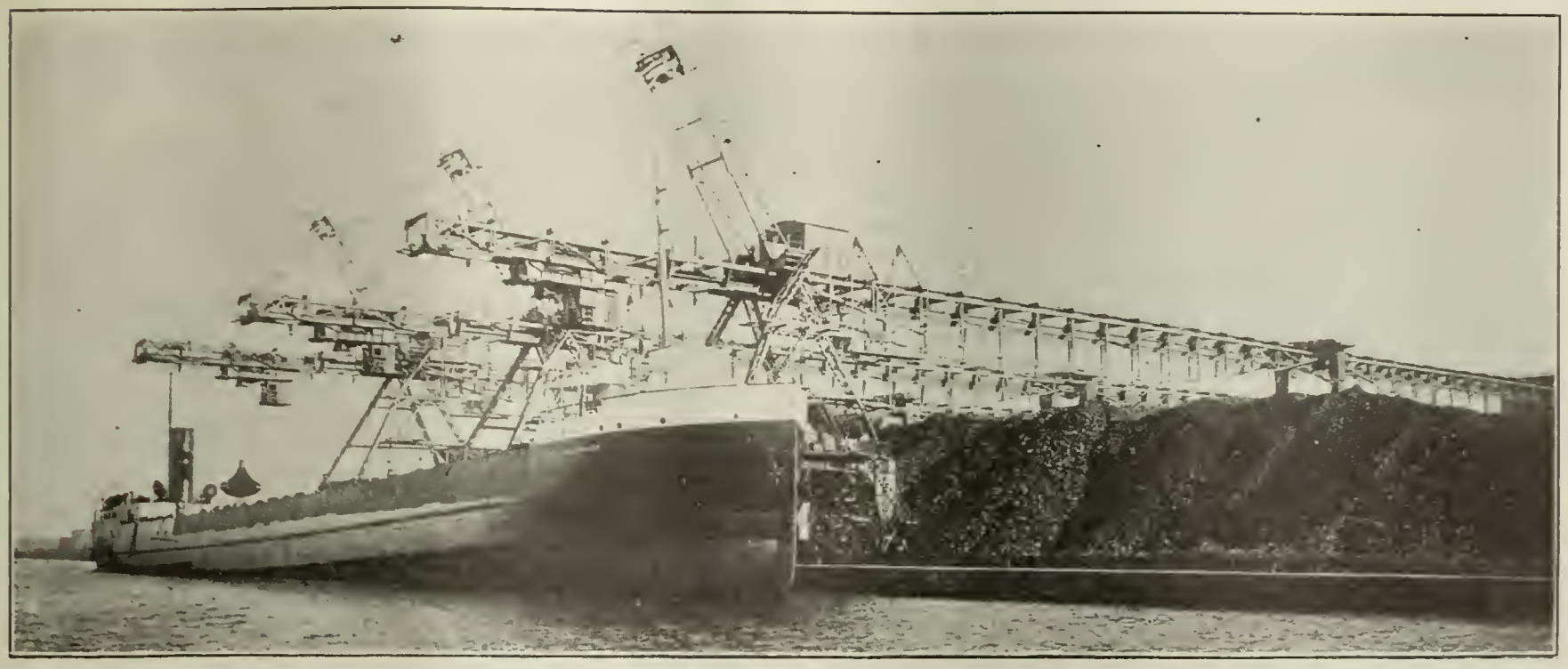
Before the robbing of pillars is commenced, its effect on the future development of the mine must be considered; also, what effect the drawing of pillars will have on adjoining workings and the inflow of water or gas from the overlying strata or from the surface, and what damage, if any, will result on the surface.

QUESTION—*How should the ventilation of a mine be arranged to reduce friction and gas explosion to a minimum?*

ANSWER—A large mine should be divided into separate ventilation districts. Each district should have its own separate circulation, taken from the main intake airway and discharged into the main return. In each district the air current should be made to sweep the working faces in such manner as to keep them free from any accumulation of gas. Splitting of the air current in this manner will reduce the friction in the mine to a minimum and afford the least danger of an explosion of gas or dust.

QUESTION—*What method would you recommend for timbering working places, keeping in mind the safety of the workmen and the recovery of the greatest amount of coal?*

ANSWER—A method of timbering should be employed that is best suited to the conditions at the working face. Where these conditions are more or less uniform, it is well to adopt a systematic method of timbering, the posts being stood in rows parallel to the face and at specified distances apart, the posts in each successive row being staggered. All timbering must be promptly done in the manner described and violations of this rule should be suitably punished.





Million-Ton Duluth Dock Tells Northwest's Coal Story

A "before and after" view of the Pittsburgh Coal Co.'s dock at Duluth, showing the amount of coal carried at the dock in normal times and the long, bare expanse of dock at present. The few piles of coal are for bunker purposes. Some idea of the desperate condition of the Northwest at the end of the coal strike may be gathered from the pictures.



Empty Barges at a Big Fuel Terminal in New York Harbor

Fleet of coal barges lying empty at the Susquehanna R.R. coal pier at Undercliff, N. J., opposite New York City.

Pittsburgh Coal Co. Signs Cleveland Pact, Bringing Peace to Pittsburgh Field

With the signing of the Cleveland conference agreement, Aug. 30, by officials of the Pittsburgh Coal Co. peace again reigns in the Pittsburgh district. The reconciliation was effected suddenly, not as in other sections of the bituminous fields where indications of the willingness of the operators to meet with the miners made apparent a lost fight.

Late on Tuesday, Aug. 29, the Pittsburgh Coal Producers' Association, acting for operators' other than the Pittsburgh Coal Co., signed an agreement with the union to resume operations practically under the Cleveland plan. It was the following day that Pittsburgh Coal Co. signed up independently.

The Cleveland agreement as accepted was slightly modified, omitting "approves and" from that section of the agreement, which reads: "the signer of this supplemental agreement approves and accepts the policy adopted by the joint conference of miners and operators held in Cleveland Aug. 15, 1922."

One of the members of the operators' committee had this to say regarding the modification: "We signed because we were forced to, and those who know us would question our veracity if we appended our names to an agreement approving the articles of this one."

The supplemental agreement was signed in the offices of the Pittsburgh Coal Co. by John A. Donaldson, vice-president, and J. H. Armstrong, general manager of the Pittsburgh Coal Co., and P. T. Fagan, acting president, and William Hargest, secretary-treasurer, of District 5, United Mine Workers.

Governor Sproul announced Aug. 29 that approximately 350 of the 1,050 National Guardsmen, on duty in the bituminous coal region in the southwestern part of Pennsylvania since July 21, would be called back to their homes Friday, Sept. 1. The units are those of the 104th Cavalry and the troops are B, stationed at Woodvale; D, Burgettstown; E, Heilwood; F, Clarksville, and a machine gun company at Jenners. It was planned to reduce the headquarters outfit of the field and also the service troops of the medical detachment.

Livingstone New President of District 26; Osborne Conciliation Board Reports

Robert Baxter, for the past three years president of District 26 of the United Mine Workers, comprising the provinces of New Brunswick, Nova Scotia and Prince Edward Island, has been buried under an avalanche of votes in his fight for re-election. Dan Livingstone, of Westville, whose home, by the way, is not in the Cape Breton district, defeated Baxter easily, the majority being very large. The elections were held by mail, Baxter losing at every poll. Silby Barrett, international board member, also was defeated, and this means the end of the opposition among U. M. W. officials of the district to the tactics of J. B. McLachlan, district secretary. McLachlan was re-elected by a wide margin over W. P. Delaney, who has been vice president of the district U. M. U., and in sympathy with the policies of President Baxter and Barrett. The new president, Livingstone, was formerly an international board member, being defeated last year for that office by Mr. Barrett.

The Osborne conciliation board, appointed to adjust the differences between the miners employed by the Inverness Railway & Coal Co. and that company, has made a report recommending that wages for section foremen be $3.70 per day; all other section employees to be admitted as union men and paid as such; bank headsmen 5.5c. per ton for coal and 4.5c. per ton for stone; weighman, a minimum of $100 per month; hoist engineers of category 1, $3.90 per day, and hoist engineers of category 2, $3.70 per day.

Late on Aug. 25 the British Empire Steel Corporation and the union came to an understanding, after four days' discussion. The matter was then submitted to the men in a referendum and the outcome was votes of nearly three to one for acceptance. In fact, Phalen local of Glace Bay, which was the most active in the strike, accepted the agreement by a large majority. But the Springhill local defeated the agreement by a large majority, and asked for the recall of the recently elected district officers.

The men will return to the mines in the course of ten days. No date has been set but the men will surely not return until the troops are withdrawn from the mining districts. This will take several days and perhaps a week, as the troops came prepared for a lengthy stay in the mine fields.

Minimum datal rates are to be increased to $3.25 per day with a minimum increase of 40c. daily and adjustments of higher rates according to a schedule attached to the agreement. Contract rates will be increased 12½ per cent. One-half cent will be added to machine rates except at Sidney mines, where the increase will be ¾c. The contract will terminate not sooner than Jan. 15, 1924.

Independent Connellsville Operators Vote to Stick to Open Shop

Independent coal operators of the Connellsville coke region will never recognize the union but will stand firm on the open-shop policy, declared W. W. Parshall, vice-president of the Fayette County Coal Operators' Association, in a statement issued at Uniontown, Pa., Aug. 31. He denied reports that certain of the independent owners would sign union agreements.

Representatives of fifty companies, at a meeting held Aug. 29, voted unanimously against recognizing the union. One of the features of the meeting was a definite and emphatic announcement that none of the Hillman mines in the Connellsville region would sign the union scale. This was the attitude, also, of the other large operations in the region.

The increase in output from non-union mines in the Connellsville region continues at about the same rate as in recent weeks. During the past week three additional large operations, the Republic plant of the Republic Iron & Steel Co., the Revere plant of W. J. Rainey, Inc., and the Brier Hill Steel Co., resumed work with small forces of strikers who have returned to work with men they have brought in. Throughout the various working plants in the region over 100 strikers have returned to work since the posting of the advanced wage scale.

Will Not Fix Coal Prices in Ohio

The Ohio Fuel Commisson, of which George M. Poor is chairman, after a long session Aug. 31, announced that it would submit its report to Governor Harry L. Davis, who appointed it several weeks ago. The commission has been holding a series of meetings on the question of fixing a fair price for coal in the various Ohio fields, but has not arrived at any decision. It is unofficially announced, however, that the commission will permit the law of supply and demand to prevail, following the example of the Federal Fuel Commission. A number of operators were heard on the subject and it was believed best to permit the ordinary trade developments in the belief that prices will soon decline to what might be considered a reasonable level.

In a recent statement Governor Davis announced that a fair coal price for Ohio will be established even if it was necessary to call a special session of the Ohio General Assembly to enact the necessary legislation. Attorney General John C. Price has been called upon for an official opinion of the power to enact laws for that purpose and he is now looking into the Constitution. Governor Davis wanted to know what, if any, powers the state has under the Constitution to establish or regulate prices of necessites of life under what constitutes a public emergency; what existing legslation there is dealing with such a situation; what new legislation would be possible under the Constitution to make effective such inherent authority as the state has.

Some attorneys have unearthed the following provision in the Constitution: "Laws may be passed to provide for the regulation of methods of mining, weighing, measuring and marketing coal, oil, gas and all other minerals."

Coolness of the Industry Toward Coal Legislation Seen As Shortsighted Policy on Capitol Hill

By Paul Wooton
Washington Correspondent of *Coal Age*

While the coal operators have maneuvered themselves into a position where they must support, outwardly at least, the fact-finding legislation which has passed the House and is now before the Senate, it is quite evident that their support is not wholehearted. Their opposition to the price-control and distribution bill is particularly active. In this they are joined by the American Wholesale Coal Association.

There is a feeling on Capitol Hill and among some of the executive officers of the administration that the course of the coal operators shows a lack of vision. They are moving toward a greater struggle in 1923 than they had in 1922. If prices are high this winter, they will enter the 1923 strike bereft of support from the public and in fact will have to contend with an embittered public opinion. For that reason some argue that they should recognize that this is an emergency and tender their honest advice as to the plan which distribution should follow to get the best results. In some quarters the attitude of the operators and the wholesalers is referred to as typical of their inability to unite on anything other than a policy of opposition. This policy in the past has alienated many of their friends. Senator Frelinghuysen is cited as an example. If any member of the Senate is sympathetic to business it is he, yet his opinion of the coal operators, when expressed privately, would infringe on the postal regulations if it were printed. In the same way this policy has antagonized other members of the Senate and of the House of Representatives, which, combined with a hostile public opinion certain to be engendered by high prices, means that the operators will enter the 1923 struggle under handicaps.

The position of the operators is that the administration is making the same blunders as did the Wilson administration in 1917 when attention is centered on prices rather than on transportation. The drastic Lever law, it is pointed out, resulted in only a few score of indictments for profiteering. The experience with that legislation, the operators contend, should be sufficient proof that prices cannot be regulated satisfactorily by law. It matters little if the price of coal be $1 a ton if coal cannot be obtained. The situation was even worse in 1921, the operators point out, because there is much less coal above ground now than was the case then. It can be said that the direct opposition to the control bill is not limited to operators and wholesalers of coal. A large number of consumers, particularly the larger ones, are objecting to the delegation of authority to the Interstate Commerce Commission which will allow that body to cut them off from their supply of coal. There also is opposition to the measure from Senators who do not believe it good policy to vest such power in the federal government.

Evidently the tactics of the opposition to the pending coal legislation will be to secure delay. Every day that final action can be deferred will diminish the pressure behind the legislation. The rate at which coal will be distributed until the surplus of cars is exhausted will do much to allay public apprehension. The public will not realize that the spurt of production made possible by the surplus of cars cannot be maintained. As the legislation progresses there probably will be a demand on the part of the Pennsylvania Senators for separate machinery to handle anthracite. This will tend to complicate the situation and make it easier to sidetrack the legislation.

The American Wholesale Coal Association also voices determined objection to Senator Reed's (Missouri) amendment to the coal commission bill wherein the wholesalers of coal would be required on the 1st and 15th of each month to report to the Secretary of Commerce the amount of coal purchased and the prices paid for the various grades; the amount of coal sold to retailers and the prices received for the various grades, and the amount of coal sold directly to consumers and the price received for each grade. They also are required to show whether the coal was spot or contract and must cite the date of the contract.

The transportation situation is much more encouraging, although there is doubt, as this is written, as to the effect of the Attorney General's injunction proceeding. Evidently the railroad brotherhoods are much displeased with the shopmen because they did not settle when they had such a favorable opportunity. As a result the bond of sympathy between the shopmen and the brotherhoods has been weakened materially. It also is known that the brotherhoods are entirely out of sympathy with the resort to sabotage.

Official reports by the Interstate Commerce Commission covering the five serious wrecks which have taken place on the railroads during the strike show that four were due to the carelessness of train crews and one was caused by wreckers. In no one of the cases did defective equipment constitute a contributing cause.

Western Kentucky Signs Up with Union on Cleveland Basis Until April 1923

After meeting for three days an agreement was signed up by the Western Kentucky Coal Operators' Association and District 23, United Mine Workers of America, in which the Cleveland agreement contract was agreed upon. The operators objected to the Cleveland conference in October, feeling that as they had never been included before it was an effort to bring the field in to strengthen weakness caused by defection elsewhere. They finally capitulated, however. The new agreement runs until April, 1923.

There was no strike in western Kentucky, as the old agreement carried a no-strike clause, under which the workers continued on the job. It is reported that the new agreement calls for $6.79 for inside workers for an eight-hour day and 74 to 76c. a ton for miners according to type of machine used. Hand-pick miners are reported to draw $1.05 a ton. Mines affected are in Muhlenburg, Ohio, Henderson and Christian counties. Hopkins and Webster counties are principally under another association, known as the Operators' Association, which has a contract which runs until next April.

New Order Releases 34,000 Open-Top Cars

Thirty-four thousand additional open-top railroad cars have been released from preferential loading. This was accomplished by amending the existing priority order so as to exclude open-top cars with sides 42 in. or less in height. Under the original priority order open-top cars with sides less than 36 in. in height were exempted. That order left 62,000 open-top cars for loading with building and road materials. In a letter to General R. C. Marshall, director of the Associated General Contractors, Commissioner Aitchison stated that this action should not be taken as the final word on the subject. Due to the present demand for coal, it is not felt that more cars could be released just at this time, but it was stated that the priority will be relaxed still further just as soon as the situation warrants.

Fifteen Killed in British Columbia Mine

An explosion in No. 4 mine of the Canadian Collieries (D) Co., at Cumberland, B. C., Aug. 30, caused the deaths of fifteen miners, three white men and the remainder orientals. All the bodies have been recovered. There also were sixteen injured. The cause of ignition is unknown.

Pocahontas Operators Revive 1920 Scale; Wage Increase Was Unsolicited

An announcement has been made by the Pocahontas Operators Association that effective Aug. 15 wages have been advanced to the level of the 1920 scale, such action having been taken on Aug. 28, the Pocahontas operators falling in line with other operators in the non-union fields of southern West Virginia. With a return to the 1920 wage scale there will be a heavy increase for all classes of employees in the Pocahontas region, the advance amounting to more than any ever before granted at any one time. There had been two reductions in wages since 1920 but the effect of the increase just granted will be to offset such reductions and to put the miners back on war wages.

The increase made by Pocahontas operators came without the knowledge of miners and was a voluntary act upon the part of the operators, employees not having solicited the increase. It was deemed necessary by the Pocahontas association, however, to restore the 1920 wage scale because of the fact that such a scale was being paid in the Winding Gulf and New River districts and there was a possibility that inroads might be made on working forces by virtue of higher wages paid elsewhere unless the rate was increased. Mines in the Tug River, Kenova-Thacker and that part of the southwest Virginia district tapped by the Norfolk & Western advanced wages as soon as such action was taken further north in the smokeless area. With the advance in the Pocahontas region all southern West Virginia is now on a war-time basis so far as wages are concerned. Higher wages in the mines are increasing the mine forces available but are depleting the labor supply in other industries.

DAY WAGE SCALES OF SMOKELESS DISTRICTS OF WEST VIRGINIA

	Winding Gulf Aug. 16, 1922	New River Aug. 16, 1922	Tug River Sept. 1, 1922	Pocahontas Aug. 16, 1922
Inside:				
Machine runners	$7.58	$7.18	$7.20	$7.20
Machine helpers	7.13		6 60	6 60
Motor runners	7.58	7 18	7 12	6 60
Motor brakemen	6.92	6.77	6 72	6.00
Trip riders	6.77	6 77		
Drivers—1 mule	6.65	6.65	6.40	6.00
Drivers—2 mules	6.77	6.77	6 72	6 60
Bratticemen	7 05	7.05	7 12	6 60
Bratticemen helpers	6.60	6.60	5 60	5 40
Track layers	7 37	7.05	7 12	6 60
Track helpers	6.65	6.65	5 60	5 40
Timber men	7.05	7.05	7.12	6.60
Timber helpers	6.60	6.60	5.60	5.40
Slate shooters	6.89	6.89	7.12	
Slate men	6.65	6.65	5.60	6 60
Trappers-men	5.00		5.00	5 40
Trappers-boys	4.00	4 00	4.00	
Pumpmen		6.70	5.60	5 60
Skilled wiremen	7.58	7 18		
Wiremen helpers	6.60	6.60		
Inside greasers—men	6.60	6.60		
Inside greasers—boys	4.00	4 00		
Inside car couplers—men	6 60	6.60		
Inside car couplers—boys	4.00	4.00		
All other inside day labor	6.60	6 60	5 60	5.40
Outside:				
Drum runners	7.45	7 10	6 00	
Car dumpers	6 65	6 65	6 00	6.00
Top tipple	6.50	6.58	6 00	4 80
Picking table	5.00	6.50	4 80	4 80
R. R. car trimmers	5 00	6 50	4 80	4 80
R. R. cleaner	5.00	6.50	4 80	4 80
R. R. dropper	6.50	6 50	5 20	5 20
Blacksmith	8.10	7.50	7 20	7 20
Blacksmith helpers	6.80	6 80	4 80	6 00
Car repairers	7.39	7 06	6 00	6 60
Greasers—men	6.00	6 50		
Greasers—bys	3.85	3 85		
Couplers—men	6.00	6 50		
Couplers—boys	3.85	3 85		
Electricians	8.10			
Carpenter foremen	7 50			
Carpenters	6.50		6.00	
Floating gang	5.00		4 40	4 80

Indiana Trusts Coal Men but Commission Will Deny Cars to Profiteers

Failing to obtain an agreement with Indiana coal operators to fix a price of not more than $3.50 a ton at the mines, the Indiana state emergency coal committee has turned over to the operators the responsibility for the establishment of prices that will be accepted by the public as fair. The decision was reached at a conference in the offices of the Indiana Public Service Commission between the state coal committee and the operators' committee. John W. McCardle, chairman of the utilities commission; Edward Blessing and David Matthews, of the commission represented the state, and William M. Zeller, Jr., and J. T. Moorman the operators.

The operators' committee pointed out at the conference that the adequacy of transportation facilities was the big factor in the price of coal at the present time. Mr. Moorman said he believed the majority of the operators would give the public a square deal and that they would co-operate with the state coal committee in preventing any possible small minority from attempting extortionate prices.

Mr. McCardle said that inasmuch as the state coal committee had no authority to enforce a price on coal it would leave the determination of prices to the judgment of the operators, but that if cases of profiteering were reported to the committee it would exercise its authority to distribute cars only to operators who gave evidence of trying to do the right thing. Mr. Moorman reported the operators were not receiving many orders for coal. Mr. McCardle recommended that all consumers who were expecting to receive coal from Washington cancel their orders and place them with Indiana coal men.

Amend Service Order 23 to Limit Class 1 Priorities to Extraordinary Cases

Official action of far-reaching importance to the country's public utilities was taken on Aug. 29, when the Interstate Commerce Commission issued amendment No. 4 to Service Order No. 23, which restricts Class 1 priorities on coal to such extraordinary cases as may be designated from time to time by the Commission. Coal intended for emergency uses generally is included in Class 2 priority. Owing to the limited time during which lake transportation will be available, shipments of coal from the Northwest to the lower lake points will be made under Class 1 priorities.

The issuance of this amendment brings the situation back to that which existed when J. W. Lieb issued his first circular to the public utilities. It is expected to correct the evils arising under federal fuel distribution, which was cutting off a large number of public utilities from their regular fuel supply, leaving them in an emergency class and compelling them to buy coal at prices greatly in excess of their contracts.

Reports reaching Washington indicate that the public utilities are getting their share of the increased volume of coal being produced, but owing to the fact that reserves have been so generally used up, the situation of a large number of public utilities will continue to be serious for some weeks to come, particularly since they are not allowed to build up stocks and because of the uncertainty of transportation.

Priorities Extended to Cover West, but in Modified and Limited Form

The Interstate Commerce Commission on Aug. 31 issued its Service Order 24, which directs all common carriers by railroad west of the Mississippi River to give priority and preference to the movement of food for human consumption, feed for live stock, live stock, perishable products and fuel, and to the return of empty cars intended to be used for the transportation of those commodities.

Utah Troubles About Over; to Recall Troops

Governor Charles R. Mabey of Utah has under consideration the advisability of recalling the National Guard from the Carbon County coal fields, where they have been on duty for the past few months, following clashes between strikers and the civil authorities. The situation has been quiet for some weeks and the public is getting a little impatient on account of the money needed to maintain the Guard on duty. It is expected that the soldiers will have been sent back to their several communities before these lines appear in print.

Winslow Price-Control Bill Passes House; Senate Debates Cummins Substitute

With Democratic Senators voicing disapproval on the grounds that it is unconstitutional and useless, joined at times by Republican Senators in criticism of the measure, the Cummins administration bill designed to bring about equitable distribution of coal and to prevent exorbitant prices was the subject of free debate last week in the Senate which ranged broadly over the subject of coal, the railroad strike and strikes generally.

The general impression is that the Cummins bill, which has been substituted in the Senate for the Winslow bill on the same subject, which was passed by the House, will pass the Senate after extended debate and possibly with clarifying amendments to meet the objections of some senators that it is too broad in some clauses and too weak in others.

Senator Cummins himself declared that in his opinion the measure passed by the House is unconstitutional in that certain of its phrases may be interpreted as an effort to regulate intrastate commerce, and he therefore effected substitution of his bill for the House bill in the upper chamber.

Meanwhile the Borah bill to create a fact-finding commission to probe into conditions in the coal industry was laid aside at the request of its author when called up Friday, Sept. 1, Senator Borah explaining that the anthracite strike appeared on the eve of settlement in such manner that amendments to his bill might be necessary.

In explaining his bill Senator Cummins said that the greatest question is one of distribution, that the Interstate Commerce Commission needs additional authority to meet the stuation, and secondarily that the bill would operate to check runaway prices. He admitted that retailers could not be controlled entirely by the measure, but asserted that future deliveries could be denied retail coal dealers who might sell at exorbitant prices. He urged speedy action.

Senator Sutherland, of West Virginia, declared that while possibly some legislation should be enacted, in his opinion there was more danger in too hasty action than in too deliberate action.

Senator Frelinghuysen, of New Jersey, called attention to the bills he introduced two years ago and declared that Congress paid little heed, while coal operators and dealers vigorously opposed the measures. Although opposed to nationalization of the mines and government ownership, the New Jersey Senator said he would support the administration coal bills because of the emergency.

Senator Dial, of South Carolina, declared himself in opposition to the distribution bill. He declared that under the voluntary Hoover agreement prices had been increased to those who had contracts for coal. The bill would do harm, rather than good, he asserted.

Senator Underwood of Alabama, the democratic leader, declared the Cummins bill does not give any authority regarding priority of shipments in an emergency to the Interstate Commerce Commission that that body does not already possess under the Transportation Act, to which statement Senator Cummins agreed. The bill merely attempts to regulate prices and will fail in that purpose, declared the Alabama Senator.

Senator Reed, of Missouri, attacked the bill as unconstitutional and inquired at length how it was expected to get more cars to transport coal through mere legislation, greater transportation being the essential need.

Under the stimulant of a letter of approval from President Harding, the Winslow administration bill to regulate distribution of coal and, indirectly, control prices at mines in interstate shipments was passed by the House, Thursday, Aug. 31, 214 to 61.

Only one important amendment was made, that offered by Representative Sanders, of Indiana, providing that the measure shall expire Jan. 1, 1924, which was adopted, 122 to 77. As favorably reported by the Committee on Interstate Commerce, the bill would have been a permanent statute, its operation being suspended by Presidential proclamation at the end of the present emergency but subject to revival by similar proclamation in the event of a future emergency. Otherwise, only perfecting amendments sponsored by committee members were written into the bill, many individual amendments being voted down during the three days of debate.

Attacks against the measure were made by both republicans and democrats of the House, on the grounds that it is unconstitutional, bad policy, will have the effect of retarding coal production, and that while it may regulate the price at the mines it cannot affect the retail price of coal. Opponents of the bill predicted that the precedent thus established will lead to demands to control the price and distribution of wheat, cotton and other commodities when shortages in these arise in the future.

Advocates of the bill defended its constitutionality and declared the necessity exists because of the shortage of coal and impaired transportation facilities.

Chairman Winslow, of the Interstate Commerce Committee, read to the House, Wednesday Aug. 30, a letter from President Harding, under date of Aug. 23, transmitting copies of two bills drafted to meet the coal emergency. One of these was a measure to create a federal agency to buy, sell and distribute coal. The other was the so-called Winslow bill.

The President said that the problem "is a confessedly difficult one. The limitation of constitutional authority on the one hand and the very great demand for government activity on the other combine to make it a problem well worthy of the earnest and early attention of the Congress. It has been a long and tedious route to the resumption of coal production, and the shortage of stocks and the general anxiety has opened a field for profiteering activities which ought to be discouraged in every way possible within the limits of constitutional law."

With the President's letter was one directed to him by Secretary of Commerce Hoover, inclosing the drafts of the two bills, which the Secretary said had been drawn under the direction of the presidential fuel committee, comprising representatives of the departments of Commerce, Interior and Justice and the Interstate Commerce Commission. The committee favored, the Secretary's letter said, the priority order measure as "being less cumbersome, requiring less extension in the federal organization and being more expeditious of application than the alternate plan through actual government possession of coal."

"The committee is in agreement," continued Secretary Hoover's letter, "that the exertion of such powers in times of peace is highly distasteful, and can only be justified as a measure necessary to provide against the effect of a famine in so necessary a commodity.

"We are deeply impressed with the fact that, due to the almost total exhaustion of coal stocks and the inevitable and growing shortage in transportation, the difficulties of the country will be very great even with the resumption of coal production, and unless there is legislation enacted that will curb profiteering and will give control to distribution, there will be great suffering and difficulties during the period of readjustment."

Reading of these letters quieted the criticisms that the President's desires were not known to Congress and it was considered probable that the bill would be driven through the House within an hour, but the fact developed that a quorum was not present and a recess until Thursday was taken.

As passed by the House, the bill extends the authority of the Interstate Commerce Commission to issue orders of priority or embargo in the distribution of coal in interstate commerce, and creates a Federal Fuel Distribution with a Distributor to be named by the President, who may appoint assistants and whose duty is shall be to investigate supplies

and demands, normal prices and current prices of coal and other fuel, and to make recommendations to the Interstate Commerce Commission. It is proposed to deny a car supply to those who charge prices above a "just and reasonable price." Penalties are provided for diverting coal from or by the consignee. An appropriation of $250,000 is carried, $50,000 of this to be available to pay the expenses of the presidential fuel committee in handling the situation through voluntary agreements.

The principal fight against the bill was directed at its price-control features and against the proposal to make it a permanent law. Repeated efforts to amend the former sections were defeated. In the latter attack, the entire section was stricken out in committee of the whole, 85 to 65, on motion of Representative Rayburn, of Texas, supported by Chairman Madden, of the appropriations committee; Representative Graham, of Pennsylvania, and other leaders on both sides, but Chairman Winslow, of the Interstate Commerce Committee, demanded a roll call on this section when the bill was in the House proper and it was restored by a vote of 148 to 134. The amendment of Representative Sanders limiting life of the bill to Jan. 1, 1924, subsequently was adopted over the protests of Chairman Winslow.

Efforts of Representatives Sanders, of Indiana, and Denison, of Illinois, to amend the bill to restrict the appointment and authority of the proposed fuel distributor failed.

Grand Jury in Herrin Case Proves It Means Business; Union Calls It Labor War; State Strike Threat

A miners' union official has been jailed. That is the first and most important development in the grand jury investigation now going on at Marion, Ill., of the Herrin massacre of June 22. The second most important development is a concentrated propaganda campaign launched by President Frank Farrington, of the Illinois miners, intended to show that union labor as such is being warred upon in the prosecution of the case and that union labor proposes to defend itself with its full power against persecution by capital. Developing out of this above-board propaganda, a threat of a general mine strike in Illinois was surreptitiously made throughout southern Illinois.

The one man whom the law seized Wednesday, Aug. 30, the third day of the grand jury sitting, was Otis Clark, head of a union local and employed as a check weighman in a shaft mine. His arrest was sudden and the effect of it was instant upon the forces of organized labor assembled at Marion frankly to defend whatever union men might be involved. The refusal of Attorney General Edward J. Brundage and State's Attorney Delos Duty to permit the release of Clark under bond and the declaration of Brundage that every man in southern Illinois under suspicion was watched so closely that it was too late for flight brought down an angry storm of protest which vented itself in a flood of letters and warnings of other sorts to the officers of the law pushing the investigation.

At the end of the first week of the grand jury's sessions public sentiment in the solid-union region around Marion had grown so heated that almost any sort of outbreak could be expected. The campaign to make the case appear in the light of persecution of labor by moneyed interests began to have such effect that even the "Greater Marion Association" of business men in Williamson County's capital broke loose and notified the Illinois Chamber of Commerce not to stop in Marion this month when the association makes its automobile "good will" tour. The chamber has been active in raising funds to defray part of the expense of the investigation in lieu of state funds for the purpose. The miners gave vent to their feelings in a score of ways, including interference, on Friday and Saturday, with the movement of coal trains out of the southern Illinois fields.

The federal government has agents carefully watching the progress of the case. They may even have taken a much more active part in the collection of evidence than has generally been supposed. The general feeling that "nothing will come of it" has about passed away among the people of the southern end of the state. Even the cloak of careful secrecy with which the jury has surrounded its proceedings thus far has failed to cover up the fact that a mass of incriminating evidence has been accumulated in spite of reluctance of witnesses afraid for their lives.

Grand jury action began on Monday morning Aug. 28 with the impanelling of a jury of 23 men—all miners except one lumber and furniture dealer, one part-time farmer and miner and a foreman who is a farmer now but formerly was a school principal. In his address to the jurors, every one of whom he knows personally, the district judge, DeWitt Talmadge Hartwell, got down from the bench, put his foot on the rail of the jury box and leaned across for a friendly but intense talk on the case that was to follow. The judge told the 23 that they had before them a job for real men, but that he was confident every one of them belonged in that category and that they would reach their findings absolutely without fear or favor. He said it was regrettable that Williamson County stood condemned already in the mind of the nation for lawlessness and a lack of will to enforce the law against criminality. He said he differed from many good friends of his in official position who seemed to hold that idea and that "no considerable percentage of the people of this county can be found who will endorse crime."

Late in the afternoon of Aug. 30, after a long procession of witnesses had gone in and come out of the jury room, the first definite action took place. The quick and quiet indictment and arrest of Otis Clark took place after 4 p.m., when it was noised abroad that Clark had sold a plow for $1.50 and it was feared he was unloading his possessions with a view to disappearing. "They have their first prisoner" was the only comment Frank Farrington would make.

Northern West Virginia Mines Ratify Union Pact; Raise on Merit System in Logan

Many operators in northern West Virginia have entered into an agreement with the United Mine Workers and others are falling into line in both northern West Virginia and the Kanawha field. There are still some that have declined. On Aug. 26 approximately 150 companies operating in subdistrict 4 of District 17 and some in subdistrict 3 had signed the union agreement. This was not true as to the Bethlehem Mining Corporation or any of the companies on the Charleston Division of the Baltimore & Ohio.

In the Kanawha field there has been no change in the alignment, coal companies south of the Kanawha as a rule adhering to the policy of not signing a union contract. In all it is estimated that approximately 300 companies in northern and southern West Virginia have acquiesced in the Cleveland agreement and signed union contracts.

The increase in wages granted by coal companies in West Virginia, whether operating on the open- or closed-shop plan, has disturbed conditions to a marked extent inasmuch as it is causing wholesale desertions from other industries. Road building is being affected to a marked extent, as many contractors were paying only 30c. an hour as against from $6.60 to $7.26 a day paid in the mines. A return to war wages in all industries is foreshadowed owing to the increase granted the miners.

Decision was reached by the Logan Coal Operators' Association late in August to increase wages. The operators made no announcement as to the rate of increase but did make a statement saying that the increases would be granted on the "merit system." It was pointed out that the increase was granted voluntarily by the operators and that it had become possible to make the increase owing to the higher price prevailing on coal. It is stated by Logan operators that the increase applying in Logan territory is equal to if not greater than that granted in other fields where the 1920 wage scale is now in force.

Lewis Compromises on Contract to Sept. 1, 1923 Anthracite Production Expected Next Week

Long deferred, the solution of this year's strike in the hard-coal regions has been found in a compromise, in which the union gets about everything it demanded and the operators are called on to sign up to the miners' terms until Sept. 1, next—that is for about one year—instead of until April 1, 1924. The miners hail this as a victory, and the operators say nothing, save that they will ge glad to get the mines going again.

Negotiations between the miners and operators were broken off in Philadelphia on Tuesday, Aug. 22, to be resumed in Washington on the 29th, following efforts of Secretary Davis and Senators Pepper and Reed, of Pennsylvania, to find some ground for a new conference. On the last day of the month the operators announced that they were ready and willing to start the mines on the miners' terms if the public would give them a "mandate" to that effect, for it is the public that would have to pay the high prices that such a course would entail.

They got the mandate from the public, both in the form of telegrams from over the country and a message from President Harding. Accordingly on Saturday night, Sept. 2, they announced that a tentative agreement had been reached, tentative only in that it must be ratified by the miners' convention, called for this week in the region. The aggreement provides for continuation of the contract that expired last March until Sept. 1, 1923. It is planned to have the mines in operation by Monday, Sept. 11.

The statement of the operators, given to the press on Aug. 31, asking the public to pass on the question of whether the operators should grant the demands of the miners, follows:

"We are faced with a demand for continuation of war wages beyond April 1, 1923. In order to bring about an immediate resumption of mining we have reluctantly agreed to continue the old wages until next April, but we have not felt that we were justified in going further than that.

"The bituminous miners have gone back to work under the old scale until next April. The anthracite producers know of no reason why their men should not do the same thing, and want to be entirely satisfied that conditions warrant a longer period of the old wages for anthracite miners.

"To continue the war wages beyond next April inevitably carries wth it a continuation of present prices. The public has protested against buying at these prices longer than is absolutely necessary. The adjournment taken today was to enable the operators to canvass the situation and to obtain, if possible, the views of others as to conditions which would be fair to all parties concerned, not forgetting those who buy the products.

"If the public necessities for coal and the urgent request of public authorities are such as to induce us to continue the old wages beyond April 1, 1923, this demand must come to us in the form of a public mandate. We will conform our action to such a mandate, but no other reason would impel us to enter into an agreement which will continue for longer than the present emergency prices, to which emphatic objection has already been made."

Illinois Operators Tell Congressmen What Industry's Ills Are and Their Cure

Taking a position opposed to the Cummins bill or anything like it, the Illinois Coal Operators' Association has sent a letter to all Illinois United States Senators and Representatives and some other national legislators stating the operators' stand on the general points now at issue in the industry. The operators contend for arbitration and for making labor unions legally responsible for their acts. They believe some fact-finding body of able, disinterested men should be appointed by the President to study coal. Admitting many ills in the industry, they declare that most of them would be automatically righted if law and order were maintained, adequate transportation of coal guaranteed and wages reduced. The letter follows:

"With respect to pending legislation before the Congress, you will doubtless desire to know the sentiment of Illinois operators.

"(1) They continue to feel and are positive that there can be no correction of the actual or alleged evils of the industry that does not contemplate equal and adequate control of the organized labor in the industry. Legal responsibility for their acts and a clearly defined form of arbitration for every disputed point on which employer and employee may not agree, either in bargaining for a new wage scale and working agreement or in settling disputes afterward arising thereunder, is imperative; otherwise, as the past few months have clearly indicated, the most threatening kind of monopoly will become permanently established and to an extent that will be beyond the control of the government itself, there having been very manifest evidence of the possibility of such ultimate outcome during the past ten weeks.

"(2) Nor is it believed, based upon the experience of the Fuel Administration in 1917 and 1918, as well as the arbitrary action of the Railroad Administration in 1919, that any arbitrary action of the government through bureaucratic organization can handle any situation of emergency for a major industry, as well it can be handled under private ownership. For this reason the Cummins bill is believed to be decidedly inimical to the entire public and to every branch of industry.

"(3) Operators quite universally have publicly and repeatedly stated their belief that through some fact-finding agency appointed by the President, composed of first-class, high-grade, public-spirited citizens, on whom both the operators and miners might depend and in whom the public would have entire confidence, gave promise of the most satisfactory results, through the establishment of the exact facts regarding the production and distribution of coal. The public has never known the facts and never can through any effort of the parties at interest—i.e., the miners and operators—or through any commission or committee the motives of which may be subject to suspicion, because of fear that political expediency might enter into the final determinations.

"(4) Nor do the operators believe any more at this time than they have throughout the past five years that either the disease with respect to sporadic, unfortunate fuel conditions, or the remedy for correction, should be assailed through the coal industry, but shou'd rather be approached through,

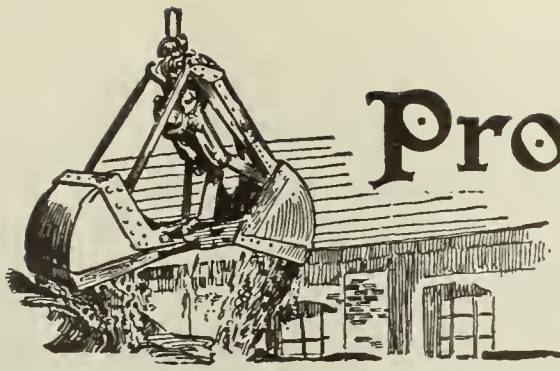
"(a) The guarantee of adequate transportation, and,

"(b) The maintenance of law and order.

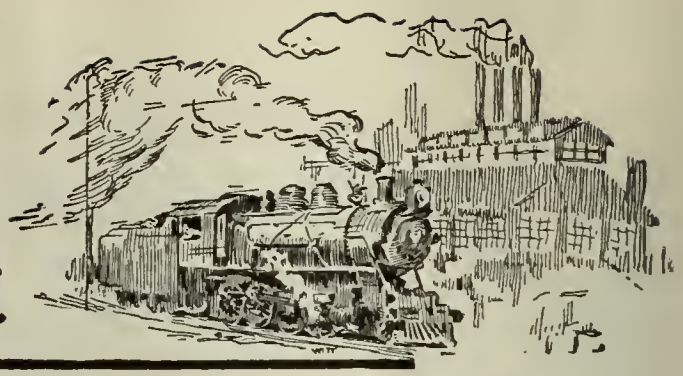
"Prior to the abandonment of these two basic conditions ample and adequate volumes of coal were always available to the American public for any use and at the lowest prices know anywhere in the world, nor throughout all this period were wage earners in the coal-mining industry paid as little as was paid in other lines.

"An average of $1.07½ an hour paid today to Illinois miners for a class of work, as to severity and skill required, for which the steel companies are paying 36c. an hour, is a reflection of approximately the same conditions that have for the past score of years prevailed in the coal industry with respect to wages.

"With the removal of the unwarrantedly indulgent wage rate made available to coal miners during the last five years, through the compelling power of their union, the question of too many mines and too many miners will very promptly correct itself after the same fashion that it has always done so heretofore."



Production and the Market



Weekly Review

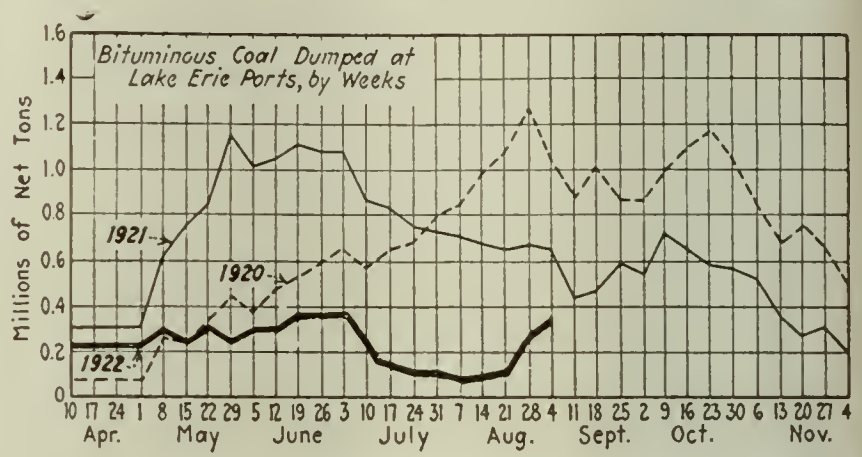
Rapidly mounting production from the bituminous coal mines, as district after district has returned to work, has eased the market and put a soft pedal on high prices. *Coal Age* Index of spot prices of soft coal at the mines dropped 17 points this week, to 420 from 437 a week ago. The high point so far this year was reached the last week of July and since then the decline has been consistent, though unsteady. The average price on Tuesday of this week was $5.08, compared with $6.73 on July 31, the peak. In the West, prices now average under $5 and in the East from that figure up.

The market is still in the process of finding itself. A week ago buyers who could wait were holding off. The market was dropping and the tone of the news was that production soon would be sufficient to take care of everyone. The past week, however, has found many small as well as large users in the market, both because they have reached the bottom of their stockpile and because they feel that prices have little more to slump before touching the base for the immediate future. Prices are irregular and doubtless will continue so until the extent of the expected car shortage is fully developed. The big questions are: To what extent will the soft-coal mines be called on to replace normal anthracite requirements, and at what figure will bituminous coal output be halted by car shortage and transportation disability?

Expect Price Upturn When Weather Gets Cold

It is the present expectation that prices will decline even more for several weeks and then with cold weather and the full pressure of winter demand plus the necessity for winter storage, to start up, slowly at first and then rapidly. What will happen then, it is predicted, will depend on the legislation passed by Congress. If that proves to be effective, provided it is passed, prices may be held in check; otherwise another ascension.

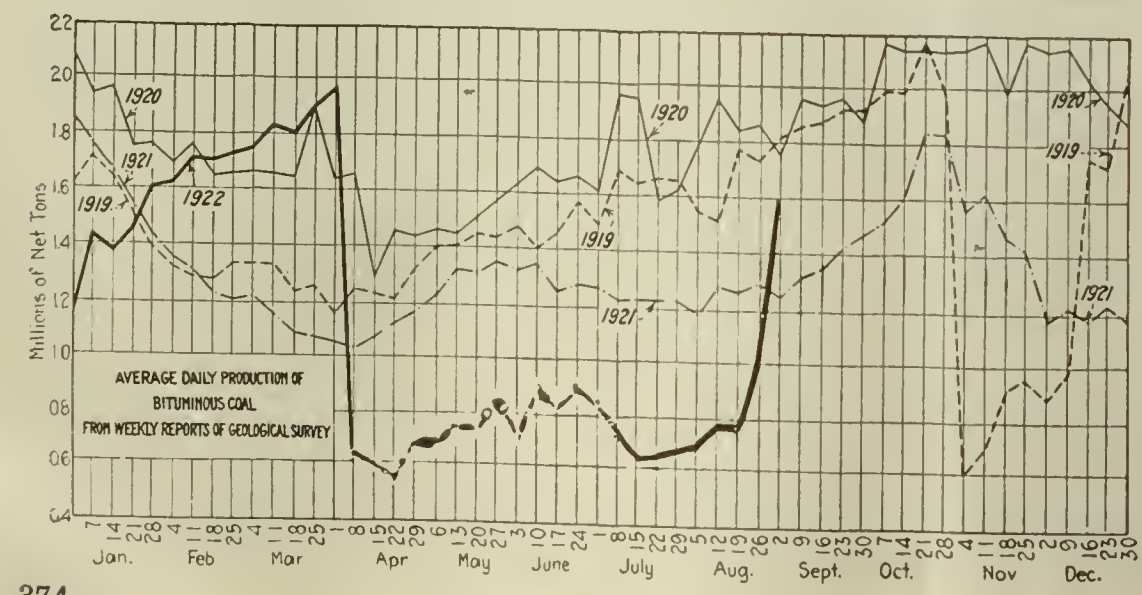
Production last week is estimated at a little short of 10,000,000 net tons, all soft coal. The gains each week are now from the union fields that were on strike, and of course nearest to markets that were shortest of coal. Alabama, for instance, that has been exporting coal north, is cast back on its home markets. West Kentucky



finds its bonanza in Chicago smothered by local output and its fancy prices a thing of the past. Only the Northwest seems in any serious danger and that is because it is so far from the mines and the weeks are few in which to move coal over the Lakes.

Hovering over the eastern part of the United States and likewise the area around the head of the Great Lakes, and also eastern Canada, is the fear of a serious shortage of anthracite for households. Production has been lost for five and a half months, an amount that everyone concedes cannot be made up. The most optimistic predict nothing worse than generous substitution of coke, gas and bituminous coal coupled with parceling out of the available new supply of hard coal. The other side of the picture is carried by those who say that the hard coal that will be available will not suffice to cover the actual needs of those whose habits and necessities require that fuel and that there will be suffering from its lack. The big problem for the fast-forming state fuel-control organizations is going to be domestic distribution during the winter months rather than price control.

Production of beehive coke is too light for



Estimates of Production

(Net Tons)

	1921	1922
BITUMINOUS		
Week ended:		
Aug. 12 (*b*)	7,771,000	4,606,000
Aug. 19 (*b*)	7,708,000	4,609,000
Aug. 26 (*a*)	7,753,000	6,696,000
Daily average	1,292,000	1,116,000
Calendar year	255,147,000	223,521,000
Daily av. cal. yr.	1,272,000	1,109,000
ANTHRACITE		
Aug. 12	1,772,000	29,000
Aug. 19	1,529,000	39,000
Aug. 26 (*a*)	1,800,000	35,000
COKE		
Aug. 19 (*b*)	50,000	122,000
Aug. 26 (*a*)	57,000	117,000
Calendar year	3,781,000	4,090,000

(*a*) Subject to revision. (*b*) Revised from last report.

furnacemen to attempt to build up a supply. This, rather than the high prices asked, is the main deterrent to buyers.

BITUMINOUS

"Soft coal production shot upward almost as suddenly as five months ago it had plunged downward, when district after district, accepted the Cleveland wage agreement and resumed work," says the Geological Survey. "Late returns for the week ended Aug. 26, indicate an output of 6,700,000 tons of bituminous coal and last week (Aug. 28-Sept. 2) will show 9,200,000 or possibly 9,700,000 tons.

"The rapid gain in output is indicated by the statement below of cars loaded daily. Following a sharp increase on Friday and Saturday, as coal began to flow in volume from the mines of Illinois and Indiana, last week opened with loadings of 30,054 cars on Monday. A decline to approximately 28,000 cars on Tuesday and Wednesday marked the first tightening of car supply. On Thursday additional shipments began from western Pennsylvania, and loadings reached 29,027 cars.

DAILY LOADINGS DURING THE STRIKE

	1st Week	12th Week	18th Week	19th Week	20th Week	21st Week	22nd Week
Monday	11,445	15,311	15,102	16,229	15,703	18,601	30,054
Tuesday	11,019	16,622	11,446	13,729	13,032	17,801	28,153
Wednesday	11,437	17,032	12,447	13,368	12,531	18,524	28,211
Thursday	11,090	16,432	12,380	13,277	13,521	19,388	29,027
Friday	11,296	16,073	12,669	13,539	13,718	22,882	.....
Saturday	8,888	13,993	12,405	11,009	13,524	23,070	.....

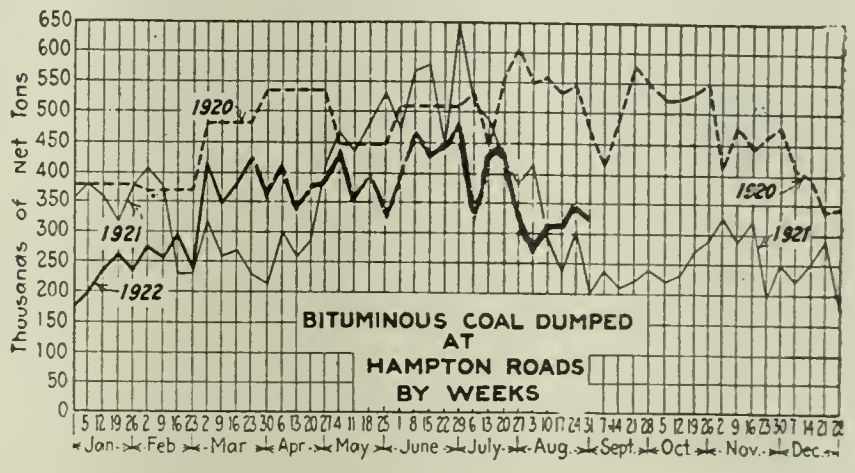
"This increase has come almost exclusively from mines opening under the Cleveland agreement. The non-union districts of the middle and southern Appalachians are still limited by railroad disability and in spite of a slight increase in car supply are producing only 65 per cent of the rate attained before the shopmen's strike.

"In fact complaints of lack of cars have already been received from the union districts of eastern Ohio and northern West Virginia. The limiting factor in production of bituminous coal has thus changed over night. A week ago it was the supply of mine labor; to day it is transportation. The first response of the railroads to the demand for more service has been favorable, partly because they had a surplus of 112,000 empty coal cars when the union mines resumed work. Whether the roads can maintain the present rate of coal movement when the surplus of cars is exhausted remains to be seen.

"Even in the bituminous mines the strike is not yet entirely over. Some thousands of men are still out in the non-union fields of Pennsylvania, particularly the Connellsville coke region, in the Georges Creek field, and in the union districts of West Virginia.

"Shipments during the first half of the week were at a rate of 47 per cent in excess of the daily average for the preceding week and 81 per cent over that for the week of June 19-24.

"The districts showing notably increased shipments were central Pennsylvania, where the daily rate is now about double that of the week before; western Pennsylvania, where the increase is about 40 per cent; Ohio, about 33 per



cent; Indiana-Illinois about 300 per cent; and the Iowa-Missouri-Kansas-Oklahoma-Arkansas-Texas region, about 120 per cent. Increases at these rates can not be expected to continue.

"Shipments in the middle and southern Appalachian regions averaged during the first half of the week about 10 per cent higher. This was due to the large increases on Monday, after which on Tuesday and Wednesday shipments dropped off to less than the average for the preceding week and in some districts to less than shipments on corresponding days of that week. Shipments have declined most in the southernmost districts of West Virginia, in eastern Kentucky and Alabama. Mining in this region is suffering severely from transportation difficulties, and shipments are now at best 700,000 tons less per week than during June.

"The all-rail movement to New England over the Hudson River increased to 917 cars of bituminous coal and 226 cars of anthracite during the fourth week of August. The total all-rail forwardings this year to Aug. 26 amounted to 110,632 cars divided as follows: 50,560 cars of anthracite and 58,553 of bituminous coal through the principal gateways;

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Aug. 7 1922	Aug. 21 1922	Aug. 28 1922	Sept. 5 1922†
Smokeless lump	Columbus	$5.60	$6.10	$6.25	$4.75@$7.50
Smokeless mine run	Columbus	5.25	6.00	5.75	4.50@ 6.50
Smokeless screenings	Columbus	5.10	5.90	5.60	4.25@ 6.50
Smokeless lump	Chicago	6.35	6.85	6.00	4.75@ 8.00
Smokeless mine run	Chicago	6.25	6.25	5.75	4.50@ 8.00
Smokeless lump	Cincinnati	5.90	5.75	5.75	4.75@ 6.50
Smokeless mine run	Cincinnati	5.50	5.50	5.25	4.50@ 5.00
Smokeless screenings	Cincinnati	5.40	5.15	5.15	4.25@ 4.60
*Smokeless mine run	Boston	8.90	8.70	9.00	8.00@10.00
Clearfield mine run	Boston	6.90	7.60	5.85	4.50@ 5.50
Cambria mine run	Boston	7.50	8.75	6.25	4.50@ 6.50
Somerset mine run	Boston	6.90	8.00	6.00	4.50@ 6.00
Pool 9 (Super.Low Vol.)	New York	8.65	8.00	6.35	5.50@ 6.00
Pool 9 (Super.Low Vol.)	Philadelphia	8.25	8.25	7.25	5.75@ 6.00
Pool 9 (Super.Low Vol.)	Baltimore	7.25	.....	6.25	6.00@ 6.50
Pool 10 (H.Gr.Low Vol)	New York	8.00	7.50	5.85	5.25@ 5.50
Pool 10 (H.Gr.Low Vol.)	Philadelphia	8.00	8.00	7.00	5.50@ 5.75
Pool 10 (H.Gr.Low Vol.)	Baltimore	7.25	7.75	5.85	5.75@ 6.00
Pool 11 (Low Vol.)	New York	7.25	6.50	5.35	5.00@ 5.25
Pool 11 (Low Vol.)	Philadelphia	7.85	7.75	6.50	5.00@ 5.25
Pool 11 (Low Vol.)	Baltimore	7.25	7.75	5.50	5.25@ 5.50
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	.....	.....	.....	4.75@ 5.50
Pool 54-64 (Gas and St.)	Philadelphia	7.85	6.60	6.00	4.50@ 5.00
Pool 54-64 (Gas and St.)	Baltimore	6.25	7.50	5.60	5.00@ 5.50
Kanawha lump	Columbus	5.60	6.40	6.00	4.75@ 7.00
Kanawha mine run	Columbus	5.50	6.25	5.60	4.50@ 6.75
Kanawha screenings	Columbus	5.10	6.00	5.50	4.25@ 6.50
W. Va. Splint lump	Cincinnati	5.85	5.35	5.35	4.75@ 6.00
W. Va. Gas lump	Cincinnati	5.85	5.35	5.35	4.75@ 6.00
W. Va. mine run	Cincinnati	5.50	5.50	5.00	4.50@ 6.25
W. Va. screenings	Cincinnati	5.10	5.10	4.85	4.25@ 5.50
Hocking lump	Columbus	5.85	6.65	6.00	6.00@ 6.50
Hocking mine run	Columbus	5.50	6.25	5.85	5.00@ 5.50
Hocking screenings	Columbus	5.35	5.75	5.60	5.00@ 5.50
Pitts. No. 8 lump	Cleveland	7.85	6.10	5.75	5.25@ 5.75
Pitts. No. 8 mine run	Cleveland	7.85	6.10	5.25	5.00@ 5.50
Pitts. No. 8 screenings	Cleveland	7.85	6.10	5.25	5.00@ 5.50

Mi lwest	Marke' Quoted	Aug. 7 1922	Aug. 21 1922	Aug. 28 1922	Sept. 5 1922†
Franklin, Ill. lump	Chicago	...	..	$5.05	$4.90@ $5 15
Franklin, Ill. mine run	Chicago	....	...	4.65	4.50@ 4 75
Franklin, Ill. screenings	Chicago	....	.	4.25	4.15@ 4.35
Central, Ill. lump	Chicago	....	...	5 10	4.90@ 5 00
Central, Ill. mine run	Chicago	....	.....	4.65	4.25@ 4 75
Central, Ill. screenings	Chicago	....	...	4.45	4.15@ 4 50
Ind. 4th Vein lump	Chicago	....	...	5 25	5.00@ 5 50
Ind. 4th Vein mine run	Chicago	..	..	4 85	4 65@ 5 00
Ind. 4th Vein screenings	Chicago	...	..	4 75	4.50@ 5 00
Ind. 5th Vein lump	Chicago	..	.	5 10	4 90@ 5 25
Ind. 5th Vein mine run	Chicago	...	.	4 65	4 50@ 4 75
Ind. 5th Vein screenings	Chicago	....	.	4 40	4 25@ 4 50
Standard lump	St. Louis	....	.	3 90	4 25@ 4 00
Standard mine run	St. Louis	....	.	3 40	3 75@ 4 00
Standard screenings	St. Louis	....	.	2 90	3 50@ 3 00
West Ky. lump	Louisville	6 35	6 00	5 00	4 00@ 4 50
West Ky. mine run	Louisville	6 25	6 00	5 00	4 00@ 4 50
West Ky. screenings	Louisville	6 10	6 00	5 00	4 00@ 4 50
West Ky. lump	Chicago	6 85	6 00	4 25	3 50@ 5 00
West Ky. mine run	Chicago	6 75	6 00	4 25	3 50@ 5 00
South an l Southwest					
Big Seam lump	Birmingham	3 50	4 25	4 75	4 00@ 5 50
Big Seam mine run	Birmingham	3 20	4 25	4 50	3 50@ 4 50
Big Seam (washed)	Birmingham	3 50	4 25	4 50	3 50@ 4 50
S. E. Ky. lump	Chicago	6 35	6 15	4 75	3 50@ 5 00
S. E. Ky. mine run	Chicago	6 25	6 00	4 75	3 50@ 5 00
S. E. Ky. lump	Louisville	5 85	5 90	5 25	4 00@ 5 00
S. E. Ky. mine run	Louisville	5 75	5 75	5 10	3 50@ 4 50
S. E. Ky. screenings	Louisville	5 60	5 65	4 75	4 25@ 5 50
S. E. Ky. lump	Cincinnati	5 85	5 90	5 35	4 75@ 6 25
S. E. Ky. mine run	Cincinnati	5 75	5 75	5 25	4 50@ 6 00
S. E. Ky. screenings	Cincinnati	5 60	5 10	4 85	4 25@ 5 50
Kansas lump	Kansas City	5 25		6 00	6 00
Kansas mine run	Kansas City	5 15		5 00	5 00
Kansas screenings	Kansas City	4 90		2 85	2 [illegible] 2 75

*Gross tons, f.o.b. vessel, Hampton Roads
†Advances over previous week shown in heavy type, declines in italics.
NOTE—Smokeless prices now include New River and Pocahontas

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 inclusive	April 3 to Aug. 19, 1922 inclusive	Week Ended Aug. 19
U. S. Total	45.6	55.7	....	....
Non-Union				
Alabama	63.5	64.6	78.5	89.2
Somerset County	55.5	74.9	46.2	55.3
Panhandle, W. Va.	55.3	51.3	44.9	50.7
Westmoreland	54.9	58.8	83.9	84.6
Virginia	54.8	59.9	73.7	60.2
Harlan	53.3	54.8	No report	No report
Hazard	51.7	58.4	47.7	21.0
Pocahontas	49.8	60.0	68.3	56.3
Tug River	48.1	63.7	72.2	54.2
Logan	47.6	61.1	59.1	27.6
Cumberland-Piedmont	46.6	50.6	18.3	28.9
Winding Gulf	45.7	64.3	61.5	33.7
Kenova-Thacker	38.2	54.3	70.7	61.0
N. E. Kentucky	32.9	47.7	47.1	25.1
New River‡	24.3	37.9	30.7	41.0
Union				
Oklahoma	63.9	59.6	14.5	16.0
Iowa	57.4	78.4	0.0	0.0
Ohio, Eastern	52.6	46.6	0.0	0.0
Missouri	50.7	66.8	2.9	7.0
Illinois	44.8	54.5	0.0	0.0
Kansas	42.0	54.9	16.5	14.7
Indiana	41.4	53.8	0.0	0.0
Pittsburgh†	41.2	39.8	0.0	0.0
Central Pennsylvania	39.1	50.2	12.1	14.4
Fairmont	35.3	44.0	4.8	10.9
Western Kentucky	32.5	37.7	61.1	51.4
Pittsburgh*	30.4	31.9	0.0	0.0
Kanawha	26.0	13.0	6.4	8.7
Ohio, southern	22.9	24.3	0.0	0.0

* Rail and river mines combined.
† Rail mines.
? Union in 1921, non-union in 1922.

Car Loadings and Surplusages

	All Cars	Coal Cars
Cars loaded:		
Week ended Aug. 19	856,219	81,959
Previous week	851,351	79,246
Same week a year ago	815,147	152,513
Surplus cars		
Aug. 15, 1922	140,253	111,521
Aug. 8, 1922	153,880	118,044
Same date a year ago	284,388	145,072

223 cars of anthracite and 1,296 of bituminous coal through Rouses' Point."

CARS OF COAL FORWARDED OVER THE HUDSON TO EASTERN NEW YORK AND NEW ENGLAND *a*

	1922		1921	
Week ended	Anthracite	Bituminous	Anthracite	Bituminous
August 12	224	688	2,347	2,480
August 19	189	826	2,498	3,022
August 26	226	917	2,475	2,670

a Figures furnished through cortesy of American Railway Association.

Following the recent order of the Federal Fuel Distributor the flow of coal to the Lakes has greatly increased. During the week ended Sept. 4 total dumpings were 339,961 net tons—305,054 tons cargo and 34,907 tons vessel fuel—as compared with 258,598 tons in the preceding week. The season's total to date is 5,554,014 tons; in the corresponding period of last year 16,739,053 had been dumped. Some Indiana and Illinois all-rail coal is beginning to trickle through to the Northwest, but this tonnage is insignificant as yet.

Hampton Roads dumpings for all accounts were 329,695 net tons during the last week in August, as compared with 350,537 tons in the preceding week. More and more this coal is now flowing in its accustomed trade channels as the maket tension has been lessened by the union resumption.

ANTHRACITE

Production during the week ended Aug. 26 was about 35,000 net tons, principally steam sizes dredged from the rivers. A rush of orders has followed the announcement that mining will soon be resumed and it is hoped that coal will be moving by Sept. 11.

Not much bituminous coal had been sold as a substitute for anthracite as the consumer has felt that soft coal would be available at the last moment, if wanted. Some British coal has been sold for this purpose along the Atlantic seaboard, however, and it is certain that substitute fuel must eke out the current supplies of hard coal for some time, as the output will have to be spread very thinly over a large territory to begin with.



Coal Age Index 420, Week of Sept. 5, 1922. Average spot price for same period $5.08. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the total output of the United State, weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shippedd and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. (Pittsburgh District prices not included in figures for last week.)

Experiencing Difficulty With Welsh Coal

SEVERAL PLANTS that are meeting the present fuel emergency through the use of Welsh coal are finding that certain modifications will have to be made in their stokers if they are to carry the same loads as with American coal.

At the plants of the Interborough Rapid Transit Co., New York, approximately a third of the boilers are being supplied with coal from Wales. It is a high-grade coal, running about 14,500 B.t.u., 15 per cent being volatile and 6 per cent, ash. Up to 200 or 225 per cent rating of the boilers the coal gives excellent results but above this it cakes and does not permit the proper quantity of air to pass through the fuel bed. The cake is readily broken, however, and does not seem to be of the nature of a clinker. At these plants the boilers are forced as high as 320 per cent rating and it is, therefore, impossible to run the boiler at more than 70 to 75 per cent of the capacity hitherto attained. It was found that the older type of overfeed stokers which break up the fuel bed handle this coal better than the underfeed stokers.

Therefore the engineering force of the Interborough have endeavored to meet the difficulty by increasing the air passages through the stokers, cutting down the velocity and the pressure from 5 to 3 in. and increasing the volume of air. Tests under these conditions are now being made for the Transit Commission.

Foreign Market And Export News

British Market Feels Effects of American Resumption; French Coals Stronger

The British market has eased off considerably in the past week. Heavier production of bituminous coal in the United States has affected the demand from that section and from Canada. Shippers have heavy orders in hand, however, which will tax export facilities for the next few weeks. European buyers, quick to sense softened demand, are reported to be holding back and prices are showing a downward tendency. Production during the week ended Aug. 19 was 5,158,000 gross tons, according to a cable to *Coal Age*, indicating a sharp recovery from the holiday slump of the preceding week and comparing with an output of 5,122,000 tons for the week of Aug. 5.

It is reported in Glasgow that the Scotch railway rates for coal have been reduced. The new rate will be the prewar rate plus 75 per cent, plus a flat rate of 3d., with a maximum increase of 3s. 6d. Formerly rates were the prewar rate plus 100 per cent, plus a flat rate of 6d.

Hampton Roads Pier Situation

	Week Ended Aug. 24	Aug. 31
N. & W. Piers, Lamberts Point:		
Cars on hand	1,419	1,463
Tons on hand	76,031	82,043
Tons dumped	169,922	157,733
Tonnage waiting	80,175	53,200
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	722	620
Tons on hand	41,800	34,750
Tons dumped	70,155	79,818
Tonnage waiting	53,400	45,199
C. & O. Piers, Newport News:		
Cars on hand	280	526
Tons on hand	14,000	26,000
Tons dumped	72,903	56,820
Tonnage waiting	35,295	19,300

U. S. Strike Aids French Coal Market

The situation of the French coal market is now comparatively satisfactory, and some coal is being taken from stocks. This improvement is, of course, partly due to the United States strike. Not much, if any, French coal has mover across the Atlantic so far.

Of the 1,725,000 tons of German reparation fuel to be monthly supplied from Aug. 1 to Oct. 31 to France, Luxemburg, Belgium and Italy (1,600,000 tons from the Ruhr and 125,000 tons from Upper Silesia) France (with Luxemburg) obtains 1,120,500 tons of the tonnage to be supplied from the Ruhr.

FRENCH PRODUCTION IN JUNE

	Metric tons:
Nord and non-devasted mines	603,305
Pas-de-Calais devasted mines	635,170
Center fields	605,761
Southern fields	348,744
Western minor fields	9,685
Ronchamp mine	8,013
Lorraine field	339,990
Total	2,550,668

France also produced in June 78,929 metric tons of coke and 219,817 tons of briquets. Sarre collieries produced 864,906 metric tons of coal and 19,832 tons of coke. The pit head stocks were 619,285 tons on June 30.

Coal Paragraphs From Foreign Lands

GERMANY—Production in the Ruhr district for the week ended Aug. 19 was 1,813,000 metric tons, according to a cable to *Coal Age*.

ITALY—The price of Cardiff steam first is quoted at 42s. 3d., according to a cable to *Coal Age*, unchanged for the last two weeks.

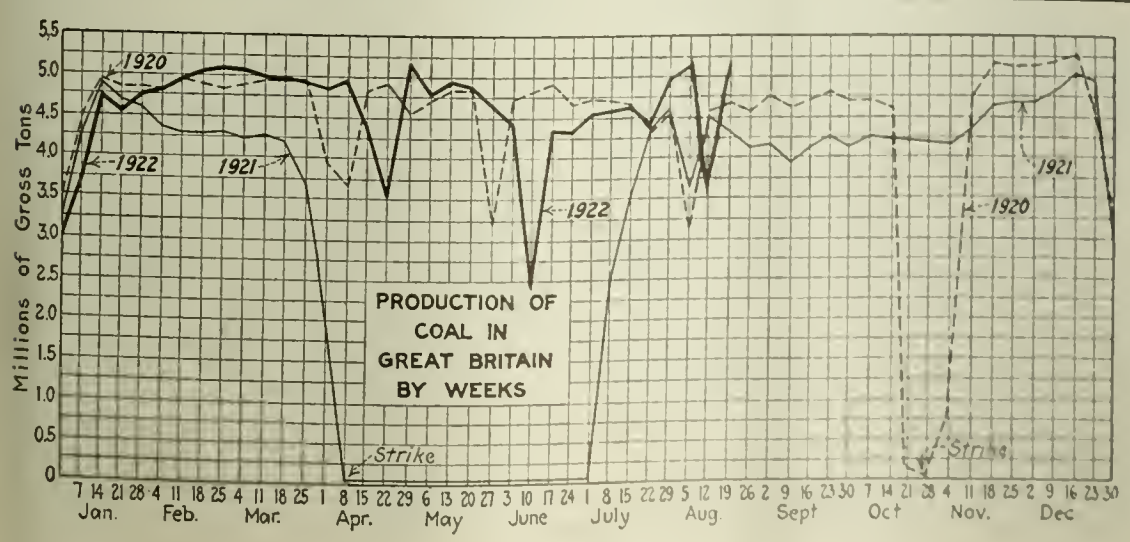
CZECHO-SLOVAKIA—The tax on the exportation of coke has been abolished by a decree of the Minister of Commerce, with retroactive effect as from March 15, 1922.

Rail Situation Improves at Roads

Dumpings during the week ended Aug. 31 showed a slight decline, while for the month the decrease was approximately 1,000,000 tons. During August the piers dumped 1,297,981 tons, against 1,330,364 tons in July.

The tendency of prices was downward, having shown a steady reduction for three weeks. Dealers were expecting still lower prices within ten days.

Dealers were moving about 50 per cent of normal, with a slight increase in prospect. The N. & W. was steadily increasing the movement from the mines, while the two other coal carriers were holding their own.



British Exports, July, 1920, 1921, 1922.

Country	Gross Tons 1920	1921	1922
Russia	7,953	.....	68,238
Sweden	132,274	21,533	229,132
Norway	72,749	21,225	96,435
Denmark	84,266	97,717	219,765
Germany	.....	19,769	1,133,402
Netherlands	.....	82,974	519,999
Belgium	28,900	7,057	199,581
France	961,361	193,474	994,675
Portugal	33,877	22,721	70,663
Azores and Madeira	.....	.....	2,653
Spain	13,256	35,958	157,433
Canary Islands	40,732	13,722	49,995
Italy	246,984	77,852	476,938
Austria-Hungary	10,385	.....	.....
Greece	466	4,414	40,496
Algeria	35,490	29,690	57,223
French West Africa	3,675	.....	5,448
Port. W. Africa	30,849	5,916	7,354
Chile	78	122	14,865
Brazil	11,383	.....	55,673
Uruguay	100	3,949	22,240
Argentine Republic	6,575	26,865	123,036
Channel Islands	17,491	5,784	8,650
Gibraltar	112,278	21,479	48,257
Malta	60,150	19,220	5,814
Egypt	141,545	49,258	70,478
Anglo-Egyptian Sudan	.....	.....	1,002
Aden and Depend	.....	.....	6,723
British India	10	17,932	82,523
Ceylon	.....	.....	24,118
Other countries	44,169	37,689	270,954
Total, July	2,096,996	816,320	5,063,763
Total, June	1,930,608	7,502	4,793,648

QUANTITY AND VALUE OF EXPORTS, JULY AND FIRST SEVEN MONTHS.

	Gross Tons July	1st 7 mos.
1920	2,096,996	16,528,529
1921	816,320	6,841,768
1922	5,063,763	32,247,723
	Value	
1920	£8,928,455	£63,828,924
1921	1,559,649	16,993,209
1922	5,579,538	36,427,301

Pier and Bunker Prices, Gross Tons

PIERS

	Aug. 26	Sept. 2†
Pool 10, Philadelphia	$10.50@$11.00	*$9.50@$10.00*
Pool 11, Philadelphia	9.75@ 10.25	*8.75@ 9.00*
Pool 11, New York	10.00@ 11.00	10.00@ 11.00
Pool 1, Hamp. Roads	7.50@ 10.00	8.00@ 9.50
Pools 5-6-7 Hamp.Rds.	7.50@ 10.00	8.00@ 9 50
Pool 2, Hamp. Rds	7.50@ 10.00	8.00@ 9.50

BUNKERS

Pool 10, Philadelphia	$10.75@$11.25	*$9.75@$10.25*
Pool 11, Philadelphia	10.00@ 10.50	*9.00@ 9.50*
Pool 11, New York	10.30@ 11.30	10.30@ 11.30
Pool 1, Hamp. Rds	7.50@ 10.00	8.00@ 9.50
Pool 2, Hamp. Rds	7.50@ 10.00	8.00@ 9 50
Welsh, Gibraltar	40s. 6d. f.o.b.	40s. 6d. f.o.b.
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	43s. f.o.b.	43s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	42s. t.i.b.
Welsh, Algiers	38s. f.o.b.	38s. f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b.	65s. f.o.b.
Welsh, Madeira	43s. f.a.s.	43s. f.a.s.
Welsh, Teneriffe	41s. f.a.s.	41s. f.a.s.
Welsh, Malta	44s. 6d. f.o.b.	44s. 6d. f.o.b.
Welsh, Las Palmas	41s. f.a.s.	41s. f.a.s.
Welsh, Naples	42s. f.o.b.	42s. f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore	52s. 6d. t.i.b.	52s. 6d. t.i.b.
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Welsh, St. Michaels	50s. t.i.b.	50s. t.i.b.
Welsh, Alexandria	42s. f.o.b.	42s. f.o.b.
Welsh, Port Said	49s. f.o.b.	49s. f.o.b.
Welsh, Buenos Aires	50s. f.o.b.	50s. f.o.b.
Durham, Antwerp	30s. 6d. t.i.b.	30s. 6d. t.i.b.
Durham, Hamburg	26s. f.o.b.	26s. f.o.b.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	Aug 26	Sept 2†
Admiralty, large	31s.@ 32s.6d	*30s.@ 31s*
Steam, smalls	22s.@ 22s.6d.	22s.@ 22s.6d
Newcastle:		
Best steams	25s.@ 26s.	25s.@ 26s.
Best gas	24s.@ 25s.	*24s*
Best bunkers	23s.6s.@ 24s.6d.	*23s.6d.@24s.*

†Advances over previous week shown in **heavy type**; declines in *italics*.

North Atlantic

Market Weakens With Heavy Influx of Receipts

Absorption of Output Effected by Cut in Spot Prices—Growing Car Shortage Slows Production—British and Southern Water-Borne Coal Plentiful

Heavier receipts have weakened the market. Central Pennsylvania is very active and while the demand is absorbing current production, it has been done by reducing spot prices. That quotations may go very little lower, however, is indicated by a growing car shortage, which is beginning to slow up production at a time when there is need for every pound of coal that can be mined.

Southern coal, via water, continues to arrive in good volume, as does British fuel. The foreign coal is in much less demand since the resumption of union mining and prices are being cut to move the unobligated tonnage now arriving.

NEW YORK

Increased production and continued lack of demand has resulted in a further softening of quotations. More coal is coming forward but a serious car shortage is imminent. Complaint has already been made of conditions along the B. & O. road and it is said the trouble is spreading to other roads.

Southern coals are coming forward freely. The transit companies are well provided it is said and are "practically out of the woods so far as soft coal is concerned." Quotations range $11.25@$11.75 in small boats, this harbor.

Receipts of British coal during the first five days of last week were not as heavy as the previous week. Ten vessels brought slightly over 55,000 tons but many others were believed to be near port. Inquiry has been quieter since the strike settlement, and as production gradually increases it will fall off. Onother factor in the falling off in inquiries is the advancing freight rates. Quotations for British Admiralty were around $9 c.i.f. New York harbor and for Durham gas coals, No. 2 quality, $8.50@$8.75.

There were 784 cars reported at the local docks on Sept. 1, little of it being free coal. High-volatile steam coals were quoted $4.75@$5 25, low sulphur gas coals, $6.25@$6.50 and Broad Top around $6.25.

BALTIMORE

The fact that many production points have begun a steady flow of supplies and that there was every indication of still further increase lead to a brief cut in prices during the past week, but the market is now once more ascending. The demand is such that there is more than ready assimilation of production on a mine basis of $6@$6.50 for the better grade steam coals.

There are offerings of less desirable fuels down to $5.25. Lump gas is demanding $6 or better. The car shortage and the steadily increasing demand for coal has turned the scale of prices upward once more. While the Maryland Distribution Committee is to be kept in existence it is felt in coal circles that their powers will be so circumscribed without federal support that their duties will be largely negligible.

Of interest here was the news from Cumberland, Md., that six of the smaller coal companies operating in the Georges Creek territory have signed an agreement recognizing the union and paying the 1920 scale. The total output of these is small, however.

PHILADELPHIA

All mines are fast getting under way, as the rush to sign up to the union scale has gathered great momentum in the last few days. Almost without exception the operators are bitter in their denunciation of the reasons which have compelled them to bow to the miners, but accept the scale as the only way out for the time being.

The amount of coal offered has increased considerably, and the consumer has shown a greater disposition to buy.

There is a feeling, however, that prices will not drop much lower, and some shippers express the opinion that another upward trend may soon set in. Already there is much complaint of car shortage, especially on the Pennsylvania. This road has claimed all along to be in the best of shape and doubtless the sudden resumption of mining has thrown a load on it for empties that will soon straighten itself out.

So far every one is distributing coal in the best manner possible, as the provisions of the new Fuel Control Act are not fully known, and the application of the same is awaited with much interest.

Foreign coal is still being offered, with some additional charters closed recently. However, the recent drop in domestic prices has been such as to discourage this in some measure. Cargoes on orders placed some time ago are arriving almost daily.

CENTRAL PENNSYLVANIA

Production has advanced to more than 60 per cent of normal. During the first week following the settlement of the strike, daily loadings averaged 2,255 cars, while the low mark reached during the strike was but 450 cars.

Practically all the union mines are now producing coal. The non-union operators absolutely ignored the request of the U. M. W. for a conference in Somerset on Aug. 29.

The non-union operators declare that there is absolutely no chance for them ever recognizing the union. They are paying the same wages as the union operators and they say that is as far as they will go. An increase of more than 100 per cent is shown in the non-union field in Somerset County within the last month. Some of the mines are operating full time.

At the convention, the Somerset union miners passed a resolution to remain on strike until the operators agree to meet them and their district officers in conference or sign individual wage scale agreements according to the policies of the district and national agreements.

FAIRMONT

Although more mines are in operation as a result of the strike settlement, an acute car shortage is greatly curtailing the output. Many of the larger companies have signed a contract with the union but on the Charleston Division of the B. & O. and in the section reached by the Morgantown & Kingwood most of the mines are running on the open-shop plan and no agreement is in prospect.

UPPER POTOMAC

Neither the Upper Potomac nor the Georges Creek operators have signed any agreement recognizing the union, nor is there any prospect that they will take such action and that is responsible for continued idleness in Georges Creek territory. Conditions are different on the Western Maryland in the Upper Potomac field where most of the mines are running and where production is being increased.

West

KANSAS CITY

So far as the coal situation is concerned it is all that could reasonably be expected in the way of supply but there is some grumbling over the price of domestic grades, which is $6 for Kansas lump and nut coal. The price for steam grades started very ragged, but has settled down to $2.50 for Kansas slack and some contracts are being closed at that figure.

The mines are now producing about 50 per cent of their normal capacity and should be producing full if there were a market for it. A great many steam plants have gone to oil and they are not likely to change back to coal just to repeat the change to oil again next April.

The retailer is taking very little coal as he made no money the past two years, due largely to buying too early and running into a much lower market later in t' e season.

SALT LAKE CITY

Dealers are finding it difficult to meet the demand of their customers, who now realize that delay in putting in their winter supply of coal may prove dangerous. Car trouble is being experienced here already, especially on the D. @ R. G. W. R.R. It is thought the situation will be serious before long.

Local yards are carrying little coal with the exception of that of the Western Fuel Co. which has about 20,000 tons. Most of the others are empty, or next to it. Nothing further has been said regarding an increase in prices. Production is not far short of capacity now.

Anthracite

News of Settlement Brings Flood of Retail Inquiries

Prospect of Early Production Hailed with Relief—Some Time Must Elapse Before Coal Reaches Householder—Substitutes Will Be Needed for a While.

The news that an agreement has been reached and that production will soon be resumed has been hailed with relief by all concerned. The announcement has brought forth a flood of inquiries at retail, but is evident that it will be some time before the householder receives any coal on orders recently placed.

Not much bituminous coal has been distributed as a substitute for anthracite. Some British coal has been sold for this purpose and it is probable that a considerable tonnage of substitute fuel will be used before hard coal is available this fall.

NEW YORK

Dealers and consumers are carefully watching for word that the so-called suspension has been ended and that the miners are returning to the mines. At the same time consumers realize there will be no reduction in prices and that they will be fortunate if they will be able to get their winter coal at the March figures. Some retail realers are delivering small tonnages of pea coal to those customers who want it but there is little if any of the larger sizes to be had in Greater New York.

Considerable pressure through newspaper statements and advertisements is being exerted in an effort to induce the use of bituminous coal and dealers look for increased tonnage as a result. Coke is also being urged as a substitute.

Several of the smaller independent operators have been reported as visiting local wholesale offices during the week inquiring as to the future prospects.

No steam coal except a small quantity of buckwheat and river barley is coming forward. Some pea was quoted around $15, alongside, this harbor. Buckwheat No. 1 was quoted $12 50@ $13. alongside, and river barley, $5.90 @$6.25. Quotations for river barley f.o.b. loading point was around $3.50.

BALTIMORE

The regular hard coal dealers are fast becoming soft coal dealers, or at least "semi-bituminous" dealers. Every few days another joins the list of suppliers contracting for the English coals which are now running to this port. Ten vessels are now on their way to this port with Welsh coal, some of it in foreign bottoms and some in Shipping Board vessels.

The dealers here as a whole are asking around $13.50 a ton for this British coal, delivered in the cellars of householders. Tests of burning already made show that the coal is good for household purposes. One large dealer here has gone so far as to set up stoves in which he keeps the English coal burning as a demontration to his customers that they are not buying a "pig in a poke."

PHILADELPHIA

The trade is taking it for granted that work will start before the end of the present week. One result of this has been a rush of orders from the retailers, together with users of steam coal, all desiring to get shipments as early as possible. Such orders are being accepted tentatively, although most companies are sending them to the mines to be in readiness when coal comes out again.

So far all preparations for the resumption of shipments have gone forward without taking into consideration the various fuel control measures which have been proposed. The most progress has been made by the State authorities, and while it is on a voluntary basis, at the meetings already held, the retail men have shown a full spirit of co-operation.

With no reduction in wages no one is looking for anything but the prices in effect on April 1 by the companies, and the independents with premiums up to 75c. It follows along the same line that the retail prices will be the same as last winter, although the question of state tax may add something to it.

The consumer demand for pea goes on unabated, with only about 40 per cent of the yards able to make deliveries. In the suburban sections the percentage of yards without coal of any kind is much greater.

River barley is still being freely offered and sold, although there is a tendency to a shading off on account of a better supply of soft coal being offered. Prices recently have been $1.75@$2.50.

BOSTON

The trade received news of the agreement with expressions of genuine relief, although it is realized we face an irksome season. Several cargo dealers have no anthracite at all in stock and there will be a rush to secure any pea the producers have in reserve.

At wholesale, of course, no change has yet appeared. If the mines resume on Sept. 11, it will be the end of the month probably before fresh mined coal reaches this territory.

BUFFALO

It is now given out that a resumption is possible, so we still hope for coal before cold weather. At the same time the consumers do not expect a full supply and there is nothing to do but buy soft coal or coke. It is quite easy at any time to work in some of these substitutes and at a saving in cost, but as a rule the householder is ready to buy straight anthracite if he can get it.

No more has been heard of the enterprising Scranton jobbers who were going to furnish stove or furnace sizes at $17.50 at the mine "as soon as new coal was moving," for the orders do not appear to come in rapidly, but the offer may be repeated when there is coal to sell.

ANTHRACITE FIELDS

Although the miners have won a victory, they have not won as great a victory as they did in the bituminous coal fields. At their Shamokin convention last January, they formulated nineteen demands and they did not succeed in having a single one of them granted. And for that matter neither did the operators win any of their counter demands, so on this score both sides broke even.

The miners have lost twenty-three weeks time out of a contract amounting to seventy-eight weeks and they have lost their pay for that period. So therefore they have lost 29.5 per cent of their income for the period. The operators only asked them to take a decrease of 20 per cent so the men not only have lost the 20 per cent the operators offered them but they have lost 9.5 per cent beyond that amount. Does it pay?

South

VIRGINIA

Transportation difficulties are hard to overcome in the Southwest Virginia field, limiting the output to 60 per cent of potential capacity. Mines on the N. & W. managed to keep production up to about 73 per cent of capacity and the output on the C. C. & O. was increased, but mines on other lines were limited to about 40 per cent. There is little or no free coal available and it is not even possible to supply the demand within the state owing to priority orders.

BIRMINGHAM

There is no lack of demand for coal, inquiry being good from every direction except from Western territory, consumers from that section having practically discontinued the placing of orders in Alabama. The supply of both steam and domestic is being seriously limited by car shortage and sluggish movement.

On account of the increase of 20 per cent granted miners by the operators, effective Sept. 1, an adjusted fair price schedule to absorb this additional cost and provide a margin of profit for spot coal and contract business taken on in future is expected to be announced in a few days by the State Fuel Administration. The withdrawal of Western business is expected to stabilize the trade and hasten a return to normal conditions both as to price and distribution.

The shortage of cars at the mines is assuming a very serious aspect, the three leading mines now furnishing only about 45 to 50 per cent of the equipment needed. Motive power is also badly crippled, allowing cars to remain under load an indefinite time, which contributes to the shortage very materially.

Production for the week of Aug. 19 was reported at 400,000 net tons, but the output has declined considerably during the past two weeks, no figures being available at this time.

Chicago and Midwest

Trade Begins to Liven In Central West Region

Country Demand Rolls In as Customers See Real Shortage and High Prices Ahead—Steam Picks Up Too—Market Remains Fairly Firm.

The much-talked-of softening of the coal market in this territory has not materialized. Car shortage has made itself so distinctly felt in all fields and labor disturbances of one sort and another are popping up so constantly that almost everybody is ready to believe at last that the coal men were right when they prophesied a dry market and costly production this fall and winter. Country and retail demand is heavy and even the steam consumers, who have held out for several days, using up the last of their high-priced strike coal and hoping for a drop in local fuel, have started back into the market.

Railroads cannot extend much comfort to operators. For the time being they are distracted with demands for cars in which to move crops and freight traffic generally has become so heavy and motive power so debilitated that coal is getting a bad deal. Illinois has not yet reached 70 per cent production and Indiana is somewhat short of that, with very little likelihood of either doing any better in the near future. In Illinois a score of tie-ups are due to soreness on the part of miners against company men. Miners' bitterness over the Herrin prosecution apparently is going to lead to further shut-downs if not to the general state mine strike that is threatened.

WESTERN KENTUCKY

Resumption of production in Indiana, Illinois and north of the Ohio River has resulted in an almost complete elimination of western Kentucky coal in the Chicago and some other Northern markets, with the result that operators are endeavoring to locate business, and are reported to be handicapped in finding enough priority business on which they can secure cars for loading.

According to some reports received coal from western Kentucky is being offered as low as $2.25 for screenings, and up to $5 for mine run or lump, at Chicago. However, it is said that anything at under $4 represents either reclaimed bank screenings, or else demurrage coal that brokers have to unload.

Some of the railroads are trying to sidestep their priority contracts for coal, it is said, due to the fact that they are now able to secure coal on shorter haul in other fields, and at a slightly lower price, as it is reported that some coal north of the river has sold under $4. As a result Chicago is refusing to bid more for western Kentucky coal than prices at Northern mines, less the difference in freight from western Kentucky.

SOUTHERN ILLINOIS

The mines of the southern countries are getting at the present time from three to four days per week on account of no cars and budding labor troubles and prices range $4.90@$5.15 for domestic sizes, $4.65 for mine run and $4.50 for screenings, although some screenings and mine run is sold for considerably less. Railroad tonnage is light, everything considered. Somewhat similar conditions prevail in Duquoin and East Jackson County, with the same prices and the same danger of dissatisfaction and trouble. Murphysboro coal is selling at $5.50 for mine run and screenings and $6 for domestic sizes.

In the Standard district practically all mines are working from three to four days per week. Car shortage is unusually severe on the L. & N. Southern, Mobile & Ohio and B. & O. Railroad coal is moving out of this field in pretty fair volume on old contracts. There is a wide variation in the price from $3.50@$4 for 2-in. lump and other steam sizes, including screenings and mine run. Six inch lump is quoted $4.25@$5, and the same for 3x6 egg and 3x2 nut, it all depending upon where the coal must go and who needs it.

INDIANAPOLIS

Indiana prepared sizes may cost Hoosier consumers at least $8.50@$9 a ton in bins this winter, according to calculations of operators and retailers. Consumers will pay even higher prices for coals from outside. At one Indiana mine the quotations were $4.35 for 1¼-in. lump, $4.50 for 2-in. sizes and $5 for other prepared sizes. Following failure of the Indiana emergency coal committee and a committee representing the operators to reach an agreement to fix a price of not more than $3.50 a ton at the mines, which was proposed by the state committee, the responsibility for the establishment of prices has been turned over to the Indiana operators.

CHICAGO

At last the public lethargy appears to be cracking. The coal market is brisking up a bit. And this comes at a time when car shortage is shutting down mine after mine in Illinois and Indiana and making most others run fractional days.

Very little fuel other than that mined in these two states is trading on this market. Illinois coals from the northern and central fields have softened a shade in price but most of the southern field output has held the market firm at $4.25@$5.15. Even screenings are now selling about as fast as they can be delivered for the double reason that strike coal is now about used up and that the steam trade is practically convinced that prices are not going to slump.

ST. LOUIS

Conditions are unusually quiet. Domestic buying is slow and the people have not realized what is ahead of them. A couple of dealers who have been lined up for prosecution for misrepresenting coal have been given some publicity by the papers in which they advised the public to wait for six weeks before buying domestic fuel. These dealers haul strip mine coal from around Belleville and there is market for that except when all other coal is unobtainable.

Country demand is also quiet to some extent for the same reason. Steam buying has not resumed as it should, the contention being that coal is too high. The general feeling is that Standard should have started off at $3, Mt. Olive at $3.50, and Carterville at $4 instead of 50c@$1 above that.

Everything indicates one of the greatest calamities that could befall a big industrial section very shortly when conditions become critical, because the tonnage available will not be anywhere near enough to take care of the demand and prices instead of being reduced must go up.

Retail prices are listed at $8.50 for Carterville, $7.50 for Mt. Olive and $6.75 @$7 for Standard, sidewalk delivery.

LOUISVILLE

Western Kentucky coal is weaker and is quoted $4@$4.50, while eastern Kentucky is $4.50@$5.75, with the bulk of movement at $5@$5.50. On Aug. 21, 23 and 26, roads were placing cars for Lake movement only, but it is reported that the entire movement was not to the Lakes, and that much of the Lake buying was at prices ranging up to $6.

It is believed that it will not be long now before the operators will be forced to quote noticeable differentials between sizes, instead of quoting everything at practically a flat price.

The state fuel commission has suspended operations, under orders from U. S. Fuel Distributor Spencer, and indications are that the railroads will be instructed to lift all classification of priority soon.

Canada

TORONTO

There is plenty of bituminous coal on the market for present requirements, but little demand for it for domestic purposes, as consumers are still hoping to be able to secure a supply of anthracite. Present quotations are about $10.75 for ¾-in. lump and $10 for slack, f.o.b. cars, destination. Dealers show no disposition to order Welsh coal, contending that only soft coal can be obtained from Wales and that they are reasonably sure of obtaining a supply of American bituminous coal.

Fuel Controller J. A. Ellis has issued a warning, giving it as his opinion that it will be impossible to obtain a full supply anthracite during the winter, urging the conservation of fuel.

Eastern Inland

Lake Situation Paramount, Local Markets Being Easier

Receipts Gaining at Lower Ports, Though Retarded by Transit Conditions—Removal of Restrictions and Absence of Price Control Aid Movement—Prices Decline Gradually.

The Lake situation holds the center of the stage. While receipts at the lower ports are growing rapidly they are still much retarded by transportation difficulties. A heavy tonnage must be moved up the Lakes in the remaining twelve weeks of navigable weather if a serious shortage in the Northwest is to be averted during the winter.

Eastern Inland markets are in an easier position. Production is increasing and local fuel shortages are being quickly overcome. Removal of many priority restrictions and the breakdown of Ohio's price regulatory measures have caused a freer movement of coal. Prices are gradually being lowered by the heavier spot offerings and the bargain-hunting tactics of buyers.

CLEVELAND

Chief interest centers upon activities to rush coal to the Northwest in an effort to head off a fuel famine. The slow movement to the lower docks has retarded the operation of pooling arrangements, under which permits for moving coal to the Northwest will be issued by D. S. Robertson, representative of the I. C. C., who will have headquarters at the Ore & Coal Exchange.

Pooling of coal for Northwest started last Friday. Except for special consignments Lake coal is placed first in priority. Receipts at Lake were about 400,000 tons last week. Expect 800,000 this week and 1,000,000 weekly thereafter.

An interesting development since the strike settlement has been the heavy inflow of orders for household coal. Retail dealers literally have been swamped. As yet these orders are being accepted with the understanding that deliveries will be made on them in the order they are received. Some dealers are urging their customers to buy Ohio coal, fearing that the government may find it necessary to shut off West Virginia coal coming into this district for all but Lake shipments. Coke is also being offered as this is in better supply. Orders for Pocahontas are being accepted on the basis of $10.75 a ton for shoveled lump and $12.25 for forked lump.

Industrial demand continues strong. With the breakdown of the present system of local committees on fuel distribution in many parts of Ohio and the abandonment of efforts to establish fair prices, the trend is toward free conditions in the coal market with everything depending on the roads' ability to meet demands upon them.

PITTSBURGH

At a meeting of the Pittsburgh Coal Producers' Association on Aug. 29, the Pittsburgh Coal Co. having previously withdrawn, it was decided to accept the Cleveland agreement. The following day the Pittsburgh Coal Co. signed the scale. Operators in the Freeport vein had previously signed, as had most of the steel companies operating in the Pittsburgh district.

The Connellsville strikers did not return to work in numbers after the posting of notices restoring the scale of Sept. 1, 1920, although some straggled back to work. Many meetings were held at which resolutions were passed to hold out for union recognition. Day by day the trade watched the situation to see when the strike, as a strike, would end. Sept. 1 brought the almost comical denouncement of a car shortage developing of such magnitude as to make it of no interest whether or not additional strikers were disposed to return. All told, a great many new men had been brought into the region.

There has thus far been no regular trading in Pittsburgh district coal, except that recently Youghiogheny gas coal appeared, developing a price of $6.50. Connellsville steam coal, quotable a week ago at $5, weakened to a range of $4.50@$5, while on the appearance of Lake demand and the development of car shortage the market stiffened to a range of $4.75@$5.25. The trading has been light except in Lake coal.

NORTHERN PANHANDLE

Resumption of operations at the few union mines here has tended to increase production but the bulk of the output is coming from open-shop mines since most of the mines in the Panhandle are operated on such a basis. A part of the increased output is going to the Lakes but the railroads also are securing a large tonnage. There is comparatively little free coal available.

EASTERN OHIO

Car shortage and transportation disability were the only deterrent elements of significance which prevented eastern Ohio mines from attaining maximum production during the week ended Aug. 26. Production aggregated 226,000 tons as against a potential capacity of 620,000 tons.

The bulk of mine output during the past two weeks has gone to railroads and public utilities and the anxiety existing with these larger consumers has been somewhat relieved. Buyers in general continue to show a procrastinating disposition toward entering the market at this time. Their anticipation is that coal may be purchased a few weeks later at prices below those now prevailing in the open market.

Spot prices remain firm at the new lows of a week ago and it is not expected by those well informed in the trade that they will recede any further for some little time, as a considerable portion of Ohio coal will be directed to the Northwest. Slack, nut and slack and mine run are quoted $5@$5.50, and lump sizes range $5.25@$5.75.

Receipts of bituminous coal at Cleveland during the week ended Aug. 26 show a substantial increase over the preceding week, total arrivals aggregating 814 cars, 743 cars to industries and 71 cars to retail yards.

DETROIT

Though the railroads report a freer movement of bituminous coal, receipts continue to fall short of daily requirements and the city is "not yet out of the woods."

Jobbers and wholesalers find very little inquiry. The chief impediment to an increased present supply is the inability of the roads on which the coal originates to supply cars and their lack of success in moving loads to connecting roads serving Detroit.

To facilitate distribution of domestic coal, Detroit dealers at a meeting held under the auspices of the Detroit Coal Exchange voted to appoint a committee of five representative retail dealers, which will have supervision over prices and distribution for household use.

COLUMBUS

With all fields working and a large tonnage being produced the market is settling down. The most insistent demand is now coming from dealers who are anxious to secure stocks as early as possible.

Householders are asking for delivery on orders placed with retailers some time ago. Since only a small amount of smokeless is coming into the market the trade is demanding largely upon Hocking and other southern Ohio grades. Hocking lump is selling $6@$6.50 f.o.b. mines. Dealers prices are $9.50@$10. Pomeroy Bend is retailing at about the same figures while Pocahontas lump is $10.50@$11.

The Lake tonnage shipped over the H. V. Docks at Toledo during the week ended Aug. 30 was only 50,276 tons as compared with 56,900 tons the previous week. So far this season the H. V. Docks have shipped 1,774,163 tons as compared with 2,968,000 up to Aug. 27 of last year.

BUFFALO

The trade proceeds slowly toward normal. More to sell is met by an increased demand. How far this movement is to continue is hard to say. The ordering of much coal to the Lakes and the scant car supply will both have an effect. The mines have been accumulating cars as much as possible, so that deliveries as yet are good, but they are not likely to continue.

Miners in the Allegheny Valley in general went to work sooner than those further south and the coal is already on the market. Prices are very unsettled and will remain so awhile yet, for the ideas of buyer and seller are much at variance. Allegheny Valley mine run sells at $5@$5.50 and Pittsburgh 50c. or so higher, with a little Youghiogheny gas at $7. The Lake allotments are likely to cut out most of the No. 8 from this market.

Northwest

Upper Lakes Region Is Still in Coal Ferment

Doubt in Many Quarters over Size Of Fuel Supply to Reach North—Prices Make General Advance Sept. 1, Amid Groans.

The Northwest is almost as badly worried today over coal as it was before the government promised plenty of fuel. Only one or two ports have received any considerable amount during the past week and every one of them has been hit by a general price increase of 75c. or $1, which moves the public to emit loud groans. However, it remains that there is no suffering yet for fuel and essential industries seem to have enough for the time being.

A strong effort has lately been made to get more Illinois and Indiana coal by rail to make up for the fuel that is not coming by vessel. Some coal has arrived by this device but not enough to count for much. Many wise coal men are cautioning the region to restrain its panicky tendencies because the next two weeks will see a Lake Movement that will bring joy to the whole territory.

MINNEAPOLIS

From all present indications, the supply of hard coal reaching the Northwest will be very much reduced—possibly a third of the normal tonnage, if that. This is counting unhatched chickens on the assumption that early incubation may be expected, and that hard coal production will be resumed soon. There were several hundred thousand tons of hard coal carried over—principally of unpopular sizes—but not enough to count heavily.

Increased demand for coke has resulted in the price going up another $1.50. Soft coal of various grades is also being ordered for use in domestic heating plants.

So far, the Northwest has been favored with promises of 400,000 tons of coal a week. But this has not been delivered. Just why cannot be quite determined. New plans follow old ones which prove unworkable. But none of them seems to produce coal. The harvest is over and past, the summer is ended and salvation is still a long way off. There is a great feeling of irritation over the situation.

A little all-rail Illinois coal was rushed up to the Twin Cities the past week, as an encouragement of future hopes in that direction. There is—with some exceptions—no crying need for fuel, though many supplies are close to the vanishing point.

DULUTH

Prices for coal coming up the Lakes after the strike have been announced here. Levels in bituminous are slightly higher than formerly. They are as follows: Youghiogheny, Hocking and Splint—lump, $9; run of pile, $8.50; screenings unquoted. Elkhorn—lump, $9.50; run of pile, $9; screenings, $7.50. Pocahontas—lump, $12; run of pile, $10.50; screenings, $8. These levels no doubt will hold throughout the entire season.

Dock men feel that there will be sufficient coal here to take care of wants for the winter, but that there will not be enough to cause any surplus. Despite reports in the daily papers about the possibility of the Northwest being unable to get coal under priority orders, shipments are coming in in ever increasing volume. Six cargoes have arrived since last week, two are reported on the way, and it is known that more are chartered.

The first evidence of pooling coal at lower ports has been felt here. A shipment of Elkhorn coal intended for one dock has been received by another. This is causing dissatisfaction as reported last week but dock men realize that it is the only solution.

Hard coal is still an unknown factor. There is none to be had, except in certain undesirable sizes.

MILWAUKEE

Coal conditions continue in a jumble with everybody dissatisfied with the conduct of the movement to this section of the country from the mines. Wholesalers have lost faith in the ability of the federal authorities to control shipments and are buying coal at the mines wherever they can and at the prices asked.

Retailers are buried under orders. It will be absolutely impossible to supply the anthracite which these orders call for. The available supply of coke is about exhausted and the price was advanced $1 per ton on Sept. 1. Large sizes now sell for $16 and pea and nut for $14. A general 75c. upward revision of soft coal retail prices took effect Sept. 1. This makes the increase since Aug. 1 total $2.

Thus far no industries or public utilities in this vicinity have been compelled to shut down but many are on the ragged edge for fuel supplies. Lake receipts for the season thus far are as follows, in net tons:

	Anth.	Bit.
April	700	107,609
May	....	195,251
June	....	303,401
July	....	167,799
August	....	72,352
Total	700	846,412
Same period last year	645,230	1,846,180

New England

Withhold Orders as Stocks Are Good and Output Gains

Distress Unlikely Unless Buyers Hold Back Too Long—Early Resumption of Anthracite Mining Would Ease Steam Coal Situation.

A recent survey in this territory shows comfortable stocks for the next sixty days. Reports of much increased production also influence consumers in withholding purchases at present quotations. It may be that some will overstay, but in view of receipts this year so nearly matching those of 1921, it is hard to see how there can be any real distress in this market.

Should anthracite mining be resumed within a fortnight, as now seems probable, a very slight increase in current receipts would make the situation here relatively easy so far as steam coal is concerned.

With the volume of British coal continuing to arrive there is certain to be ample fuel during September and October. Certain foreign cargoes that have reached here unsold have been absorbed only with difficulty, and there are still small barges and lighters being offered on the current market for prices much lower than was quoted c.i.f. in large cargoes. Under these conditions there will be no broad market for bituminous unless car-supply or some other controlling factor intervenes.

The Hampton Roads agencies have made a distinct gain in tonnage. Less coal is being sent to railroads like the Pennsylvania and the Erie, such requirements being met from central Pennsylvania, but it is amazing that, as late as Sept. 2, N. & W. cars were being sent all-rail to help supply the New Haven Road. When Washington undertakes cross-haul movement of this kind it is not surprising that car shortage is predicted.

Consumers who made their contracts on smokeless coals are beginning to hear of the recent wage increase granted in non-union districts, the bill to the consumer amounting to $1 per net ton. This only adds to the confusion between contract coal and priority coal, the net result being a much higher delivered cost for those who have to pay.

There have been increased offerings of Pennsylvania grades for shipment all-rail. Prices range from $4.50 per net ton at first hands to $6@$6.50 per net ton for coal that approximates Navy standard.

Aside from the shortage of anthracite the only possible reason now for any anxiety is over carsupply. The Southern roads have swung the burden for so long that it is only natural their equipment should be more or less crippled. Other roads are in better shape.

Cincinnati Gateway

Normalcy Awaits End of Railway Shopmen's Strike

Report Return of Groups of Workers to Duty—Scarcity of Cars and Condemnation of Locomotives Cripple Production—Prices Soften as Consumers Lay Low.

The shopmen's strike is the nub of the fuel situation. Other rough spots occasioned by the long strike are beginning to show signs of softening and it seems generally agreed that normalcy is not so far off if the railroad workers would get back in the traces. Considerable interest is shown in the report that little groups of workmen of the C. & O. are coming back to work and that the violence is growing more intense. On the L. & N. cars are getting scarce and the action of the I. C. C. in turning down a number of engines doing duty in the fields was a further crippling.

Production is now largely a matter of obtaining cars. Prices are softer, as consumers play a waiting game.

HIGH-VOLATILE FIELDS

Kanawha

Much of the coal originating in the Kanawha region is still coming from open-shop mines although approximately 50 companies in the district have signed an agreement with the union. Production is being slightly increased but cars are so short of requirements that the output of most mines is necessarily limited.

Logan and Thacker

Production was hardly on as large a scale in the Logan region during the latter part of August, owing to an acute car shortage. This diversion of coal to the Lakes made for a shortage of supplies at automobile factories and among other industrial concerns and also cut the supply of free coal.

Mines in the Williamson field are just about managing to maintain production at 165,000 tons a week, owing to the fact that the car supply is not fully equal to the requireemnts of the mines. There is an unusually heavy movement westward through Williamson, particularly since the district has been called upon to furnish a large part of its quota to the Lakes. Although many strikers are drawing benefits in this county, yet as a matter of fact all the men needed are available.

Northeastern Kentucky

Transportation disabilities are still materially handicapping mines so that the output is still under 50 per cent of potential capacity. With a heavy tonnage being shipped to the Lakes under government orders, there is little coal available for general market purposes. Most of the coal is moving at $4.50 or less.

LOW-VOLATILE FIELDS

New River and The Gulf

Production is being gradually increased in the New River field. Upon the signing of a union agreement in other fields miners at a few of the plants in this region declined to go to work, but such a condition was not general and did not affect production. The only factor which is hampering the mines is the difficulty of securing cars and of moving coal after it is loaded. Increased production is resulting, however, in a somewhat larger movement of coal to Tidewater.

Winding Gulf mines are still being handicapped to some extent by a shortage of cars and by the difficulties attendant upon the movement of coal on the western end of the Virginian. Labor is plentiful.

Pocahontas and Tug River

By the end of August production in the Pocahontas region was back on about the same level as observed during the earlier part of the month. A shortage of cars is still handicapping mines to some extent. The Eastern movement is large, there being approximately twice as much coal going to Tidewater and Eastern markets as to Western points. There is also a good deal of fuel moving under priority orders so that there is comparatively little spot coal to be had.

Tug River production is once again above normal, being not far short of 100,000 tons per week. This improvement is due solely to improved transportation facilities on the part of the N. & W. which supplies this territory. All the free coal available, however, is moving under priority regulations.

CINCINNATI

Lake coal is still the uppermost question here. It has been found that the permit system has been merely one of evasion for the shipper who contracted low-priced coal and that priorities are easier to obtain than is healthy for the good of the trade. Word comes that there will be a more comprehensible ruling from Washington that will get coal to the Lakes. The movement in this direction, in spite of all of the impediments that the government has thrown about has been fair with prices on a $6 range.

The Kentucky coal distributing committee has gone by the board and the Huntington committee for the Kanawha section has followed suit. The Ohio dictator has thrown up his hands and decided to let fair price take care of itself. Indiana and Illinois coals are beginning to show that the aching void to the west is being filled, all of which has slowed down the local business that was taking care of this. Here and there a rabid wholesaler is bidding 25c. on top of the spot market and can get all that he is looking for at that price.

Smokeless coals are more in the range of the Hoover prices than the others. Recent wage advances, however, are forcing the 8 per cent commission to be tacked on where possible.

The retail market has taken another spurt upward. The new prices follow: Smokeless lump, $10.50@$11; mine run, $9@$9.50; screenings, $8.75. Bituminous: Lump, $9@$9.50; mine run, $8.50 @$8.75; slack, $8.25.

Coke

CONNELLSVILLE

Coke production has continued increasing, at a moderate rate, until Sept. 1 a car shortage of impressive proportions developed, and operations will be controlled by that factor in future. There remain many strikers whose mental attitude is that they are holding out for union recognition.

Increased production has been chiefly on the part of furnace ovens, and market offerings are but slightly increased. There is no opportunity now for any number of furnaces to resume by reason of increased supplies of merchant coke, whether on old contracts or by fresh buying. Furnace coke was quotable a week ago at $11.50, but the market has since stiffened to a range of $11.50@$12 Furnacemen generally claim prices are altogether too high to justify their considering the market, and talk of $7, but the practical fact is that offerings are too light to encourage a furnace to attempt to build up a supply, irrespective of price.

Foundry coke has been in lighter demand and the market is off $1.50 in the week, being at a range of $13@$13.50.

The *Courier* reports production during the week ended Aug. 26 at 69,900 tons by the furnace ovens and 16,200 tons by the merchant ovens, a total of 86,100 tons, an increase of 3,590 tons.

UNIONTOWN

Just as Connellsville coal operators believed they had the strike situation well in hand the long expected car shortage made its appearance, due principally by demands for equipmen from union regions resuming operations. The Connellsville region may now be considered as operating at 50 per cent of capacity despite the continued strike of the recently organized miners. The mines and ovens are being mined by men who have left the union, by other region labor attracted by the present high wage and by imported labor.

Coal closed the week with a quotation of $4.50@$5. Priorities were in force on the B. & O. but the market appeared open on the Pennsylvania. The present effort to coal the Northwest before the Lakes close will have but little bearing on the Connellsville trade, this vein of coal being considered too fine for the Lakes trade.

BUFFALO

Demand is fair, especially for domestic sizes, but the supply has not increased much yet. Reports are sent out that the prices are off, but that seems to mean merely that some very extravagant asking prices have been dropped.

News From the Coal Fields

CONNECTICUT

Thomas W. Russell, of Hartford, has been appointed fuel administrator for the State of Connecticut by Governor E. J. Lake.

Mayor Fred Atwater of Bridgeport is planning to **establish a municipal coal yard** at the city dock, to enable the people of Bridgeport to purchase their winter supply of coal at a price guaranteed to be about $11 per ton, alongside, the purchasers to do their own haulage.

ILLINOIS

The Ellisville Coal Mining Co., of Galesburg, has been incorporated with a capital of $30,000 by William Donaldson, A. B. Donaldson and W. R. Hawkins.

The Mutual Fuel Corporation, Chicago, has been incorporated with capital of $665,000. The object of the company is to acquire and operate coal mines and mining property. The incorporators are John R. Fitzpatrick, Frederick R. Thomas and Guy R. Creelman.

Work will be started soon on the building of the **Jefferson Southwestern R.R.**, according to reports from Mt. Vernon. The road will be built by the **Illinois Coal & Coke Co.**, of Chicago, of which Albert J. Nason is the head. A petition for a rehearing of a controversy over the road has been denied by the State Commerce Commission and it is reported that the roads contesting the case will make no appeal. The road will extend from Jefferson, south to the site of a new mine to be sunk by the coal company building the road.

The Buckheart Coal & Mining Co. has been incorporated with capital of $25,000 and will operate a mine in Buckheart township, Fulton County.

John Ferry is opening a new coal mine on the McKelvie farm, near Brooklyn.

C. V. McShane, of the Chicago office of the White Oak Coal Co., is spending a part of his vacation at the company mines in West Virginia.

INDIANA

The Rea Coal Co. has been incorporated with capital of $10,000 to operate coal lands. The incorporators are George W. Rea, Carl A. Nickey and Fred W. Bender.

The White & Wright Coal Mining Co. has been incorporated with capital of $10,000 to deal in coal, with James A. Wright, Charles J. White and Arthur S. Wright as the owners.

Appointment of a receiver for the **State Coal Mining Co.** has been asked in a complaint filed against the company in Superior Court by H. H. Woodsmall & Co., creditors. The company operates mines in Vigo County. It is alleged that the company is in danger of insolvency and that the mines have not been operated since March 25 because of insufficient funds. Included in the list of liabilities, which the complaint says are owed by the mining company, are a $3,000 mortgage, unpaid labor claims amounting to $172, first installments of this year's taxes and a promissory note for $5,000.

The Winslow Coal Co. has been incorporated with capital of $10,000 to mine and market coal, the incorporators being Edmund C. Landgrebe, Gilbert C. Landgrebe, S. H. Wulfman, F. N. Landgrebe and Frank E. Newlin.

The Nash Mining Co. has been incorporated with capital of $50,000 by Fred Graham, Raymond H. Munshower, L. G. Lewis, A. A. Bibler, J. F. Warner, E. L. Miltonberger, James F. Hildebrand, J. A. Jackson, Edward Hoffer and G. P. Davis.

IOWA

A group of business men of Indianola are interested in the sinking of a new coal mine near that city. J. C. Ward, Kirksville, Mo., is in charge of the work. The syndicate backing the new mine has taken options on about 400 acres of land. Only local men are interested in the project.

The engine room and boiler house of the **Smoky Hollow Coal Co.'s** mine No. 11, south of Hiteman, have been destroyed by fire which swept the plant. The hoisting engine was wrecked, the cables ruined and the cages dropped to the bottom of the shaft. The blaze started in the boiler room.

KENTUCKY

The West Kentucky Coal Co. has opened a new mine between Fairmont and Wheatcroft on the Providence branch of the Illinois Central.

The Kentucky Retail Coal Dealers' Association has sent out a notice of a meeting to be held in Louisville, September 14, to see what can be done to make things better in the coal trade. The letter is signed by **R. A. Watson**, president, and **J. Crow Taylor**, secretary.

The Gordon Hill Development Co., Central City, capital $150,000, has been chartered by W. O. Field, Louisville; J. G. Hodges, of Asheville, N. C.; J. H. Frost, Central City, and N. N. Boyden, Louisville.

A new mine is to be started on the Barret farm, just out of Henderson, on the Illinois Central, to which a spur will be built. W. L. Hughes and William and John Barret are the promotors of the company. It is planned to start development work this fall.

John Marchand has relieved **H. M. Priest** as I. C. C. agent for the Louisville district.

Huntington capitalists have organized the **Big Sandy Coal Co.**, having in view the development of coal property in northeast Kentucky. This enterprise is capitalized at $125,000. Closely identified with it are C. L. Ritter, H. T. Lovvett, M. A. Simms, G. A. Koontz and H. Blaisdell.

MISSOURI

The Hawk Point Coal & Mining Co. is planning to sink a shaft at Hawk Point.

A strip mine has been opened east of Armstrong, and coal is being marketed there. Coal was mined at this place many years ago and hauled to Glasgow, where it was sold to owners of steamboats for firing engines.

The St. Joseph Coal Mining Co. has been incorporated at Lawson with a capital stock of $50,000, and will buy, sell and lease mining lands, sink shafts, mine and operate coal mines. Shareholders are J. W. Stouffer, T. C. Smith and Alex Shepherd.

The Lincoln Coal Co. has been formed at St. Louis, and has filed incorporation papers with the secretary of state at Jefferson City, showing a capitalization of $10,000. The company will own, operate and manage coal mines, coal properties and coke ovens. The shareholders are M. E. Sullivan, J. A. Schultes, J. A. Tighe and P. A. Lavin.

NEW YORK

David Taylor, vice-president, Coal & Iron National Bank, New York, recently returned from his vacation in the Pocono Mountains.

Wm. H. Jaquith, assistant cashier, Coal & Iron National Bank, New York, recently enjoyed a well-earned vacation at Raquette Lake, N. Y.

Effective Sept. 1, **Alfred D. Thompson**, manager of bituminous sales for Pattison & Bowns, Inc., became associated with the Titan Fuel Corporation as vice-president, in charge of sales for central and western New York and western New England, with offices in Utica.

OHIO

A party of officials of the **Maher Collieries Co.** visited the mines of that company in Belmont County during the closing days of August. In the party were Thomas Maher, president, Cleveland; John C. Heinlein, vice-president and general manager, Bridgeport; K. G. Perry, secretary; John A. Maher, treasurer; J. C. Maher, president of the Rodewig Coal Co.; Vincent F. Maher, William J. Maher, general manager; Judge John Pollock, Dr. J. A. Heinlein and Henry Beiberson. No improvements at the company's mines will be authorized until the result of the inspection trip is analyzed.

A new high mark for eastern Ohio coal land was set recently when **D. H. Shields**, editor of the *Bellaire Democrat*, received a consideration reported to be $65,000 for 130 acres of coal in Mead and Poltney townships south of Bellaire. The property was purchased by the **J. A. Paisley Coal Co.**, Cleveland, but according to reports, it will be transferred to the **Rail & River Coal Co.**, in exchange for a similar amount of coal near the Paisley holding at Stewartsville. It is said that each company had practically blocked expansion of the other because of ownership of adjacent lands and that the exchange will enable these companies to expand properties already operating.

Donald M. Hamilton, trustee in bankruptcy of the **Elk Coal & Coke Co.**, has been authorized to sell the real estate of the company, consisting of 12.67 acres in fee simple and coal rights on 378.48 acres at Roseville on the Pennsylvania. The company has been in bankruptcy for some time.

PENNSYLVANIA

Effective Sept. 1, the **Jefferson Coal & Coke Co.**, Pittsburgh, will sell the coal produced by the **Jefferson Gas Coal Co.**, **Lindley Coal Co.**, and the **Wet Branch Mining Co.**

Central Pennsylvania will be represented on the committee appointed by W. D. B. Ainey, chairman of the fuel commission, who will look after the speeding up of the production and distribution of coal in the bituminous fields, by Charles O'Neil, Altoona; H. J. Meehan, Johnstown; G. Dawson Coleman, Philadelphia; Rembrandt Peale, Clearfield; William Lamont, El Mora; B. M. Clark, Indiana; Harry Bolton, Clearfield; J. R. Casley, DuBois, and J. C. Forsyth, Clearfield.

Mines at Carrolltown, Cambria County, opening last week under the Cleveland agreement, include the operations of the Pennsylvania Coal and Coke Corporation, the Navy Smokeless, the West Carroll mine, the Watkins Coal Co., the Snyder and the Burley mines. Seventy per cent of the men returning to work were Carrolltown men and a new era of prosperity dawned upon the northern Cambria mining towns.

The Erie Railroad Co.'s ten small mines in the vicinity of Blossburg and DuBois, Pa., will be operated by the **Peabody Coal Co.**, of Chicago, beginning Sept. 1. The railroad takes practically the entire output. This addition to the Peabody string raises the total number of mines operated by the Peabody interests to forty-six, with a tonnage said to total 20,000,000. The other thirty-six mines spread from the thick-vein coal of Wyoming, eastward through Oklahoma to eastern Kentucky, with the majority of the company's operations in central and southern Illinois.

The Jamison Coal & Coke Co. proposes to develop about 1,200 acres of coal land in South Union Township, Fayette County, and with that purpose in view has awarded contracts for the sinking of two shafts. There is comparatively little virgin coal land left in the Connellsville area and this is said to be one of the few tracts of such property available. Tentative plans call for the product of the new mines to be shipped to the byproduct plant of the Bethlehem Steel Co., at Bethlehem.

The Pennsylvania State Fuel Commission has announced the appointment of special agents to carry out the orders of the Public Service Commission, the I. C. C. and the State Fuel Commission for bituminous coal loading and distribution in the six established regional districts. Appointments were also made of representatives of the public on the six committees, the personnel of which had consisted of operators. The agents are: W. B. Moore, Altoona, for the central Pennsylvania district; J. Patterson, Greensburg, Westmoreland district; J. F. Stewart, Pittsburgh, Washington and Allegheny district; T. J. Davis, Uniontown, Fayette and Greene district; John E. Barr, Butler, northwestern Pennsylvania district; W. J. Kiniry, Somerset, Somerset district. The public's representatives to the six regional committees are: Thomas C. Hare, Altoona, central Pennsylvania district; S. John Morrow, Uniontown, Fayette and Greene district; Dr. Robert B. Greer, Butler, northwestern Pennsylvania district; Charles F. Uhl, Somerset, Somerset district; Thomas A. Dunn, Pittsburgh, Washington and Allegheny district; Robert B. Herbert, Greensburg, Westmoreland district.

The Ayrdale Coal Co., Philadelphia, has notified the State Department at Harrisburg that it has changed its corporate title to the **Argyle Coal Co.**

The Marvel Coal & Coke Co., Allegheny County, has changed its name to the **H. Oliver Coal & Coke Co.**

In the Dauphin County Court the anthracite tax act was recently declared to lack a definite provision relative to ascertaining the value of coal when prepared for the market. J. Claude Bedford, Philadelphia, counsel for the **Mill Creek Coal Co.**, of Philadelphia, which operates Morea Colliery, led the fight against the act, the argument being the first to be heard in the eighty-nine appeals filed from the tax amounts declared by Samuel S. Lewis, Auditor General, to be due the Commonwealth. These appeals relate to cases involving upwards of $2,000,000 in taxes. The other cases will be grouped according to questions raised and will be argued later.

The Graceton Coal & Coke Co. has notified the State Department at Harrisburg of an increase in its indebtedness from $450,000 to $500,000. C. M. Shwerin, New York City, is president.

The Schuylkill County Commissioners have given out their new valuations on coal land properties, which total $422,544,587, compared with $55,907,496 under the old valuations. The new total includes only the coal, and not the surface valuations, which will add about $50,000,000 to the total. Breaker property and buildings will also come under increased figures, which are to be added to the coal valuations and the surface valuations, making the grand total approximately $600,000,000.

The Philadelphia & Reading Coal & Iron Co. has filed an appeal in Dauphin County, from the State coal tax assessed against it for the last six months of 1921, amounting to $477,619. Twenty-five subsidiary companies are affected, being leased by the Philadelphia & Reading company. This is one of numerous similar suits filed and has no direct bearing on the appeals from the constitutionality of the State coal tax law, now before the United States Supreme Court.

TENNESSEE

A new coal mine has been opened at Cartwright by the **Palmetto Coal Co.** The mine is located near the Nashville, Chattanooga & St. Louis R.R. It is the first one to be opened in what is known as the Tracy City field. It will have a capacity of 400 tons a day.

TEXAS

The Dollins Coal & Lumber Co., of Greenville, has been organized with a capital stock of $3,000, to do a retail coal business in connection with the operation of a lumber yard in Greenville. The incorporators are C. M. Davis, Ruby Davis and J. B. Gober.

The Empire Fuel Co., recently organized with a capital stock of $5,000,000 and incorporated under the laws of Delaware, will begin operations immediately in the vicinity of Rockdale. The company owns 5,000 acres of lignite lands in Milam, Limestone and Freestone counties, which will be developed. Adam H. Davidson, of Dallas, is general manager of the company, while A. E. Neisanger, formerly efficiency expert of the Dallas Power & Light Co., at Dallas, is vice-president and general superintendent of the plant. M. R. Summers is local manager at Rockdale. The company is erecting a briquet plant at Rockdale that will represent an expenditure of approximately $1,000,000. The company has taken over the Sparks interests in the Rockdale lignite field, consisting of 1,000 acres of land with five operating shafts; the Santa Fe Lignite Co., of Rockdale, which owns 1,000 acres of land on the Gulf-Colorado & Santa Fe Ry., eight miles east of Rockdale. The company also owns 3,000 acres of undeveloped lignite lands in Limestone County.

UTAH

A. D. Pierson, for the past ten years general sales agent of the Utah Fuel Co., at Salt Lake City, has resigned. He has not yet announced his plans for the future, but may go into business for himself.

The Carbon County R.R. Company, an auxiliary of the new **Columbia Steel Co.**, has received a permit from the Public Utilities Commission to construct a line from a point on the D. & R. G. Western to the company's coalfields which it purchased from the **Utah Coal and Coke Co.** in Carbon County.

John S. Critchlow has been appointed general sales manager of the Utah Fuel Co., Salt Lake City, to fill the vacancy caused by the resignation of **A. D. Pierson.** Mr. Critchlow is well known in Utah coal circles. Of late he has been engaged in the coal brokerage business in San Francisco.

A new mine superintendent of the Utah Fuel Co. is **Thomas Parmley**, who enjoys the ecclesiastical title of "Bishop."

VIRGINIA

Menalcus Lankford has been appointed chairman of the Norfolk Fuel Distributing Committee, and plans are being made by this committee to get Norfolk's supply of coal, estimated to be 12,000 tons to meet the needs of September.

The Chesapeake & Ohio Ry. will erect at Newport News a new steel coal pier, the cost estimated to be in the neighborhood of $3,000,000. The plans for the erection of this pier will not be completed until the board of directors of the road meets later in September. The plans for financing the pier will be mapped out at that time, according to advices received here from Richmond officials. The C. & O. has announced the projected expenditure of $16,500,000 in improvements, one of the principal items of which will be the new pier. This will give Hampton Roads facilities likely to place it abreast of the foremost coal handling ports in the world.

WEST VIRGINIA

The coal holdings, equipment and assets of the **LeMar Coal Co.** have been purchased by the recently organized **Fairmont-Chicago Coal Co.**, which is capitalized at $600,000. The property of the LeMar company was sold at public auction. The purchase price was $82,000. The holdings consisted of about 160 acres of Sewickley coal in addition to a developed mine, a modern tipple and sidetrack. The Fairmont-Chicago company is making a specialty of the production of Sewickley coal.

The Gordon Fuel Co. has been organized by Clarksburg capitalists for the purpose of engaging in the coal business in Harrison County. This company has a capital stock of $50,000. The general office will be at Clarksburg. Principally interested in the new enterprise are: H. G. Smith, P. W. Bailey, M. Gibson, D. K. Smith and T. M. Smith.

The Argonne Coal Co. has been organized in the McDowell County field, having a capital stock of $25,000. Dan is to be the point of operations. Identified with this new enterprise are: F. N. Evans, F. D. Evans, J. N. Evans, Victoria Evans and M. M. Perkins, all of Dan.

Operations on a large scale are presaged by the organization of the **Houck, Reidler Brothers Coal Mining Co.**, just organized for the purpose of developing coal property in Preston County. This company has been capitalized at $400,000. Active in effecting its organization were G. C. Houck, W. O. Houck N. P. Reidler and C. E. Reidler, all of Austen; R. D. Houck, Daniel Houck, of Oakland, Md.; G. W. Reidler, of Tunnelton, W. Va.

Fatalities incidental to the production of coal in West Virginia during July were somewhat less than during earlier months of the year, there being only 23 deaths. As is usually the case, 15 deaths were the result of falling slate. One miner was killed in a mine car accident, two by electrical shock and one in a local gas explosion. The other four deaths occurred outside the mines. More miners were killed in McDowell than in any other single county, there being six deaths in that county.

Coal property in Clay District of Harrison County is to be developed by the **National Gas Coal Co.**, capitalized at $150,000. The offices of this company will be at Wheeling for the time being, Ohio County capitalists being largely interested in the new venture.

The Consolidation Coal Co. has just completed training fifty-five miners in the New River-Pocahontas division at Coalwood in first-aid work, this work being carried on under the direction of George M. Grove, of the United States Bureau of Mines safety station. The Consolidation devotes a good deal of time to training its men in first aid and mine rescue work and has many well-trained crews.

The Banner Coal Co. has been organized with a view to developing coal property in Harrison County and vicinity, this company being capitalized at $50,000. Offices will probably be at Clarksburg. Having an active part in organizing the new company were: E. W. Laubensteln, George C. Butt, S. E. Butt, Susan Butt and Julia Butt, all of Clarksburg.

The Farnum Coal Co. has been sold to the **C. L. & W. Coal Co.**, of Fairmont, of which Alex R. Watson of Fairmont is president. At the time the sale was consummated the Farnum company owned 65 acres of Pittsburgh coal land and a mine near Shinnston in Harrison County.

The Hartland Railroad Co. has been organized by well-known coal people of Charleston, the short-line road to be constructed being for the purpose of tapping several mining fields. This company was organized by J. B. Hart, Edward Hart, Fred O. Blue and R. E. McCabe.

Organization of the **Barton-Weaver Fuel Co.** presages further development of coal land in Upshur County. This company has a capital stock of $15,000. The company will have its headquarters at Buckhannon. Having an active part in effecting a preliminary organization of the company were D. A. Barton, E. B. Weaver, Mary E. Barton, J. M. N. Downes and L. Hyre.

The Brady Coal Corporation, of Fairmont, is giving consideration to the question of purchasing 10,000 acres of coal land in Clay and Nicholas counties, this being in the Kanawha series.

BRITISH COLUMBIA

COAL OUTPUT FOR JULY, 1922

Vancouver Island District

Mine	Net Tons	
Western Fuel Corp., Ltd., Nanaimo	76,395	
Canadian Collieries (D), Ltd., Comox	31,209	
Extension	20,089	
South Wellington	6,595	
Granby Consol. M. S. & P. Co., Cassidy	20,399	
Nanoose-Wellington Collieries, Wellington	7,018	
Old Wellington, Nanaimo	527	
Total	162,232	162,232

Nicola-Princeton District

Coalmont Collieries, Coalmont	15,051	
Middlesboro Collieries, Middlesboro	5,058	
Fleming Coal Co., Merritt	3,191	
Princeton Coal & Land Co., Princeton	629	
Total	23,929	23,929
Total, all fields		186,161

Crow's Nest Pass District

No output on account of strike.

ONTARIO

The Reliance Coal & Coke Co., Ltd., has been organized in Toronto and has been granted an Ontario charter authorizing the company to engage in a general coal handling business. The authorized capital is $50,000, and among the incorporators are E. W. Wright, E. G. McMillan and G. S. O'Brian.

A group of Toronto business men have formed a company known as **The Toronto Coal Briquetting Co.**, and have taken over the defunct Nukol plant for the manufacture of anthracite coal briquets. Manufacturing has commenced and deliveries are being made.

The Toronto Coal Briquetting Co., Ltd., has been incorporated under the laws of Ontario and the charter authorizes the company to deal in and manufacture coal briquets and combustibles. The authorized capital is $250,000 and the provisional directors are C. B. Henderson, O. D. Kester, R. E. Clipsham, R. A. James and B. Rowe, all of Toronto, where the head office will be located.

WASHINGTON, D. C.

The United States Civil Service Commission announces an **open competitive examination for valuation engineer.** Vacancies in the Technical Staff of the Income Tax Unit of the Bureau of Internal Revenue, Treasury Department, Washington, D. C., at $3,600 to $4,800 a year, and in positions requiring similar qualifications, at these or higher or lower salaries, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion. Separate registers of eligibles will be established for (1) General Mining, (2) Coal Mining, (3) Oil and Gas, and (4) the Forest Industry.

Approval No. 1000 was issued on May 25, 1922, to the **Concordia Electric Co.**, covering equipment approved under Schedule 10A. The equipment is approved for safety and adequacy for hand lamp and trip lamp service as follows: For hand lamp service, when equipped with a white glass dome. For trip lamp service, when equipped with a ruby glass dome and when used with special holder which was tested with the lamp and is furnished by the manufacturer.

Obituary

L. B. Weisenburgh, president of the Valley Ice Co. of Hamilton, Ohio, and owner of coal yards in that city and Middletown, died suddenly on the golf links at Richmond, Ind. **F. B. Scott**, of the Superior Coal Co. of Knoxville, Tenn., died at the Seton Hospital, Cincinnati, recently, after it was thought that he had completed a recovery from rheumatism for which he came from his home for treatment.

Paul T. Spence, 59, secretary-treasurer of the Gibson-Spence Coal Co., Columbus, died at his residence, Upper Arlington, a suburb of Columbus, from the effects of a carbuncle. He was a prominent member of Masonic orders as well as the Rotary Club. He leaves a widow and two sons.

Traffic News

A meeting of the executive committee and advisory council of the **Indiana State Chamber of Commerce** to discuss the freight program of the Chamber as regards the coal situation, was held in Indianapolis recently. Both the Eastern coal case, which is set for a hearing before an examiner of the I. C. C. in Indianapolis on Sept. 11, and the Indiana coal case, which is to be argued before the Indiana Public Service Commission at an early date, as well as the Missouri River and Twin Cities rate cases, were discussed. The Twin Cities case, after being won by the State Chamber and the rate department of the Public Service Commission, was re-opened on petition of St. Louis intervenors. The final hearing will be held in Indianapolis, Sept. 13. The hearing in the Missouri River case will be before an I. C. C. examiner in Indianapolis on Oct. 3. Discrimination in favor of Illinois shippers to Missouri river points is alleged by the Indiana chamber. Complaints of Indiana shippers in the Eastern and Indiana coal cases were filed July 1. Owing to the fact that adjustment of rates in the Indiana coal case was a matter within the province of the Public Service Commission, the I. C. C. instructed the attorneys to redraft the complaint and file it with the state commission. A decision in the short-haul case argued before the Public Service Commission recently is expected soon.

In the complaint of the **City of Clarksville, Tenn.**, an examiner of the I. C. C. has recommended that refund be awarded on shipments of coal from western Kentucky mines served by the L. & N., to Clarksville, Tenn., from June 25, 1918, to March 1, 1920, because of application of unreasonable rates.

In the case involving coal rates from the Southwest to Omaha, the **Omaha Chamber of Commerce Traffic Bureau** has asked the commission to permit the proposed rates to become effective because the 20c. reduction will remove prejudice against Omaha; the proposed rates are reasonable, and that the relationship which will be thereby created between southern Kansas and the Springfield districts will not prejudice Illinois interests.

In the Western coal rate case the **Sheridan-Wyoming Coal Co.** contends that Sheridan, Wyo., is discriminated against and that the relationship between its mines and those located in Montana, Utah, southern Wyoming, Washington and Canada should be revised. Brief for the defendants serving Nevada and California argues that the rates on coal from Utah and Wyoming mines to destinations in Nevada and California are now on the proper basis and should not be disturbed. The Union Pacific System contends that the rates from Utah mines to the Northwest should be differentially higher than from southern Wyoming mines; that the differential should be not less than 50c.; and that lower rates on slack from Utah and southern Wyoming to destinations in Oregon than are applied on lump are justified. Supplemental brief for the Santa Fe submits that the record does not justify any reductions in the present rates.

The I. C. C. will hear oral argument in the complaint of the **Clay County Coal Operators' Association** at Washington on Oct. 24, and the complaint of the **McKell Coal & Coke Co.**, on Oct. 25.

In the case involving rates on coal from the Southwest to Omaha, the **Lincoln Chamber of Commerce** in a brief contends that the proposed reductions in the rates on coal from the Southwest to Omaha and Lincoln have been justified and that the differential in favor of Lincoln over Omaha should not exceed 20c.

The commission has denied a rehearing of the complaint of the **Citizens Coal Mining Co.**, in which it held that rates on bituminous coal from Citizens Mines A and B in the Springfield, Ill., district to various points during federal control were not unreasonable.

Association Activities

The Statistical Committee of the National Coal Association is composed of the following members, to serve from June 1, 1922: Honnold, F. C. (chairman), secretary, Coal Operators' Associations. Barker, G. H., vice-president, Maynard Coal Co., Columbus. Crewe, L. C., president, LaFollette Coal & Iron Co., LaFollette, Tenn. Dickinson, C. C., president, Dry Branch Coal Co., Charleston, W. Va. Guthrie, T. W., president, Hillman Coal & Coke Co., Pittsburgh. Lukins, F. W., president and general manager, Farmers' Fuel Co., Kansas City, Mo. Megeath, W. F., president, Roundup Coal Mining Co., Omaha. Puterbaugh, J. G., president, McAlester Fuel Co., McAlester, Okla. Randall, R. M., general manager, Consolidated Coal Co. of Saginaw, Saginaw, Mich. Robbins, S. H., president, Youghiogheny & Ohio Coal Co., Cleveland. Taylor, C. W., vice-president, W. G. Duncan Coal Co., Greenville, Ky. Wilshire, F. W., vice-president, Consolidation Coal Co., New York City. Jones, W. A., statistician, Central Pennsylvania Coal Producers' Association, Altoona, Pa. Koepler, W. E. E., secretary, Pocahontas Operators' Association, Bluefield, W. Va. McKinney, W. D., secretary, Southern Ohio Coal Exchange, Columbus. Reed, C. E., secretary, West Kentucky Coal Bureau, Louisville, Ky.

The following have been appointed as members of the Finance Committee of the association, to serve from June 1, 1922: Tierney, J. J. (chairman), vice-president and general sales manager, Crozer-Pocahontas Co., Philadelphia. Barnum, Walter, treasurer, Pacific Coast Co., 50 Church St., New York City. Brydon, J. C., president, Quemahoning Creek Coal Co., Somerset, Pa. Clemens, Ira, president, Clemens Coal Co., Pittsburg, Kan. Douglass, E. L., vice-president, First Creek Mining Co., Cincinnati, Ohio. Hutchinson, S. Pemberton, president, Westmoreland Coal Co., Philadelphia. Jenkins, C. H., vice-president, Hutchinson Coal Co., Fairmont, W. Va. Maloney, A. J., vice-president, Chicago, Wilmington & Franklin Coal Co., McCormick Bldg., Chicago. Morrow, J. D. A., vice-president, National Coal Association, Washington, D. C.

Trade Literature

Goulds "Pyramid" Double-Acting Piston Pump. The Goulds Mfg. Co., Seneca Falls, N. Y. Bulletin No. 100. A 2-page circular illustrating and describing the use of this pump, with its low air chambers, for mines. —Advertiser.

The Sullivan Spader. Class "DE-360." Sullivan Machinery Co., Chicago, Ill. Bulletin 70-X. Pp. 4; 6 x 9 in.; illustrated. Remarkable results are claimed for this spader in excavating stiff clay in trenches, open cuts and tunnels, in which work it takes the place of the hand pick, as well as the hand spade or shovel.—Advertiser.

Small Steam Turbines. Allis-Chalmers Co., Milwaukee, Wis. Bulletin No. 1123. Pp. 15; 8 x 10 in.; illustrated. These turbines are suitable for driving condenser auxiliaries, exciters, small generators, etc.

Type QC-3 Quick Break Lever Switches up to 600 Volts and 1,000 Amperes. General Electric Co., Schenectady, N. Y. Bulletin No. 47,326. Pp. 7; 8 x 10 in.; illustrated. Describes the location as well as dimensions of these switches on switchboards.—Advertiser.

Belted Alternating Current Generators. Allis-Chalmers Mfg. Co., Milwaukee, Wis. Bulletin No. 1099B. Pp. 12; 8 x 10½ in.; illustrated. This bulletin describes types "AB" and "AH," the former being made only in the smaller sizes, and for ratings up to 300 kva., while the latter are of the pedestal-bearing type.—Advertiser.

Distribution Transformers. Allis-Chalmers Mfg. Co., Milwaukee, Wis. Bulletin 1109, superseding Bulletin No. 1088. Pp. 12; 8 x 10½ in., illustrated. These transformers have ratings of 200 kva., and smaller, suitable for lighting and power purposes.—Advertiser.

The following bulletins have recently been issued by the **Sullivan Machinery Co.**, of Chicago, Ill. Bulletin No. 79-C describes Sullivan ironclad coal cutters for room and pillar and longwall mining; Bulletin 79-D describes Sullivan ironclads, class "CE-7" for room and pillar mines; Bulletin 79-E is descriptive of Sullivan longwall ironclads, and Bulletin 79-F, on Sullivan ironclad coal cutters has sections on motors, driving gear, cutters and feed. These bulletins are all 6 x 9 in. and are well illustrated.—Advertiser.

Pyro-Porous Gas Filter. Uehling Instrument Co., Paterson, N. J. Bulletin 113. Pp. 4; 6 x 9 in.; illustrated. Describes how the filter excludes soot and dirt from the gas sampling lines.

O-B Arc Weld Bonds. The Ohio Brass Co., Mansfield, Ohio. A 2-page folder describing the new O-B A.W.-7 and 8 bonds, manufactured by the company.—Advertiser.

Recent Patents

Wood Preservative. Robert A. Leam, Yellow Springs, Ohio, 1,404,128. Jan. 17, 1922. Filed March 28, 1921; serial No 456,162.

Boiler Feed-Water Purifier. Charles E. Sargent, Indianapolis, Ind., 1,400,993. Dec. 20, 1921. Filed Aug. 9, 1919; serial No. 316,290.

Miner's Carbide-Lamp. I. I. Billings, Marial, Ore., 1,401,129. Dec. 27, 1921. Filed Aug. 7, 1917; serial No. 184,895. Renewed May 5, 1921; serial No. 467,126.

Flotation Apparatus and Process. Frederick D. Gross, R. P. Atkins and J. W. Bucher, Denver, Colo., 1,401,535. Dec. 27, 1921. Filed Nov. 5, 1919; serial No. 335,951.

Coming Meetings

New York State Coal Merchants' Association is holding its annual meeting at Richfield Springs, N. Y., Sept. 7-9. Executive secretary, G. W. F. Woodside, Arkay Bldg., Albany, N. Y.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

Alabama Mining Institute will hold its next meeting Oct. 3 at Birmingham, Ala. Secretary, J. L. Davidson, Birmingham, Ala.

Coal and Industrial Exposition under the auspices of the Huntington Chamber of Commerce will be held Sept. 18-23 in the Chamber of Commerce Bldg., Huntington, W. Va.

The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers will hold its annual meeting in connection with the Coal and Industrial Exposition at the City Hall, Huntington, W. Va., Sept. 19-22. Secretary, H. Smith, 212 Robson Pritchard Bldg., Huntington, W. Va.

National Exposition of Chemical Industries will hold its eighth national exposition at the Grand Central Palace, New York City, Sept. 11-16. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Mining Congress. Twenty-fifth annual convention and exposition of mines and mine equipment will be held at Public Hall, Cleveland, Ohio, Oct. 9-14. Executive offices, the Hollenden Hotel; E. C. Porter, convention manager.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Institute of Mining and Metallurgical Engineers will hold its fall meeting during the week of Sept. 25 at San Francisco, Cal. It is proposed to arrange for a party to leave New York on Sept 10, stopping at different cities en route. Secretary, F. F. Sharpless, Engineering Societies Building, New York City.

American Chemical Society is holding its annual fall meeting Sept 4-9 at Pittsburgh, Pa.; divisional meetings will be held at Carnegie Institute of Technology and general meetings at Carnegie Music Hall.

The Rocky Mountain Coal Mining Institute will hold its next meeting at Glenwood Springs, Col., Sept. 7-9. Secretary, F. W. Whiteside, Denver, Col.

American Gas Association will hold its annual meeting Oct. 23-28 at Atlantic City, N. J. Secretary-Manager Oscar H. Fogg, 130 East 15th Street, New York City.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, *Editor*

Volume 22 NEW YORK, THURSDAY, SEPTEMBER 14, 1922 Number 11

Who is Assaulting Unionism at Marion?

THE law's investigation into the Herrin horror is on. A grand jury of twenty-three Williamson County men—all farmers except a lumber dealer and a part-time miner—has been listening to testimony wrung from scores of witnesses fearful that their revelations will bring about their death by some stroke from the dark. It is a serious and conscientious effort to get at the facts in the case of the slaughter of non-union men who surrendered to a mob which had attacked the strip mine they were trying to work. It is an investigation by officers of constituted authority. It is an action by a court of the American people. Yet already this due process of law is being obstructed by devious tactics. Already the action has been labelled "persecution of labor" in a well-developed campaign of propaganda. Dominated by the moneyed interests, the courts, we are told, are trying in this case to crush organized labor. Such was the labor defense in the Mooney case. It has become well worn by usage.

But if an assault is now being made on unionism at Marion, who is making it? Who is it that stirs up public sentiment against the prosecution of the case to such a point that the prosecutors are threatened horribly—not once but hundreds of times and by many devices? Who is it that frightens witnesses to the point of silence? Who is it that openly condemns the jury action as tainted by money? Who is it that agitates for a general strike of Illinois miners as a protest against further action in the case? Who is it that suddenly begins a vicious campaign of stopping shipment of coal from the mines of Williamson County as a form of protest against the investigation? Whoever performs these acts is taking a definite stand against law and government. If it is proved that the United Mine Workers of America sanctioned and condoned such acts then the "assault upon unionism" is an assault by the United Mine Workers of America and by nobody else.

Huntington Greets Electrical Engineers

COAL mining, as we now view it, is the art of extracting coal from the ground by electrical apparatus. The engineers of West Virginia and Kentucky some few years ago felt the need of an association that would deal in the main with the mechanical and electrical problems that new methods of operation were making of vital importance to the coal industry. They felt that the old institutions—the coal-mining institutes—laid most of their stress on management, social questions, legislation, geology, air circulation, drainage, roof support and like subjects with which mechanical engineers had little or nothing to do. They wanted an institute that would limit its study to the mechanical problems of mining and would give those attending its meetings that mental pabulum which would be of value to them in their daily careers.

Electrical and mechanical engineering at the mines has a distinct industrial flavor. In some ways the mine electrician has problems in common with those of the electric-railway engineer. He has the same interest in wheels and axles, brakes and brake shoes, trolley-wire suspensions, draw-bar pull, starting problems and portable resistances. Still his problems are different. His shop facilities, to begin with, are less. His locomotives are subjected to greater violence, his tracks are lighter, his wheel gages are narrower, he must suspend his wires from the roof of the mine, from timbers or from supports drilled in the coal. He could not feel at home for this and many other reasons in societies like the American Electric Railway Association, and indeed that organization might not be pleased if he intruded his peculiar needs into the discussion of problems so widely different, though analogous.

The electrical engineer at the mines has his central stations, but his troubles are with plants far smaller than those which are maintained by most public utilities. His loads are different; his coal is obtained at a different price and is or should be in many cases inferior, for he is often striving to consume the unsalable; he is not selling power; he may be buying it. An endless line of items would be needed to show the differentiation between the public-utility electrician and his brother at the mine.

For these and similar reasons he would not be welcomed at meetings of the National Electric Light Association, for again he would introduce conditions alien to those under which public-utility engineers are operating, and the papers he would present and the discussion he would offer would be likely to lead the meeting from its special subject, which is how to generate electrical energy for the public and how to sell it when generated.

There is no industry perhaps with the meetings of which mine electrical engineers could associate themselves with advantage. They want every paper to be helpful to themselves, and the other industries have similar desires. Some use storage-battery trucks but not trolley locomotives and some use the latter and not the former. Most have a more even load and few problems in common.

The superintendent of the power and mechanical department of a mine has a machine shop to manage. He has the duties, therefore, of a machinist; but here also his problems are special. He has few repetitive jobs. His work is mainly that of repair. He cannot attempt to arrange his work after the model of a Ford, a Lincoln or a Willys. But though his jobs are smaller they can be as much bettered by judgment as can those of an automobile factory. The right tools to buy, the way to do the best with what is on hand, what extensions should be made, can best be learned from those who have the same problems to confront.

Furthermore, the American Institute of Electrical Engineers, which would seem an appropriate place for electrical mining men, gives more time to questions of

design, to the mathematical problems of electricity, to tests of dielectrics and like subjects than to problems such as the electrical man at the mine must understand.

Looking around the mine, electrical engineers decided that they would do well to foregather with themselves. Hence the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers. Its meetings have done much to advance the practice of mechanical and electrical engineering in West Virginia, Kentucky and Virginia and a large future seems assured as electric energy continues to be used for more purposes and with increased complication.

Price Control—by Indirection

AFTER some hesitation and considerable debate the Senate passed the Cummins coal-control bill last week. In principle this is the same as the Winslow bill passed in the House. When these bills are harmonized in conference the country will have legislation giving price control of coal—by indirection. It does not appear that there was more than a modicum of hesitation on the part of Congress to give the administration price control; hesitation was entirely on the point of how to do it without overstraining the Constitution. Many there are who hold that Congress has not yet, in either the Winslow or the Cummins bill, found a way to fix maximum prices on coal that is not in violation of the Constitution, but the bills have been passed notwithstanding.

The attitude of the administration on the subject of price regulation and control of distribution was voiced by Secretary Hoover on Aug. 28 in a statement to the House Committee on Interstate and Foreign Commerce. He said: "It does seem to me that there is a public necessity for action; that there should be some restraint on the extortionate prices. It is obvious that regardless of the resumption of mining there will be an alteration of the situation from that of a short production to that of a short transportation—that we have a continuous condition of effective famine in coal. In the face of shortage in supply the coal will go to the highest bidder, and price alone is not from a social point of view a proper basis of distribution. That means the poorer classes must bear the burden of deprivation. If distribution is to be based solely upon the highest bidder, it means suffering for a large portion of our population, and it does not in this situation mean an addition to production. The usual defense of unlimited price during shortage is that it stimulates production. Our limit of coal at fair prices is a limitation on transportation, not of mining."

Mr. Hoover said that two ways of accomplishing price control had been considered. One was "to use various federal authorities as a foundation for the government taking possession of coal at a fair price." This, he explained, would put the government in the coal business, and therein lay its chief difficulty. The organization to handle it would take too long to bring together. The trouble would be over before the machine would be working.

The plan adopted by Mr. Hoover and his conferees on the Presidential Coal Committee contemplates an extension of the powers of the Interstate Commerce Commission to enable that body, on the advice of the Federal Fuel Distributor (whose duties, we are told, "practically amount to the determination of facts and the establishment of co-operation"), to permit the use of coal cars only by those shippers in interstate commerce complying with established orders as to distribution and price.

It is far from clear on what constitutional grounds this power is to be granted. Washington, official and unofficial, has been debating the question for weeks. The chief counsel for the Interstate Commerce Commission, Mr. Farrell, appears to base his belief as to its legality on the theory that "if by reason of that exorbitant charge, interstate commerce is made impossible, then they go to the root of the evil and apply it to the thing over which Congress has control." That is to say, he looks to the commerce clause of the Constitution to sustain this legislation. Further on he says: "It depends upon whether it is a burden upon interstate commerce. Congress, in the first instance, has the right to exercise its judgment in determining the facts."

Whether it can be done legally or not, beyond doubt it is to be done, or tried at least. There are abundant reasons why it should be tried, reasons that lie mainly in the domain of distribution, however.

The supply of anthracite will be woefully inadequate and can be made to serve only by careful distribution all the way down the line. The government at Washington can direct the flow of this coal only between states; beyond that, at the actual point of retail distribution the good sense of the retail dealer, supported by local opinion and in some instances by state legislation, is our only hope. We feel that the trade will respond manfully.

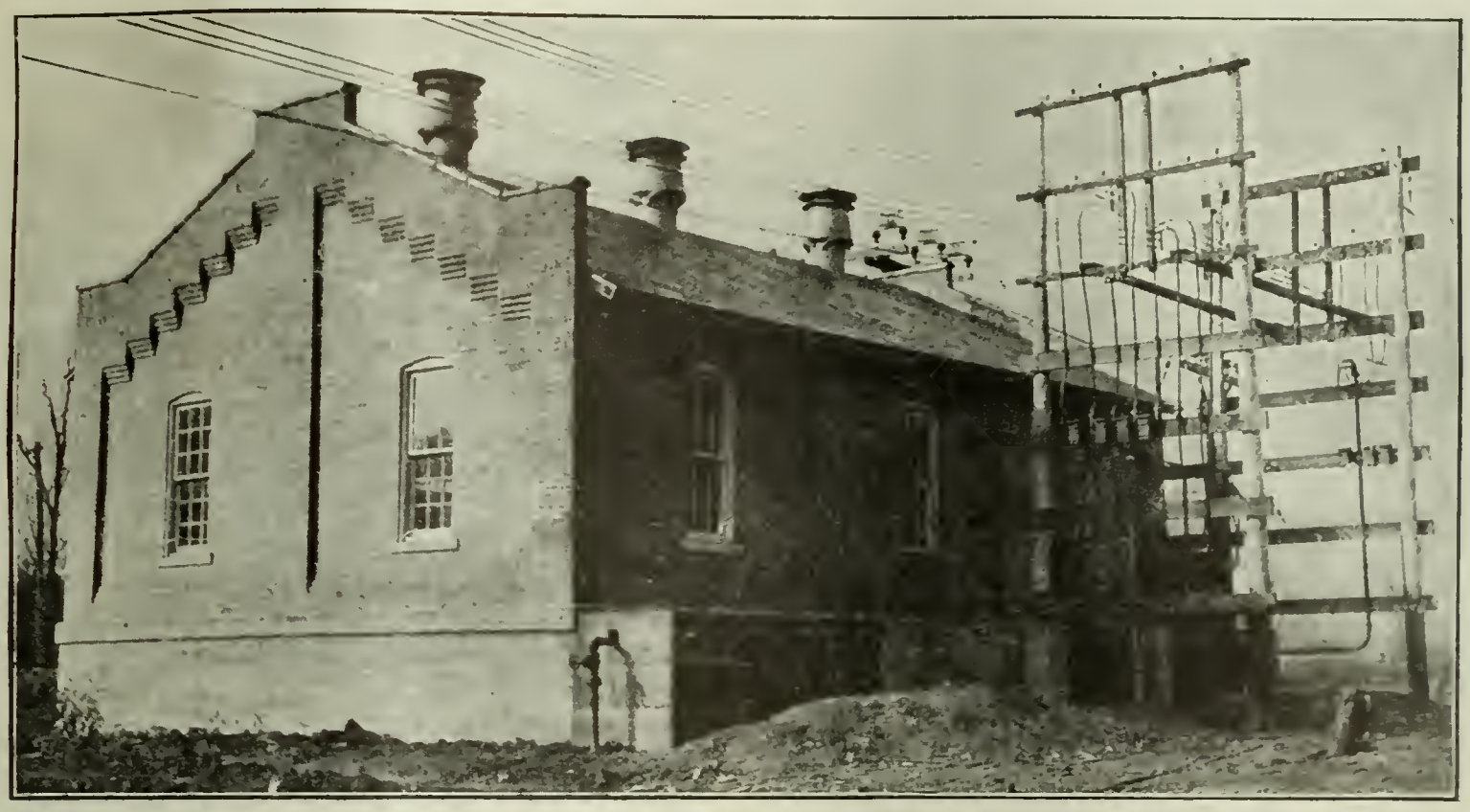
As for bituminous coal, the immediate prospect is for a current output this winter averaging little above actual requirements, leaving such large budgets as normal storage for the Northwest and for railroads and industrial plants over the country in precarious state. Just now prices on soft coal are declining. They will continue on the downgrade only so long as buyers are willing to hold off. The recession is temporary, and prices, unless arbitrarily checked, will soon start another ascent. The pending legislation is designed to perform this checking.

Thus the coal industry faces in times of peace the kind of regulation it has been fearing and opposing since 1919. External causes have brought it about and it appears that external agencies must be depended upon to remove, at some later date, its incubus on the trade.

THERE IS LITTLE COMFORT in the Herrin case for those violent anti-aliens who froth lavishly at the mouth when any crime is committed by a man named Pellini, or Mallakoff, or Papafrangos or Pshmlzinczheick or anything like that. The names of a large number of coal miners in Williamson County indicate that they sprang from the racial stocks of the four corners of the world, but there also are a large number in that county whose forbears trailed long rifles through the Blue Ridge Mountains and other purely American "God's countries." It would appear, from a casual glance at the long list of Hancocks, Coopers, Baxters, Kirbys and Craigs indicted by the grand jury that aliens are socially ineligible for some of "bloody" Williamson County's grisly enterprises.

A MAN IS KNOWN by the company he keeps, but a company is known by the men it keeps.—*Indianapolis News.*

RAILROAD LABOR IS FINDING OUT that its goal is not within striking distance—*Washington Post.*



Economical Ways of Transmitting Power Underground*

Importance of Keeping Trolley System Separate from Power Circuit—Alternating-Current Power Cheaper Than Direct—Protection Against Electric Fires—Outside Stationary Motors Should All Be Built for Alternating Current

SEEING that the problem of distributing electric power in mines is so closely connected with the source of power and the outside feeders of that power, a brief description of these will be given before dealing with the subject of underground transmission and distribution.

The main points to be considered are the voltage of the circuit used, the kind of current used, and the method of bonding the mine tracks.

The U. S. Bureau of Mines divides the voltage of circuits and equipment into three classes, as follows: Class 1—"Low." Not over 300 volts direct current or 240 volts alternating current. Class 2—"Medium." Between 300 volts and 600 volts direct current, or 240, and not over 480 volts, alternating current. Class 3—"High." Six-hundred volts direct current or 480 volts alternating current and higher.

It might be well to summarize a few of the rules that two of the states have adopted regarding electrically operated mines. The State of Alabama has the following rules: No apparatus or conductors carrying a voltage within Class 3 shall be allowed in or about working places. Portable apparatus using voltage of Class 3 is prohibited. Electrical equipment installed after this date (date not available) shall not use any voltage higher than that in Class 1 in or about working places. This does not prohibit the use of voltage defined in Classes 2 and 3 (except in or about working places) provided such apparatus is installed and maintained according to these regulations.

Three-wire double voltage systems having a maximum voltage within Class 2 may be used if the neutral is effectively grounded and if the maximum voltage between any conductor and the earth complies with these requirements.

We might also mention the following rules adopted by the State of Pennsylvania: All electrical apparatus or conductors shall be of sufficient size and power for the work they may be called upon to do, shall be efficiently covered or safeguarded as the law thereafter prescribes, shall be so installed, worked and maintained as to reduce to a minimum all danger from accidental shock or fire and shall be of such construction, and so worked, that the rise in temperature caused by ordinary working will not injure the insulating material.

The Pennsylvania (bituminous) law also has the following provision: At every mine where electricity is used below ground for power, a competent mine electrician shall be employed who shall have full charge of the electrical apparatus in the mine, but shall be subject to the authority of the mine foreman.

We will now consider what the electrical installation of an electrically operated mine should be. A success-

*First part of report of committee on underground transmission and distribution to be presented at the session of the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers, Sept. 20, at the session in Huntington, W. Va. The committee consists of C. J. Fuetter (chairman), M. H. Powell and H. E. Carlton. The second part, which will appear next week, gives a detailed description of the workings of an automatic substation at Van Lear, Ky.

NOTE—Frontispiece shows surface station of the Pittsburgh Coal Co., at Montour No. 10 Mine, Broughton, near Library, Pa.

ful mine haulage requires direct current for the motors of locomotives. Hence, as there must be a trolley wire and possibly some feeder wire, it is only natural that the cutting machines and pumps also should be driven by direct-current motors fed from the trolley system. Recently, however, mine owners have come to realize the importance of keeping the trolley system separate from other power circuits, so that accident on the haulage roads which may tear down the trolley wire will not interfere with the supply of power to the cutting machines, pumps, booster fans and other apparatus.

The potential supplied to trolley and feeder wires should not exceed 250 volts direct current. If the mine is of any size and the direct current is generated outside, excessively large feeder wires must be installed if a sufficient voltage is to be maintained at the working places.

With a 250-volt system electric current can be transmitted without excessive loss in voltage only for limited distances. As the current is inversely proportional to the voltage of a given connected load and the losses are proportional to the square of the current it is easy to show marked savings by the use of higher transmission voltage. These savings show up in the amount of copper required in the circuit, the output of the machines and the cost for the maintenance of the motors. Reduced voltage causes motors to operate at low efficiency and at underload and underspeed, the current used also is increased, and as the heating is proportional to the square of the current, motors soon overheat and burn out, causing delays and high repair charges. With reduced voltage at a cutting machine the lineal feet of coal cut per shift falls off. With reduced voltage the haulage locomotive hauls fewer cars per trip and makes fewer trips per shift, and eventually its motors burn out.

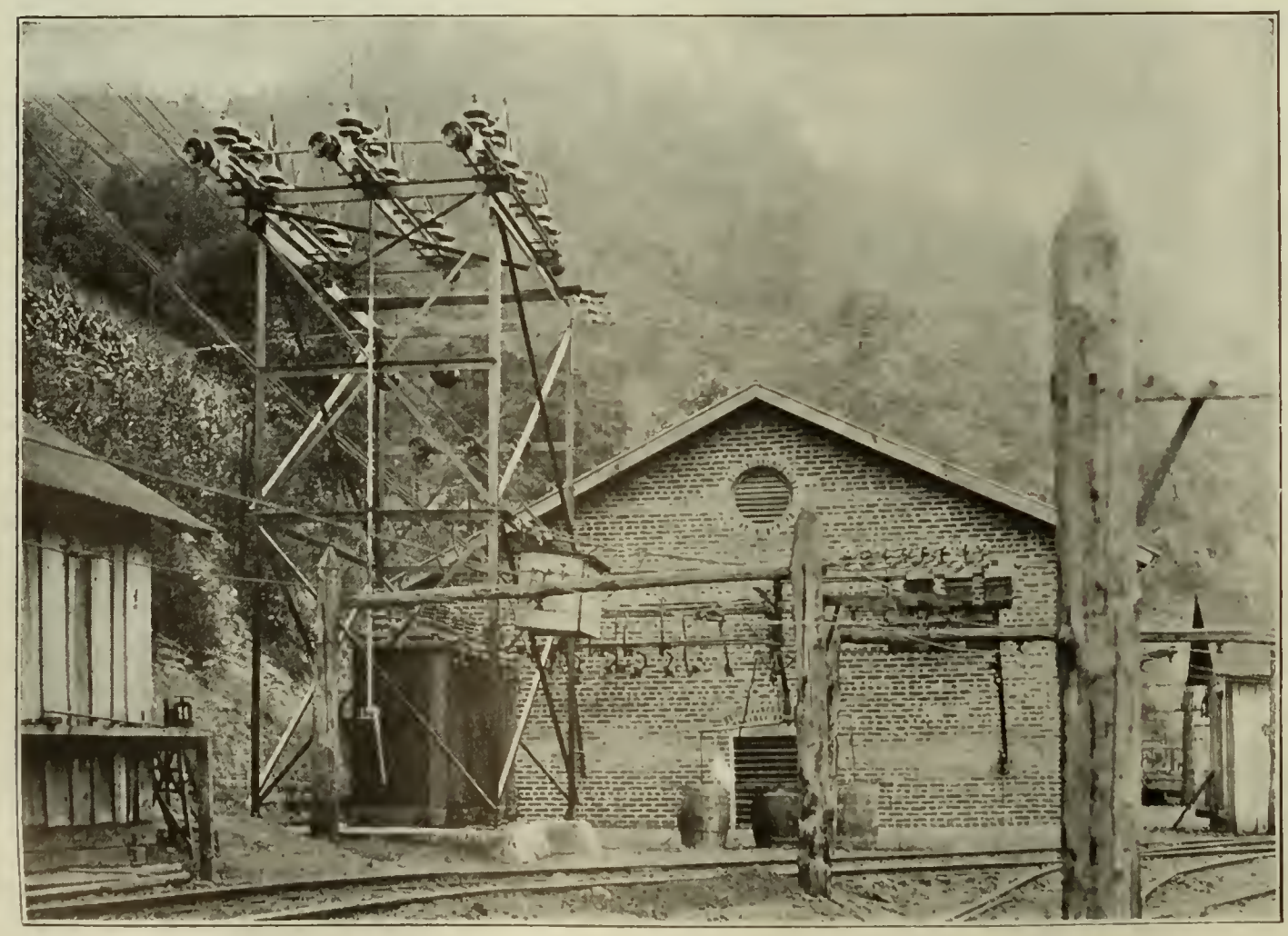
No set rule can be given for determining the economical limit of distance for a 250-volt system, because it will vary with the nature of the connected load. Some mines cut and haul coal on the same shift, and in this case the transmission problem is quite different from that in a mine that cuts on one shift and hauls on another. Then again the nature and development of a mine also has to be considered, so that the economic value of any given electrical system must be figured out for each separate mine.

For a large mine the use of high-tension alternating current probably will be most economical, in that a substation equipped with a rotary converter can be installed near the load center, the alternating current being dropped through a borehole into the mine at 2,100 to 6,600 volts. For this purpose a three-conductor lead-covered and armored cable is used, insulated for twice its working voltage. It is for such an installation that a rotary converter has been recommended because with most mine loads the peak determines the capacity of the machine. A synchronous converter will carry about twice as much momentary overload as a synchronous motor generator. Consequently with such a converter it is possible to use a smaller unit, which even with the necessary transformers will not cost more than the equivalent motor-generator set. Where no regular attendant is at hand to adjust the rotary converter for load variation it can be set so as to give a higher average power factor than a motor-generator set.

The room in which an underground substation is housed should be of fireproof construction, well ventilated with fresh air and wired in accordance with the requirements of the National Board of Underwriters. Transformers should be so arranged that if one should explode the oil would not flow outside the room.

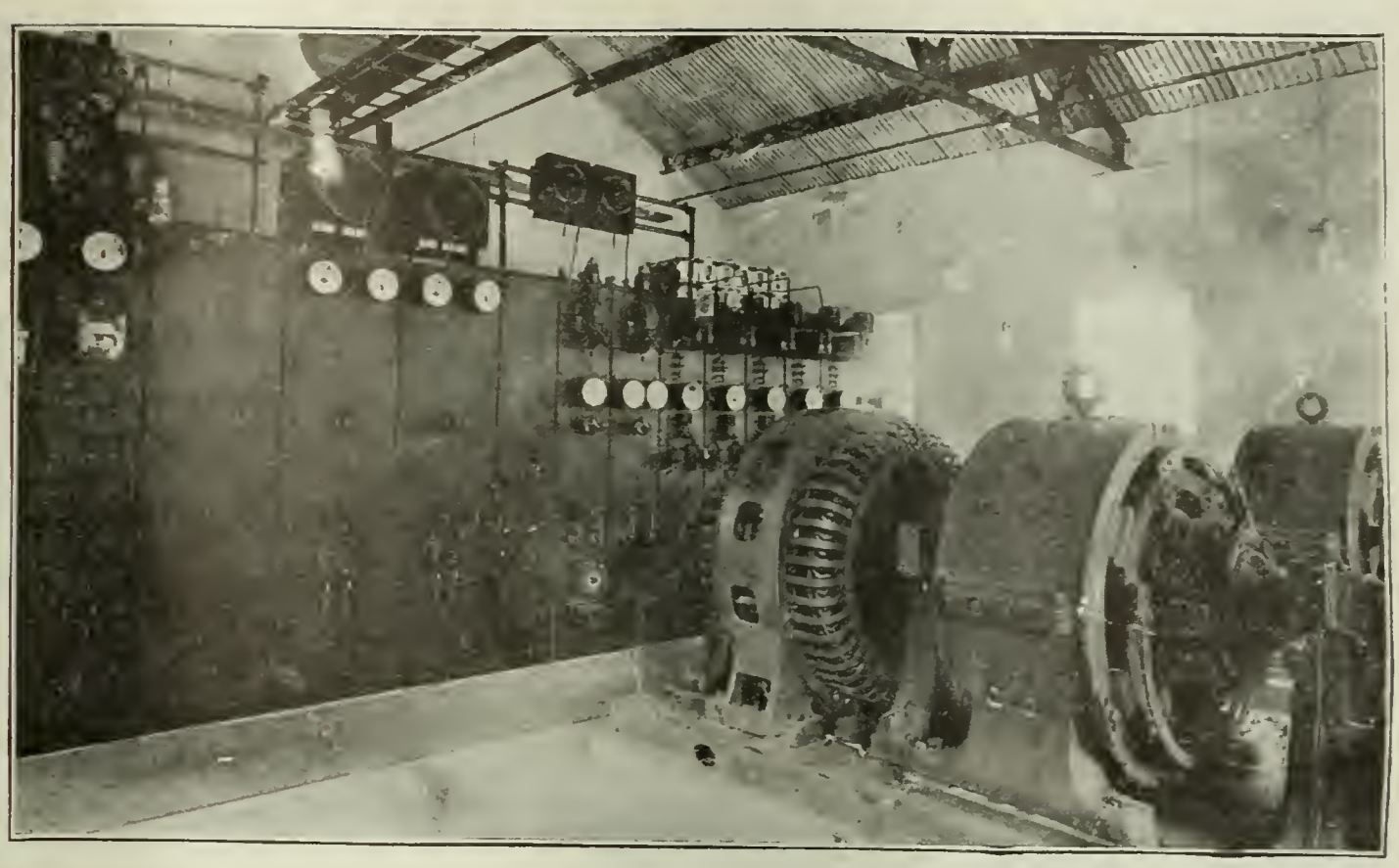
The high-tension supply lines should be equipped with lightning arresters of approved type, with proper ground connections. Arresters should be located on the surface at a point near where the cable enters the borehole. A fused horn-gap disconnecting switch should be provided for each phase.

As the substation usually is located at a point near the load center, the 250-volt direct current is sent from



Main Substation, Toms Creek, Va.

This substation, belonging to the Virginia Iron, Coal & Coke Co., operates 24 hours per day and is the key station at the Toms Creek plant. In its work it is aided by two substations, one three miles away in one direction and one a mile distant in the other. These work only 8 hours per day. Each station is connected with the other two for parallel operation. In each station are two 200-kw. 600-volt direct-current generators driven directly by 2,300-volt 60-cycle synchronous motors which are hand-started with full automatic feeder panels.



Interior of Main Substation

This illustration shows the front of the switchboard, the two generators and two of the synchronous motors. By the use of this substation and two others the power is so distributed that the drop in voltage at no point exceeds 10 per cent. In consequence there is no low voltage anywhere along the line, though there are ten mines scattered along an S-line frontage of four miles.

this station to the different parts of the mine through feeder and trolley wires, either in one or several different circuits, according to the layout of the mine. In planning the installation of these wires care should be taken to install wires of the proper size to carry the maximum amount of current which may be needed. In doing this consideration should be given to the future load to be transmitted. In any event no smaller trolley wire than 1/0 B. & S. gage should be used, but, regardless of the size, it should be securely supported on approved hangers placed at such intervals that the sag between the points of support will not exceed 3 in., unless, indeed, the height of the trolley wires is 5 ft. or more above the rail and the wire is so supported that it will not touch the roof when the trolley runs on it.

The height of the wire above the top of the rail should be made as uniform as practicable and the wire should be placed at least 6 in. outside the rail and on the opposite side from the traveling way and shelter holes. On straight runs hangers should be spaced between 20 and 30 ft. apart, according to the height of the roof. On curved runs enough hangers should be placed to keep wire from swinging unduly in either direction should any one of them fall out. At about every 2,000 ft. a quick-break single-pole switch or a section-insulator cutout of the correct carrying capacity should be installed, so that, when desired, the wire can be entirely disconnected from the power supply.

All joints in trolley wire should be made electrically and mechanically efficient. This usually is done with the aid of what is called trolley-wire splicers. Means should be provided for cutting off the current in circuits branching off the main trolley wire. At some of the mines of the Consolidation Coal Co. a scheme to prevent mine fires has been put in successful use. Throughout the mines where this scheme has been adopted many pumps are located which it is necessary sometimes to keep going day and night.

In this case besides the Ohio Brass type M section insulator switch, which is installed on all branch circuits, a bypass is provided through a quick-break single-pole switch and also a fuse of the proper capacity to take care of the night load on this circuit. When the motormen make their last trip at the end of the shift they throw the regular branch cutout. This takes the power off the circuit. When the night pumper comes in, in order to get power for his pumps he throws in the bypass switch, making all the power delivered to the pumps go through the fuse. If a fall occurs during the night and the trolley wire comes in contact with the rail or any other material that will cause a ground, the fuse is blown out and before a fire can start the power is cut off.

In most mines both the feeder and the trolley wires must be placed along the roadways. These passages are necessarily low and in many places poorly lighted, if at all. Consequently these circuits must be protected at all points where men must pass under them while at their work or when traveling to or from it. It seems that the best method of safeguarding these places is to have boards on each side of the trolley wire, these boards being supported by iron hooks wedged in the roof. For feeder wires only one board may be needed.

The method of hanging feeder wires along haulageways demands careful consideration. Feeders should be so located that they will be as free as possible from mechanical injury, such as a fall of rock or coal or a derailed mine car might occasion. All trolley or feeder wires coming in or leaving the mine should be provided with lightning arresters, located near the mine opening.

The trolley and feeder wires installed in a mine should be large enough to carry the maximum current not only without danger of overheating but also without a drop in voltage exceeding 15 per cent at any point under load on the system. For this result not only should plenty of copper be hung overhead but a good return should be provided. The rails usually are employed as a return.

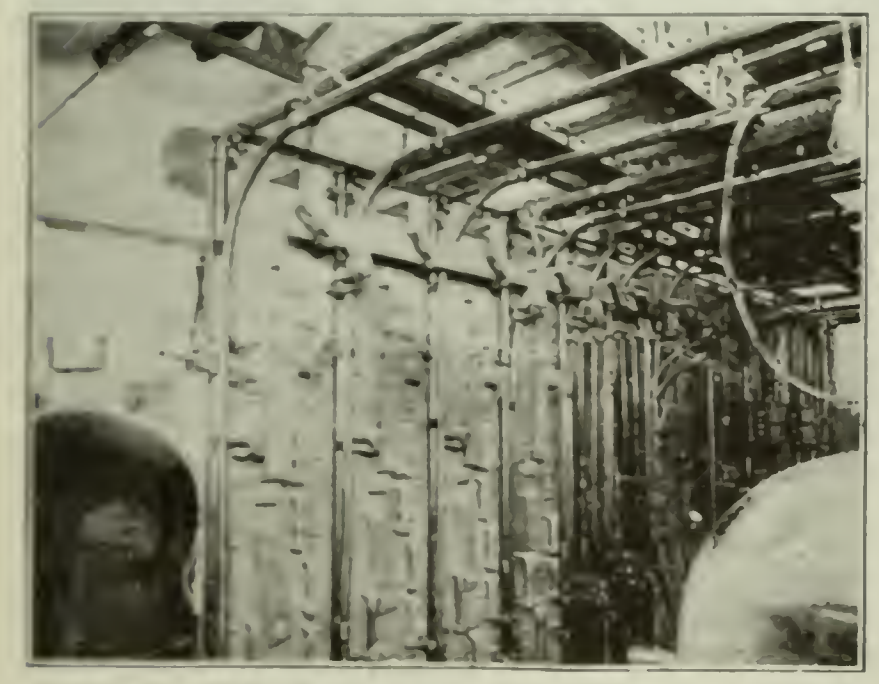
This part of the circuit is just as important and has just as much bearing on the proper operation of the equipment as has the positive wire. For this reason the track rails should be fishplated and be provided with bolts drawn up tight enough to reduce the vibration of the rail as much as possible. Every joint should be bonded and the two rails cross-bonded every 200 ft. Provision also must be made for bonding around all

switches, frogs or openings in the track, so as to insure a continuous return, no bond of less than a 2 0 wire being used, and where necessary 4 0 should be provided.

On main-haulage roads it is good practice to bond both rails. After the bonding is installed it should be carefully maintained and given care equal to that afforded positive wires. If not properly maintained the voltage drop may become excessive. There is danger also that shocks may be received from a poor return.

In the last few years the electrically welded bond has been used extensively in mine work, and no doubt it will be adopted eventually at every mine where greater efficiency at low cost is sought. At one mine two men did all the bonding, using compressed terminal bonds. The placing of ten bonds was considered a good day's work, the men being required to drill the necessary holes in the rails.

After a little teaching these men learned to install electric-welded bonds, and after a short time they did not feel satisfied unless they had installed on old track



BACK OF THE SWITCHBOARD AT MAIN SUBSTATION
Showing also part of one of the synchronous motors on the left and the resistance grids above the switchboard.

at least forty such bonds in a shift and as many as sixty where the track was new. Two years ago about 400 such bonds were installed in a certain mine, and up to the present day not over six of these bonds have been reported as loose. Every one of the defective bonds happened to be among the first installed. At the time they were made the men had not had the required experience to do good electric welding. The men in charge of this work are convinced that the electric welded bond is far superior to any mechanical bond so far used: first, because a better electrical and mechanical joint is obtained, and, second, because the cost of installation is lower.

In recent years many engineers have advocated running all machinery, except the haulage locomotives, with alternating current. As a result fans, pumps, coal loaders and mining machines are now available driven by alternating-current motors, but before adopting this current for mining machines particular attention should be paid to the type of machine selected and the conditions under which it is to operate.

The squirrel-cage induction motor generally used for mining machines has practically constant-speed characteristics, and the speed cannot be satisfactorily varied by the use of resistance, but the three-phase squirrel cage induction motor is more rugged and freer from trouble than the direct-current motor. As it has no commutator or brushes, repairs to windings are made much more easily. This type of motor when overloaded or subjected to a reduced voltage will practically quit, so it is not likely to burn out like a direct-current motor.

The starting torque or ability to accelerate a load from a standstill is more definitely fixed or limited in the squirrel-cage induction motor than in the compound-wound direct-current motor, and as a result the mine wire must be well installed and normal voltage maintained under full load if an alternating-current installation is to be operated satisfactorily. This feature of the induction motor of not operating when the voltage has dropped is really more of an advantage than a fault as it demands better voltage regulation, which in turn means efficiency and increased production at lower cost.

Should direct-current motors refuse to work when proper voltage is not maintained many mines in the long run would make a much better showing. They would produce coal more cheaply and keep the cost per ton more uniform year in and year out.

Should Alternating-Current Cutters Be Used?

Everything considered it is a question whether in the larger mines the alternating-current motor-driven mining machine should be used where the mine has not been developed to a point making electric haulage necessary. Provided alternating-current power can be purchased, it might be good policy to use it, installing transformers above ground and supplying power to three-phase induction motors on the mining machines through a three-phase cable properly installed in the airway or lowered through a borehole. Such an arrangement might give good results at a minimum cost of equipment.

Whether alternating-current motors should be used to drive pumps inside a mine depends on many conditions, but where they are favorable and alternating-current power is obtainable there should be no hesitation about the matter. It is sometimes an easy matter to lower a 2,200-volt three-phase cable through a borehole located centrally over a number of the larger pumps.

In this case the transformers could be located at the bottom of the borehole, in a room of fireproof construction, the 2,200-volt current before entering the transformers being passed through fuses of the proper capacity, and from the fuses into a three-phase oil-break switch equipped with an automatic overload trip having a trip coil in at least two phases. From this oil switch the wires could then be brought to the three transformers.

The circuit leaving the transformers need not be provided with either switch or fuses if these are installed at the places where power is used. It is hardly necessary to mention that the transformer room, besides being of fireproof construction, should also be well ventilated and well lighted and that all wiring should be done according to the requirements of the National Board of Underwriters. The secondary of the transformers should be either of 220 or 440 volts. The motors driving pumps should be of the squirrel-cage type and motors above 5-hp. should be equipped with either a manual or an automatic starting compen-

sator, either type to have no-voltage and overload release coils.

The cost of power also is an item to be considered when figuring on such an installation. The following figures give the costs of alternating-current and direct-current power per kilowatt-hour. They are taken from four large mining properties operating their own central power plant and are for the year 1921, when coal prices and wages were at their highest. We will call the different plants Nos. 1, 2, 3 and 4.

No. 1 plant generated alternating current at a cost per kilowatt-hour of 0.66c., the direct current at the mine cost 1.13c. for the same unit. At No. 2 plant alternating current cost 0.75c. and direct current 1.57c. per kilowatt-hour. At No. 3 plant alternating current cost 1.10c. and direct current 2.54c. per kilowatt-hour. At No. 4 plant alternating current cost 1.44c. and direct current 2.86c. per kilowatt-hour.

From these figures it will be seen that the difference in cost of power alone is an item on the side of economy large enough to favor the installation of alternating-current motors on pumps wherever possible, but, as mentioned before, the final saving in the power bill depends on many other conditions besides the cost of the current used. The lower maintenance cost will justify the extra investment involved in providing an alternating-current installation. In gaseous mines, of course, preference should be given to alternating-current equipment regardless of first cost, for an alternating-current motor has no commutator and brushes to form arcs and so explode any gas that may be present. For these reasons whether to use alternating- or direct-current motors to drive pumps is a problem to be solved individually at each mine.

Details of Toms Creek Electric Installation

The following is a description of the underground transmission system installed in the Toms Creek, Va., Mines of the Virginia Iron, Coal & Coke Co. H. E. Carlton is electrical engineer for this corporation and credit must be given him for this information. Should the potential be 250 volts direct current in place of 600 volts, and other conditions remain the same, the installation would be a model in every way, but this committee could not recommend the installation of any direct current having a potential exceeding 250 volts.

The Virginia company has ten openings at the plant mentioned. These are scattered over a distance of approximately four miles and are disposed almost in the shape of the letter "S" with the curves flattened out. A substation is located at each end of the long line of openings and a third has been built three miles from one end and one mile from the other. The machines are 200-kw. 600-volt direct-current generators driven by 2,300-volt 60-cycle synchronous motors. They are all hand-started with full-automatic feeder panels. Two machines connected for parallel operation are installed in each station and each station is connected with the other two for parallel operation. The center station, although the last installed, is the key or main station and operates 24 hours per day.

The other two are operated for 8 hours only, one machine being normally used in each station. This leaves two machines in reserve at all times, so that any one station may be out at any time and not interfere with the operation of the mines.

The outside feeder capacity is so distributed that at full loads no more than 10-per cent line drop is allowed. The result is that the voltage is practically constant at every point of delivery.

No. 1 mine is on the retreat so that the problem of filling future requirements is past. The mine is fed by 2/0 figure-eight trolley wire suspended on pipe driven into boreholes in the side of the coal so as to give the wire a uniform height of 6½ ft. above the rail and 18 in. to the right of the track. All crossings where the standard height cannot be maintained are guarded with 3x6-in. boards fastened to the roof.

Bond Just Long Enough to Clear Splice Bars

The return is secured by bonding one side of the 40-lb. steel with 2/0 pin-driven all-wire bonds 26 in. long, which is just long enough to clear the splice bars. When installed in this manner a wrecked car rarely will cut out a bond. These bonds are installed on the inside of the rail.

The load consists of one 20-ton bar-frame locomotive, one 20-hp. pump motor, and one 25-hp. fan motor. The coal in this mine is gathered by mules, and the loaded cars have to be drawn up heavy gradients.

Number 2 mine is fed by approximately 6,000 ft. of 4/0 figure-eight trolley wire with 2,000 ft. of 300,000 circ.mil cable feeder in addition. The current returns by 40-lb. steel with 4/0 pin-driven all-wire bonds up to 4,000 ft. where the return feeder from No. 2 station comes in, the rest of the road being bonded with 2/0 bonds of the same type. The trolley wire is supported by pipe hangers in the side of the coal rib and by roof hangers fastened in the roof with the aid of expansion bolts.

When the roof is of sandstone a timber hanger is used. This is installed by drilling two ¾-in. holes 4 in. deep, a poplar wood peg being driven into the holes thus formed. Two 20-lb. track spikes driven into the wood complete the job. This method gives a secure support of low cost, and it stays in place longer than any other type of roof construction I have ever used.

The load in this mine consists of two 15-ton trams, four 4-ton gathering motors and mine-pump motors aggregating approximately 100 hp. Two storage-battery locomotives also are used in this mine.

No. 3 is the largest of the mines and has the most coal for future development. It is being worked on the three-entry system with the left and center main both tracked to the heading. The east and west headings are driven on the face with cross entries to the right and left. The main feeders are two 4/0 figure-eight trolley wires for approximately 14,000 ft. with a 300,000-circ.mil cable extending about 8,000 ft. into the mine. The current returns by a single track bonded on both sides with pin-driven 4/0 all-wire bonds installed on the inside of the rails.

This track is of 56-lb. steel. The other main is laid with 68-lb. steel and is bonded with the same size of bond. Both tracks are cross-bonded every third rail and the two tracks are connected every 300 ft. with a 300,000-circ.mil cable.

The trolley wire is supported by mine-timber hangers installed with expansion screws part of the way and spikes and plugs the rest of the way. To date the spikes have given the best service, but as the oldest of them have been in place only six years, the lasting qualities of this method of construction have not yet been completely tested. As the hangers put up with spikes and plugs have been up six years and so far have not given any trouble the chairman of this committee

hopes that Mr. Carlton will live long enough to give them a thorough test.

The feeder is installed one foot from the trolley on porcelain feeder insulators with U-straps and bolts into the top or, like the trolley wire where the roof has fallen, by pipe supports from the coal. Both trolleys and feeders have cut-out switches every 2,000 ft. after the first mile. These switches are of 1,000-amp. capacity with quick-break contacts.

The wiring in the cross-entry is strung in the same way as in the main with the exception that only one cut-out switch is used—that is, where the trolley leaves the main. These switches are installed on the first straight wire after the turnout. On the east and west entries 4/0 trolley wire is used and on the cross-entries the trolley wire is of 2/0 cross-section.

The track on the east and west mains has both rails bonded with 2/0 pin-driven all-wire bonds, whereas the cross-entries have only one rail bonded. As the rooms are turned from only one side of the cross-entries the straight or through rail is always selected for bonding.

On all switches the frogs are bonded around with cross-bonds, so that the lead rails are bonded on but one side. The bonding of only one rail requires much more attention, but if properly maintained will give excellent results on 600-volt circuits.

The load in this mine consists of two 20-ton bar-steel locomotives, one 13-ton tram and seven cutting machines, motors aggregating about 200 hp. being installed on pumps and booster fans. The coal is gathered with six 4-ton locomotives and some mules. These latter are gradually being displaced by locomotives.

The wiring in the other seven openings at this point is of the same general type with the loads running in about the same ratio. For the past year a ton of coal has been dumped into the railroad car for every 3.15 kw.-hr. of power purchased. This includes pumping and all dead work. For a year of poor tonnage, as the past year has been, this is rather a good average.

The bonding in two of the other plants differs somewhat from that outlined for the above mines. One plant has all main-line and cross-main tracks bonded with 4/0 and 2/0 pin-driven all-wire bonds with the terminals outside the splice bar but with the body of the bond bolted one strand under and one strand over the splice-bar bolts. These bonds have been giving excellent service. The track, it is true, is in good condition and is so maintained. These bonds have been in place over a year, yet so far none has been found loose. In fact switchboard voltage is obtained at the face all the time.

The other exception is a plant having four openings. This has all track bonded with pressed-terminal concealed bonds. The trolley wire and track in this mine are better maintained than any I have ever found underground and the following statement will be proof that this is true: With one 10-ton tram, seven gathering locomotives, five cutting machines (representing three makes) and 150 hp. in stationary motors underground not a single armature has failed since February, 1922. For 600-volt operation I believe this an excellent sign that the feeders and bonds in these mines are in good shape.

Wherever we install purchased power we replace all outside direct-current motors with alternating-current synchronous wound-rotor and squirrel-cage induction motors. This I think will be done all over the field in the next few years if business conditions will permit.

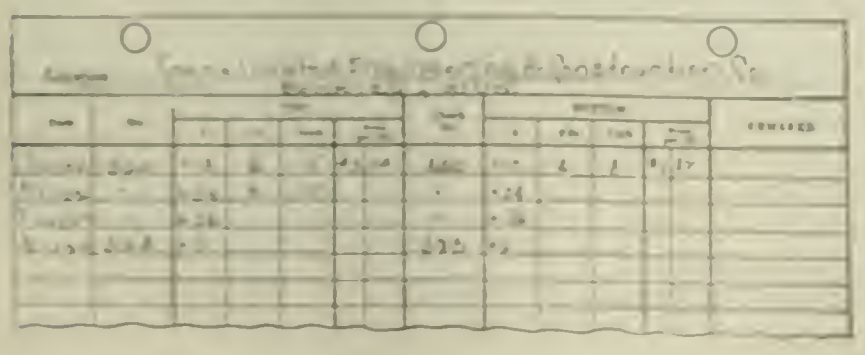
Who Shall Estimate Slate Yardage and How Should the Work Be Done?

By J. A. Graft

AT A meeting of coal men from mine foremen up with engineers in attendance apparently 80 per cent of those present said that the mine foreman should measure slate yardage. It was alleged that if the engineer did it dissatisfaction would be sure to arise.

In this connection may be exhibited a form used by the engineering department of the Raleigh Coal & Coke Co. which has been used most successfully, and it seems so simple that it should not be difficult for a mine foreman to use it, the engineer filling in that part of it relating to the distances. This would prevent the mine foreman from crediting the entrymen with having shot down more slate or driven more heading (where payment is made on that basis) than can be found in the engineer's note-book and map.

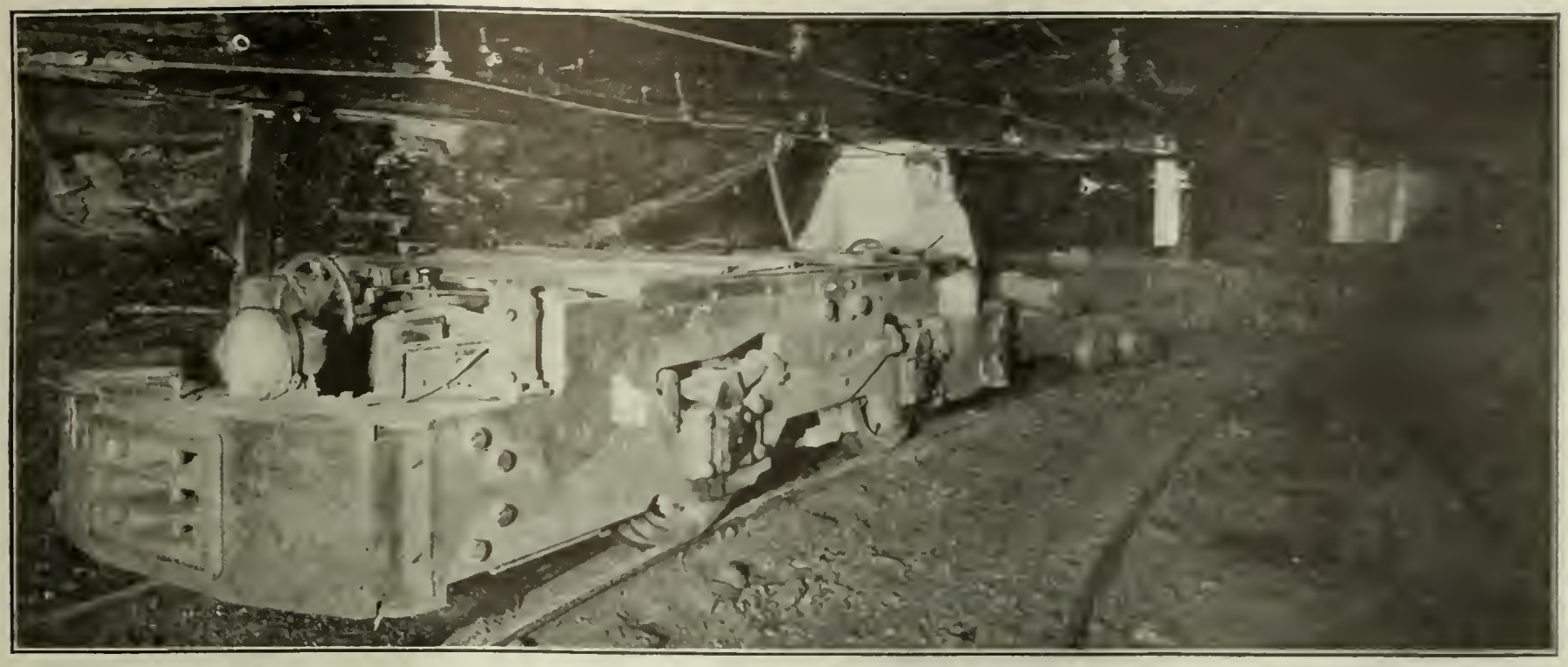
In some cases finding the company more lenient toward charges for slate yardage which are not matters of opinion than for dead work (which is not so clearly specified in the understanding between employer and employed and which is not as easily assessed) the mine boss will turn in dead work as yardage. Nothing will be said here of actions not having even this degree of justification except that they have been known to occur. I may say also that a method closely resembling this has been used by the Pennsylvania Coal & Coke Co. with offices at Cresson, Pa., using a cross surrounded by a circle as a station and an acute-angled L to designate a corner.



More Details as to Jerry Dunn's Output

DESIRE having been expressed to obtain more information regarding the output of Jerry Dunn described in *Coal Age*, Aug. 10, p. 216, the following further details will doubtless be of interest: The rate paid was 63c. per car, making a straight earning of $295.47. In addition he received a bonus of 8c. per car, or $37.52, a prize as leading coal loader at No. 3 mine of $10, and a further prize as crack loader in the contest between Loma No. 3 and Cora No. 2 of $20—a grand total of $362.99 for thirteen days' work, or $25.61 per day for straight earning and bonus, and $27.92 per day figuring in the prize awards.

The coal, which was of the Island Creek seam, was free from impurities; a No. 3 shovel and a breast auger were used by Jerry Dunn for loading and drilling shotholes respectively except that about 25 per cent of the drilling was done by electric coal augers; the working place was dry; the coal was shot by Monobel; two tracks were laid in the 36-ft. room and a gathering locomotive supplied the cars.



Cost and Track Data and Other Facts Relating to Upkeep of Mine-Locomotive Wheels and Tires*

Worn Wheels Make Locomotive Parts Drag Roadway, Causing Wrecks —Tables Showing Commercial Sizes of Wheels—Replacing, Resurfacing, Rebuilding and Grinding Tires—Frog and Switch Formulas

GREAT is the need for a detailed investigation of mine-locomotive wheels and tires, their care and maintenance. Mechanical engineers should thoroughly analyze the conditions to which such equipment is subjected and determine those which are favorable and find methods of remedying shortcomings.

Too much of the so-called "experience" related and "advice" given is not based upon investigation but is handed down time after time and used as a remedy for all conditions, little thought being given to the original circumstances to which it had reference. Personal favoritism and prejudices enter into such experiences or advice, and as such are without much weight. If you can back your practices by facts developed from research, time will be saved and waste prevented.

The time required for a thorough research or investigation into this subject is not a matter of a few weeks or months. It can come only as the result of records which have been well and industriously kept for years, in which is shown the service received, maintenance required and the conditions encountered for each of the various classes of wheels and tires. Until you keep a record of these things you will be at a loss to know what service to expect under conditions obtaining and will be unable to compare the relative merits of the different types of wheels and tires.

The standardization of these parts is of mutual interest to manufacturers and coal companies. The chairman of the committee on "Mine Locomotive Wheels and Tires" of the Electric Power Club, which is investigating the subject, informs us that they will soon recommend such standards.

It is to be hoped that these specifications will be such as can readily be adopted by manufacturers and local companies, and that the committee will be found to have based its investigations as to these standards upon actual conditions met in the mines rather than on a too liberal use of theory or on tests made on factory tracks.

Some of these proposed standards could be announced, but until the Power Club Committee has completed its recommendations these details will not help you to resurface the worn tires and wheels that lie waiting at the mine for your return.

To appreciate more fully how important it is to take proper care of wheels and tires let us consider for a moment the interrelation between tracks and locomotives. Badly worn wheels and tires invariably cause poor track, and poor track generally causes excessive wear on wheels and tires. Some coal companies permit their locomotives to operate through pools of water, over muck-covered rails and through sands that literally grind out the bearings. Where the responsible parties are ignorant of such conditions or believe it is an economy to ignore them they continue to add heavily to the cost of mine operation.

When we look back to the day of mules, from our present electrified mines, it recalls to us the manner in which we figured their values. It was obvious to anyone that a mule's value continually became smaller with passing years. Given two mules with a difference in age of five years but equal in all other respects, the younger one was worth more money, for, barring extraordinary circumstances, it was practically certain that he would outlive the older. The mule had a limited life and consequently as year by year elapsed he possessed less potentiality for usefulness and his value accordingly decreased.

The mine locomotive has a period of life just as defi-

NOTE—Frontispiece shows locomotive and trip in the mines of the Woodward Iron Co., at Mulga, Ala.

*Report of committee on mine-locomotive wheels and tires to be made to the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers at its session in Huntington, W. Va., Sept. 19 to 22. The committee consists of I. J. Fluck (chairman), E. D. Knight, J. H. Petty and P. C. Miller.

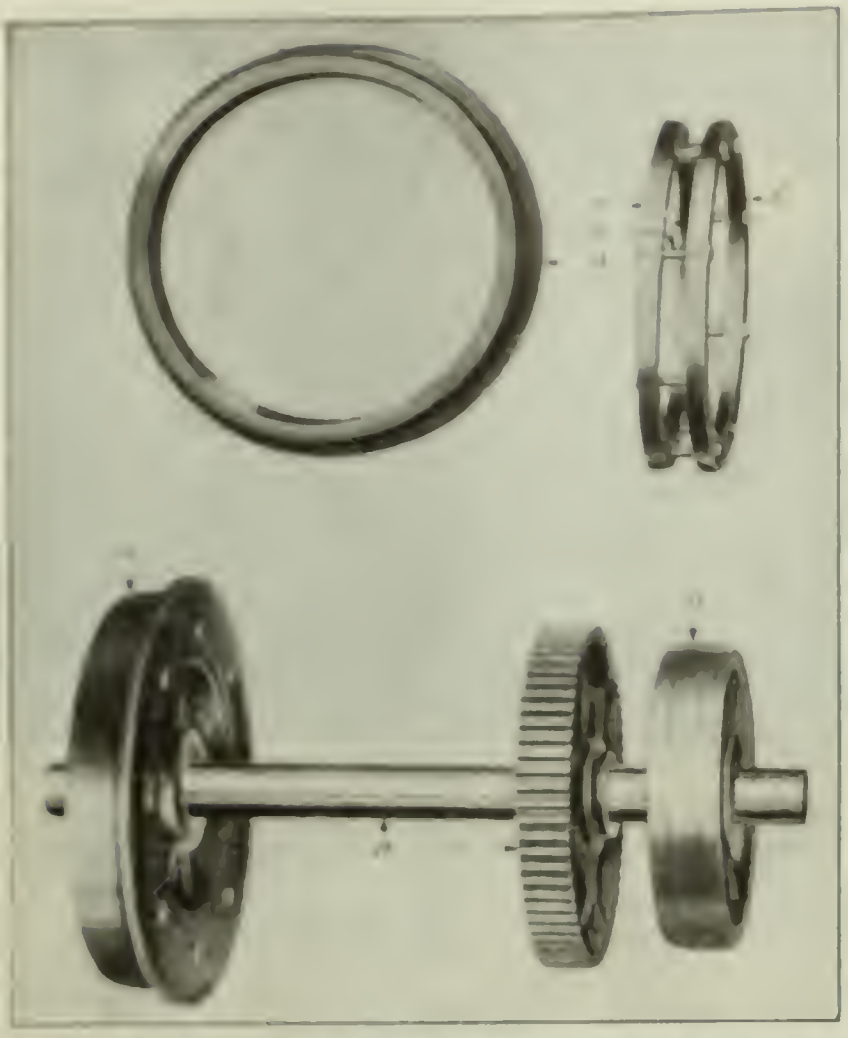


FIG. 1—DEMOUNTABLE TIRE FOR LOCOMOTIVE WHEELS

A is the demountable tire; *B*, the axle; *C*, the solid gear; *D*, the wheel center; *E*, the outside retaining ring; *F*, the inside retaining ring, and *G*, the bolt for the rings.

nite as a mule and consequently is just as sure to depreciate in value. With a mine locomotive running day after day for months, doing its assigned work without any apparent loss of efficiency, it seldom strikes some people that it is in any other than the best of condition. Every machinist knows well that a silent lessening of its value is going on and that eventually it must be abandoned.

Barring obsolescence, the life and depreciation of any mine locomotive will vary according to the conditions under which it operates and more particularly upon whether timely or untimely repairs are made. Its parts subjected to the hardest wear should naturally receive first consideration in maintenance; if they do not, the life of the locomotive will be greatly shortened by this neglect.

You will notice instances where wheels and tires are worn so badly or resurfaced so often that parts of the locomotive will drag on the bottom or catch on switches or cross-rails. Many wrecks can be attributed wholly to this cause, and the loss due to the delays they occasion and to the damage done will far exceed the expense which would have been incurred had the wheels been duly re-tired.

The damaging effect of badly grooved wheels on mine track is seemingly slow, but track subjected to such conditions will depreciate 10 per cent faster than other track carrying an equal volume of traffic but traversed by locomotives having well-surfaced wheels. Without good haulage roads the mine cannot be operated successfully, and care always must be taken to keep transportation facilities favorable by good track and by prompt attention to the needs of the haulage equipment.

If you are at all interested in the condition of your locomotive, you cannot afford not to be just as interested in the mine tracks. If you boost for good locomotives, boost first for good track on which to run them. You may not be responsible for the maintenance of the tracks, but report their inequalities to those who are. Keep on reporting them until to keep you quiet they are put in proper order.

Keep the maintenance of the locomotive wheels and tires one step ahead of that of the track and there can be no retaliation. About 20 per cent of all accidents in the mining industry are due to haulage. In all probability 50 per cent of these are due to poor track, wheels and tires. Investigate as many wrecks as possible and remedy the conditions that cause them wherever you can. Some general track formulas are listed in this article for this specifc purpose.

In many cases it is impossible without first removing the trucks from the locomotive to determine the exact diameter of the wheel centers for which tires are to be purchased. Some tires have a shoulder which extends over the outer rim of the wheel center, and owing to the design of the locomotive it is impossible to measure on the inner side of the wheel. Locomotives are left to

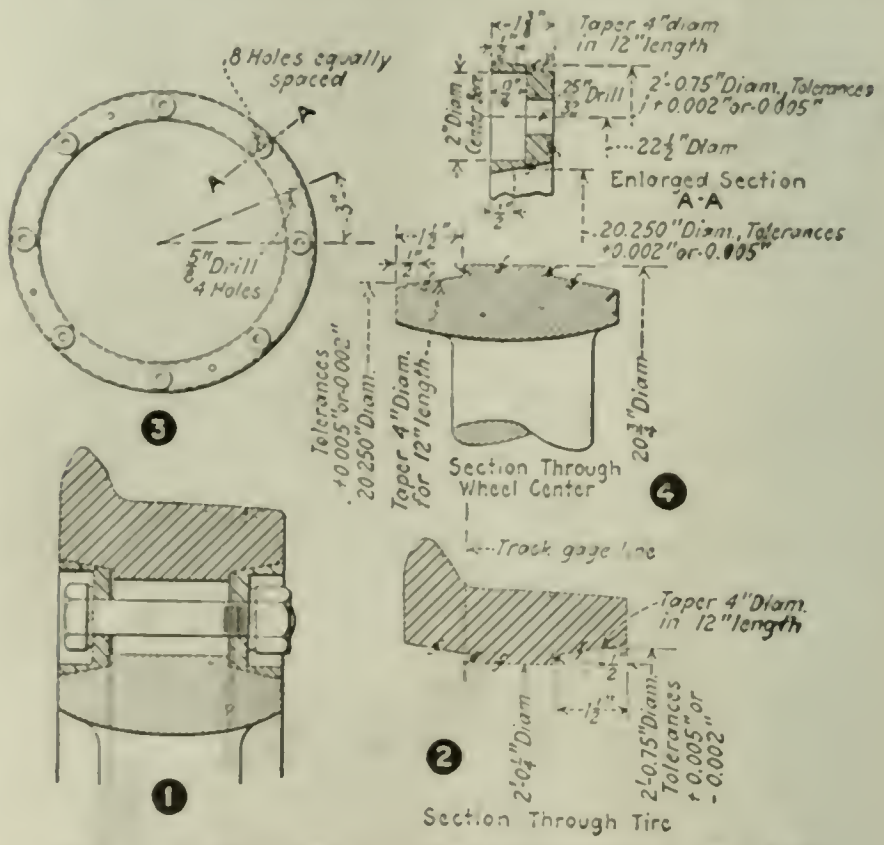


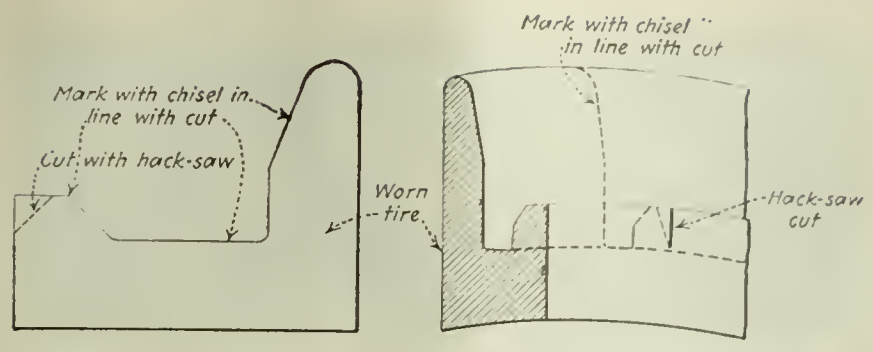
FIG. 2—ELEVATION OF WEDGING RING AND CROSS SECTIONS OF DEMOUNTABLE TIRE

At 1 is shown how the tire is wedged into place by two rings having tapering surfaces which press against the tire as the bolts are tightened up. At 2 is shown a cross-section of the tire, in which an *f* shows the finished surfaces. The diameter is at no point allowed to be 0.005 in. larger or 0.002 in. smaller than standard. At 3 one of the rings is shown and in 4 the wheel center with its finished surfaces, *f*.

TABLE I. EXACT DIAMETER OF WHEEL CENTERS IN GENERAL USE FOR TIRES OF THE OUTSIDE DIAMETER SHOWN

	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches
Outside diameter of tire	14	16	18	20	22	24	26	28	30	33	36
General Electric			14	16	18	20	22	24	26	29	
Baldwin		13½	15	15	19	19		23	25	27½	30½
Jeffrey		14	16	18	20	22	24	26	27½	30½	
Ironton	10 5/16		14 9/16		18 022	20 0242					...
Morris	Solid rolled-steel wheels to use 14-in. tires										
Morgan-Gardner			15½ 14*		22½ (18½)		26½ (22)	28½ (24)	30½ (26)	31 (26)	. .

* Under Morgan-Gardner sizes expressed thus: 15½ (14); 18½ is the outside diameter of tire and 14 the diameter of wheel center, both in inches.



METHOD OF BREAKING TIRE WITH SAW AND CHISEL

A deep cut is made with a hacksaw in the worn tire at the edge of the tread, and a chisel mark is made on the flange and also on that part of the tread where the saw cannot reach. A 45-deg. chisel is put in the hacksaw cut and struck with a 20-lb. sledge. One blow should break the tire.

run on worn wheels because the management believes it cannot afford to stop them long enough to remove the trucks for the taking of these measurements.

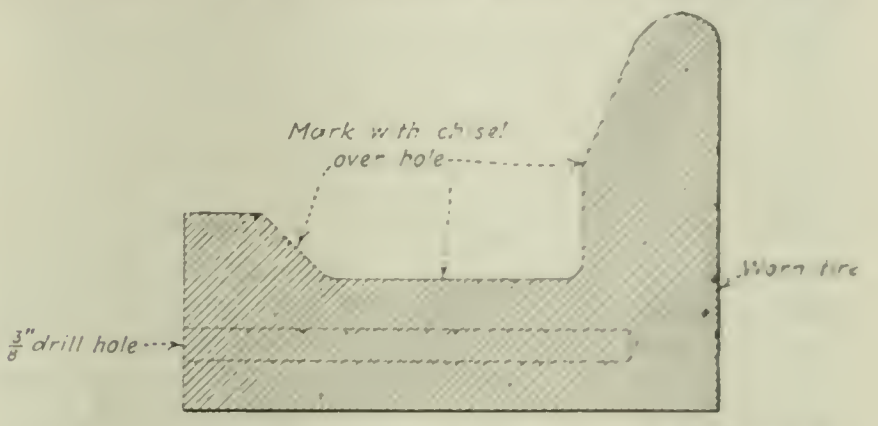
If the record of the sizes and performance of tires to which we have previously referred were kept this trouble would be eliminated. Rarely is information to be found on hand around the mine giving general data on the sizes of tires and wheel centers, and for this reason information of this kind has been sought from several manufacturers, and it is listed herewith. All mine-locomotive wheel and tire manufacturers should indicate on all wheels and tires in some permanent manner their exact diameters, widths and thicknesses.

On Curves, Flanges and Tires Wear Unequally

Where curves in the mine tracks are in one general direction, the flanges and tires on the outside-rail side usually will wear faster than those on the opposite side. Under general haulage conditions in the mines it is also often found that the wheels or tires on the gear end of the locomotive wear much faster than those on the opposite end, but that the flanges on the gear side do not wear thin as fast as those on the opposite side.

The wear on wheels, tires and brake shoes is materially reduced by the use of a dynamic-braking controller on the locomotive, for a heavy downgrade can be negotiated under heavy load without putting on the brakes and sliding the wheels, and because in stopping a trip the brake shoes have to be applied only after the controller has reduced the speed of the locomotive to practically zero. With this controller the motors are connected in series. This reduces the possibility of spinning the wheels when starting a trip.

The dynamic method of braking is accomplished by connecting the motors as generators. By proper manipulation of the controller when the motors are so acting the controller will regulate the resistance sufficiently to produce the desired braking effect.



HOW TO BREAK TIRE FROM WHEEL WITH DYNAMITE

The worn tire is drilled with a ⅜-in. hole and scored by the chisel above the hole. The drillhole is then filled with dynamite and detonated with a cap.

In removing tires from wheel centers it is customary to heat them with a gasoline or kerosene torch, upending the axle so that the wheels can be imbedded in a fire, air under pressure being supplied through a circular pipe fitting around the wheel. They also are frequently

FIG. 5

Preparing to Turn Badly Grooved Tread

Too often a tire that has become badly grooved is allowed to run on long after prudence would favor its resurfacing or removal. It is probable that if the turning, when turning is all that is needed, could be done without the locomotive being laid off during operating hours it would be far more frequently done with less risk of derailment and less hazard to life and injury to property. A mine is fortunate indeed if it has motive power enough so that one of its locomotives can always be in storage or can be readily spared so that at any time it can be put in the best of condition for safe and efficient operation. This illustration shows a lathe in the workshops of the Arrow Coal Co., Rockingham, Pa.





FIG. 7—SHOWING HOW GRINDING WHEELS ARE LOCATED

The grinding wheels are placed just outside the track. The adjacent rail section in each case can be removed and the grinding wheels shifted over so as to come immediately under the wheels to be ground. The locomotive is supported during the grinding by jacks.

removed by the use of a special type of forge over which the wheels can be revolved.

The new type of demountable tire developed by the General Electric Co. for mine locomotives is worthy of consideration, for such tires can be removed in much less time than those which are not so designed. Furthermore, with this type of tire the axle or wheel center is not subjected to excessive heat such as is sometimes developed when tires are removed by other methods.

When tires are worn to a point where they must be discarded it is better to break them by the methods shown in Figs. 1 and 2 than to remove them by heating.

Only in a few cases are the machine shops at the coal mines equipped with a tire lathe—that is, one that will turn two tires at one time and do it without the prior annealing of the metal. A lathe of this type will turn two tires in two hours. The small lathe usually found at the mines cannot turn tires unless they have been annealed, for the lathe cannot cut the hard crystallized surface which has developed on them. Before placing the tires on such a lathe they must be annealed to a dull red and allowed to cool naturally in air.

They are generally shrunk on the wheel center while cooling and they are then resurfaced. If the tire is turned by the use of chucks it must be reheated after turning and shrunk on the wheel center. Three tires a day is a fair average for this method of turning. In either case when the tire is being turned a drip composed of two parts petroleum and one part turpentine should be used for lubrication.

The use of abrasive brake shoes has done much to retain the proper contour of the wheel or tires. The grades on the haulage roads have much bearing upon the manner in which they should be used. To eliminate undue wear upon the wheels and tires they must be interchanged in many cases with common brake shoes.

A grinding machine has been placed on the market for the resurfacing of tires. It is so designed and operated that the tires can be ground without removing the trucks from the locomotive. The grinding wheels are on the same elevation as the track, and the motor

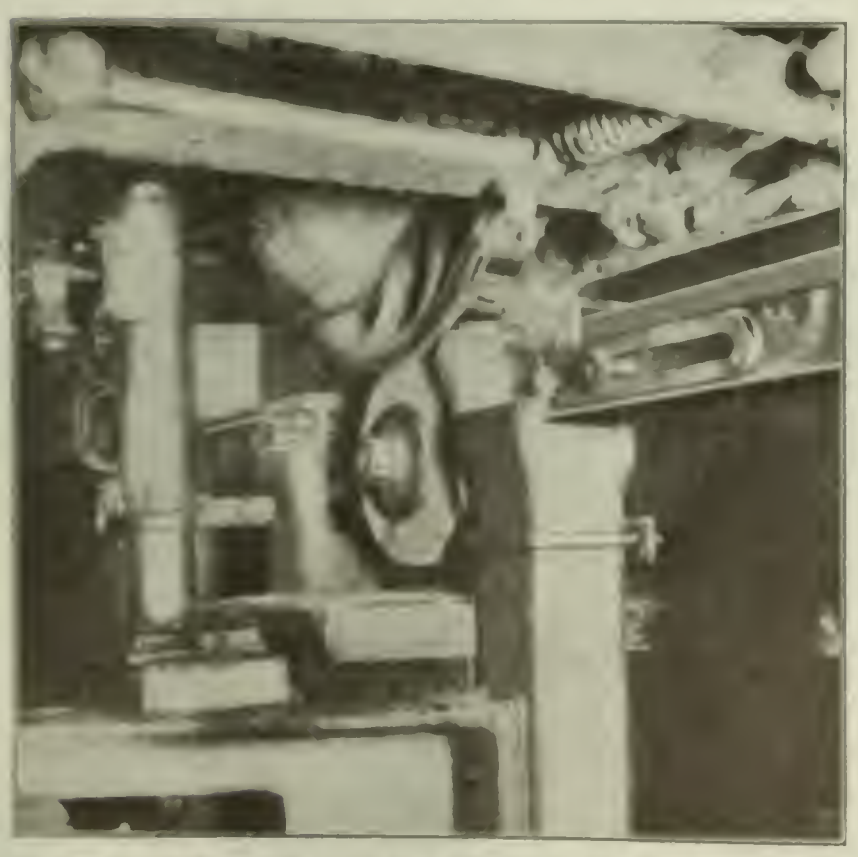


FIG. 8—GRINDING WHEELS WHILE STILL IN PLACE

Mine tires would wheels be surfaced if they could be demountable and without removing them from the locomotive. This is likely to be the cause of considerable trouble.

TABLE IV WHEEL BASE IN GENERAL USE ON LOCOMOTIVES OF WEIGHT SHOWN

Weight, tons	4	5	6	8	10	13	15	20
General Electric, inches	37 and 44		44	46	61	61	72	.
Goodman, inches	40	42	44	48	66	66	66	74
Ironton, inches	36	36	36	36				..
Matcha, inches	29½	32½	29½	36½	44½			..
Morgan-Gardner, inches	24	35½	29½	42½	41	48	48	..

TABLE V COST OF REBUILDING TIRE BY ELECTRIC WELDING

Operation of machine per hour at 1½c. per kw.-hr.	$0 11
Operator per hour	60
Electrode, per hour (2 lb.)	16
Total	$0.87
Ten hours labor required for two tires	8.70
Turning to contour, 3 hours at 60c.	1 80
Total average for two tires	$10 50
Total average per tire	5 25

For comparative figures let us assume costs as follows:

Cost of one new tire	$30 00
Resurfacing one tire in lathe	6 00
Rebuilding by electric welding	5 00

Assuming that tires are turned once a year by the lathe, the locomotive maintenance costs per tire for any given period, all conditions being equal, would be as in Table VII.

TABLE VI TIRE COSTS WHEN TIRES ARE ONLY SURFACED AND REPLACED

Number of Turnings That Two Will Furnish	Years 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Cost in Dollars per Tire Resurfaced and Replaced for a 16-Year Period															
None	30	60	90	120	150	180	210	240	270	300	330	360	390	410	440	470
One	30	54	66	72	102	138	144	174	180	210	216	246	252	282	288	
Two	30	48	42	72	78	84	114	120	126	156	162	168	198	204	210	216
Three	30	36	42	60	72	84	90	96	126	132	138	144	174	180	186	192

Life of last tire estimated by dotted line.

TABLE VII. TIRE COSTS WHEN TIRES ARE SURFACED, WELDED AND REPAIRED

Number of Turnings That Tires Will Permit	Years	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		Based Upon Three Re-fillings by Electric Welder. Life in Years and Costs in Dollars per Tire.															
None		30	35	40	45	75	80	85	90	120	125	130	135	165	170	175	180
One		30	35	40	45	51	56	61	66	96	101	106	111	117	122	127	132
Two		30	35	40	45	51	56	61	66	72	77	82	87	117	122	127	132
Three		30	35	40	45	51	56	61	66	72	77	82	87	93	98	103	108

Life of one tire indicated by heavy line.

is run into position as if it were being spotted over a pit in the machine shop. A limited inquiry into the merits of this machine discloses quite a difference of opinion as to its performance and results. It cannot be condemned or recommended until a thorough investigation has been made and until several questions have been answered by practical experience:

(1) When grinding the locomotive wheels are turned by the friction of the grinding wheels. This may prove satisfactorily on a special type of locomotive but will it work well on all types?
(2) If there is ½ in. or more play in the journal boxes caused by worn bearings or wheel hubs, how can the flanges be prevented from playing on the grinding wheel?
(3) If two tires are worn unequally or to different diameters how will the two be reground to the same diameter in one operation?
(4) How many tires per day can be resurfaced?
(5) As either the lathe or the electric welder can be placed in constant service for general repair work as well as to resurface tires, will the investment, interest and maintenance costs for a grinding machine, which has only one definite use, be justified by the saving that its use affords? If not its installation will be unwarranted.

Building up worn tires and wheels successfully and economically with the use of the electric welder requires an operator who has by experience acquired the technique of manipulating the electrodes and their application to the various classes of welding.

For building up tires a $\frac{3}{16}$-in. metallic electrode does the best work but more speed can be made with one of ¼-in. diameter. The $\frac{3}{16}$-in. electrode requires 200 to 250 amperes whereas the ¼-in. requires from 250 to 300.

The worn space to be filled up, using a 26-in. tire as a fair example, will require on an average about 10 lb. of metal. A competent operator should fill this in at the rate of 2 lb. per hour. At this rate two tires could be rebuilt in ten hours.

In general practice around the coal mines the tires are placed flat upon a turntable at a convenient working height. The welding is then done in 2- to 3-in. sections at a time, starting at the flange and welding across the tread and in four equidistant points around the tire. If instead of removing the tire and placing it on a turntable the locomotive truck is set up on a pedestal the operator will make two welds, one on each tire, while in the one position, then roll the axle 180 deg. and repeat the welding, and so on until the original weld is reached.

Such a procedure holds the localized heat to an absolute minimum, and this becomes more essential as the carbon content of the metallic electrode is increased. An electrode having 0.10 per cent carbon or less will give complete satisfaction. However, if it is desired to use a rod having approximately the same carbon content as the tire itself, there are no difficulties, except that the price is slightly higher per pound.

For tire work no metallic electrodes in which the carbon is in excess of 0.75 per cent should be used, for with the harder metal it seems difficult to prevent local strains. Tires will break by using this high-carbon metal because the local strains cannot be compensated.

How to handle the resulting tire after it is built up doubtless will puzzle operators who are not equipped with lathes large enough to swing an axle complete, much less the larger size tire. A portable grinding wheel satisfactorily overcomes this condition. It is possible to use these tires without turning if the operator has put on the finishing layer expertly.

It is claimed for the electric welder that a tire can be built up three times after each surfacing. Upon this assertion, using prices as indicated above, the life and maintenance cost per tire would be as in Table VII.

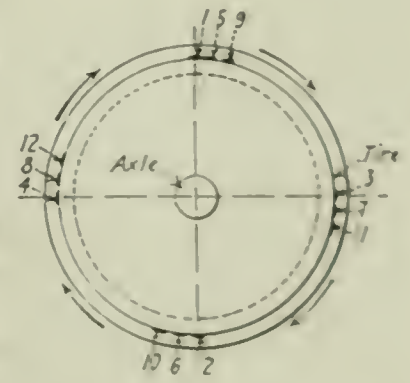
As it is not considered profitable in general practice to rebuild flanges on tires, the flanges in all probability will be worn beyond repair before the tires could remain in service for a life such as indicated above. Many mine locomotives are designed so that the wheels cannot be resurfaced, and must be maintained as near their original diameter as possible, this because of the underhangings of the locomotive, which if lowered by worn wheels will catch on switches, etc.

The electric welder has its advantages in cases like this, and it means a considerable saving. When one wheel is worn deeper than the other, it is necessary to resurface both wheels to the diameter of the one worn the deepest, thereby unnecessarily shortening the life of the other tire, but by rebuilding the tires electrically this waste is eliminated.

FIG. 8

HOW TO PLACE METAL IN ELECTRIC WELDING

The applications of metal to the surface of the tire should be made in the order shown and continued till the whole tread has been built up to the required diameter.



A locomotive having the minimum height above the rail has many advantages, but it is always well to investigate the conditions, prepared if possible to sacrifice a few inches of height in order to allow space for the complete utilization of tires and if possible to use tires as much as one inch oversize.

TABLE VIII. FROG AND SWITCH FORMULAS

When l = lead rail in feet, g = gage of track in feet, n = number of frog, r = radius to center line of track in feet, x = length of switch latch in feet, d = clearance between hinge of latch and rail in feet, then

$$n = \frac{\text{spread in inches, 3 ft. from frog point}}{\text{?}}$$

$l = 2gn$, $r = nl$, $x = 2rd$

To estimate required increase in gage on curves

When r = radius to center line of track in inches, w = wheel base in inches, d = diameter of wheel in inches, o = height of flange in inches, and l = a constant.

Then $l = \sqrt{o(d-o)}$, $x = \frac{w+L}{\text{?}}$ = sine of angle

1 — cosine of angle = versed angle

r in inches times versed sine = x or distance in inches gage must be increased

To find the minimum radius of curves for various wheel bases and wheel sizes, assuming the curves to be properly gaged

When R = minimum radius of curve in feet, B = wheel base in inches and C = a constant and the gage is ½

Wheel Diameter in Inches		Wheel Diameter in Inches	
12	4 00	31	2 13
14	3 69	33	2 12
16	3 43	35	2 11
18	3 20	36	2 10
20	3 01		

Relative Merits of Storage-Battery, Combination and Conductor-Cable-Reel Gathering Locomotives*

Believed That Larger Capacity Straight Battery Type Might Show Rate Two Cents per Ton Lower Than Combination—Reel Type Fits Heavy Grades; Combination, Medium Grades and Straight Battery, Low Grades

THE authors of this paper hope that the relative merits of the various types of locomotives now in use have been laid down in this article without bias, the sole purpose of preparing it being to bring to light the advantages of one class of gathering locomotive over another under certain specified conditions. This is done for the benefit of those who have invested or who may be contemplating investing their money in motor equipment.

Mining and electrical men of recent years have much discussed the merits of the different kinds of gathering locomotives, practically all of which will come under the three classifications named in the title. Widely differing experiences have been reported. There is reason to believe that much prejudice has crept into the arguments because of the misapplication of the equipment and the slowness of all human beings to admit their mistakes and accept new developments. Therefore this article will be confined to facts so far as the members of this committee have been able to obtain them, associated, we hope, with logical reasoning.

All Three Machines Have Their Proper Place

In this way, with no selfish end in view, we hope to show the relative merits of straight storage-battery, combination and conductor-cable-reel gathering locomotives from an operating point of view. This will be done primarily under what we consider average mining conditions, but we will state before going further that we expect to find an economical place or condition for each of the above classifications.

Before presenting any data it is in order to discuss briefly how and under what conditions these data have been obtained and compiled, and the kind and size of the equipment considered.

Records of Nineteen Locomotives Collected

Records of nineteen gathering locomotives have entered into this comparison. They are owned and operated by the Logan Mining Co. in the Logan field. These motors are classified as follows: Nine combination storage-battery machines, all equipped with 88-cell lead batteries, all 13-plate except one, which is a 15-plate cell; seven straight storage-battery machines all 48-cell, lead, two 17-plate, three 19-plate, two 21-plate, making the average 19 plates; three locomotives of the conductor-cable-reel type.

These locomotives are not all at one mine but are divided as follows among four operations: One mine has one straight battery and one cable-reel machine; another has four combination machines that gather and trip their coal to the slope bottom; another has four straight battery, two combination and two cable-reel machines; the remaining mine has two straight battery and two combination locomotives.

The coal beds at the four mines range from 5 to 6.5 ft. in thickness and are generally considered level, but have numerous local dips ranging up to 4 per cent. These of course will average about "fifty-fifty" in favor of and against the loads. In general these mines have what would be considered good average mining conditions. Forty-pound steel is laid on all main haulways and 20-lb. in all butt entries and rooms.

Locomotive Maintenance Costs Closely Kept

This company has kept an extremely accurate maintenance-cost system on the practical operation of its locomotives from March 1, 1920, to date. It is through the courtesy of this firm, the chairman of this committee being an employee in the capacity of chief electrician, that we have been given access to a large part of the facts that will be presented in this paper with the assurance of their reliability.

A monthly cost record is kept of each locomotive on standard forms printed for this purpose. The electrician at each mine makes an itemized record of each repair part used, the date of its installation, and the number of hours consumed in making the repairs. Also on this same sheet the daily tonnage of each locomotive is accurately kept. When a new battery is installed and after a deduction is made for credit on the old battery returned to the manufacturer the rest is charged monthly with depreciation calculated on a two-year life, stopping the charge at the end of two years where the battery exceeds the estimated life or doubling up during the last months should the battery perchance fall short of that period of usefulness.

Maintenance of the batteries, including the replacement of water, is recorded on these sheets, and at the end of the month the results are totaled up, showing the tonnage, total cost and cost per ton for the month. One or two good months will not be picked from these records and a comparison made from these, but the records back to March 1, 1920, covering a continuous operating period of twenty-seven months, terminating June 1, 1922 will be taken. A point that we wish to emphasize here is the length of the time interval that these records cover. The experience over a number of months is essential if figures of this nature are to furnish reliable indications.

The many conflicting stories and reports on the subject under consideration doubtless arise from the fact that the most of us do not dig deep enough when making comparisons or drawing conclusions. Offhand it might seem that compiling and comparing the records mentioned above would be all that would be necessary to settle this question, but it is not, because this compilation does not represent more than 30 per cent of the cost that should be entered against these locomotives

*Report of committee on "Relative Merits of Storage-Battery, Combination and Conductor-Cable-Reel Gathering Locomotives," to be presented Sept. 21 at the meeting of the West Virginia-Kentucky Association of Mine Mechanical and Electrical Engineers at its session to be held Sept. 19-22 at Huntington, W. Va. Committee consists of C. E. Rogers (chairman), L. C. McAllister, H. R. Wegert and J. Lewis Dawson.

and introduced when making such comparisons. We must not be satisfied till we have reduced every possible alleged advantage or disadvantage to facts or figures. It matters not what claims may be put forth; if they fail to show a reduced cost per ton they are not worth considering, for this is the vital point of interest and is the only characteristic that can really be counted of advantage. In other words this is not a question of individual likes or dislikes, it is a question of dollars and cents. After our data are exhausted, however, we will consider some of the points of advantage for which we have no substantiating figures.

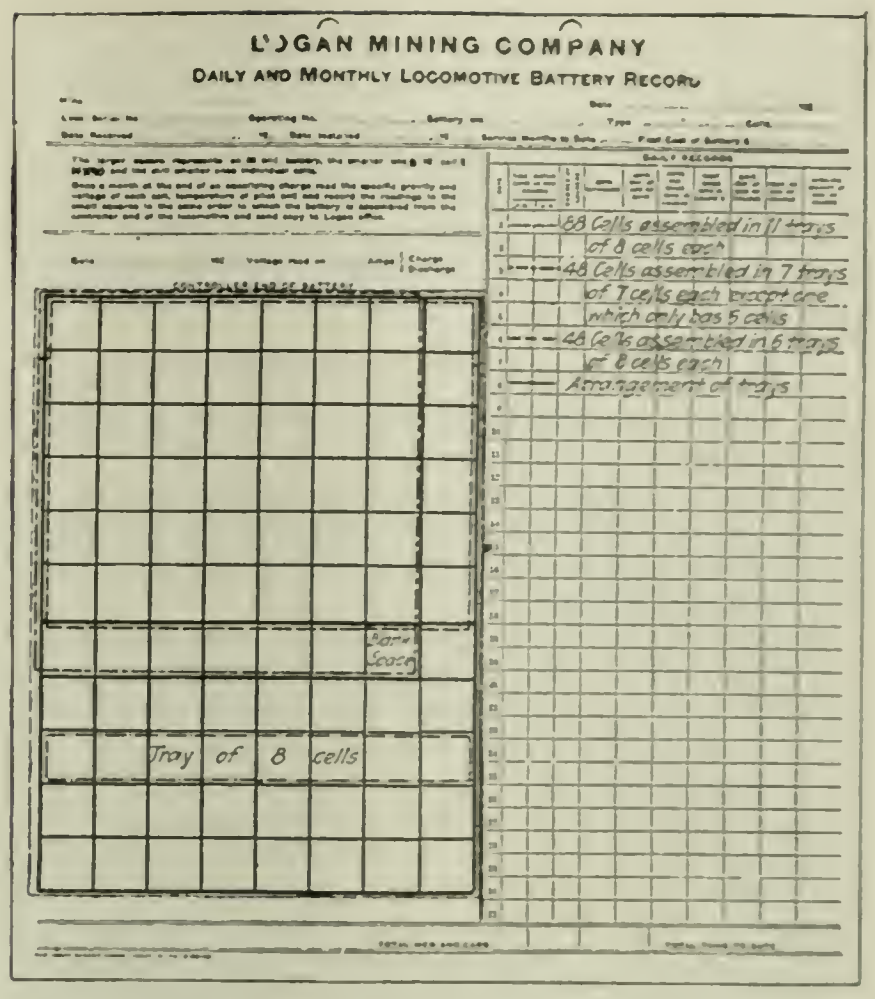
The largest item of cost entered is for the wages of motormen and brakemen. The average wage these operatives received during the period under consideration was $5.59 per 8-hour day, the mines working 404.5 eight-hour shifts during this time. The next important item is the power-demand charge, which in this locality is based on the highest integrated 5-minute peak that occurs during a month. This charge is $1.80 per kilowatt per month, and to it the regular charge for energy must be added. By the use of straight storage-battery locomotives this demand charge is at a minimum, as the day load is reduced and the power consumption spread out more evenly throughout the 24 hours of the day. The straight battery machine being the most economical from this point of view we take it for a base.

Accordingly we must charge the cable-reel locomotives with a demand equal to the capacity of their motors, which is 30 kw., as they all draw their power from the trolley and do it during the day shift, when the maximum load is on. The motor capacity of the combination locomotives is 20 kw. Apparently they should be charged with 20 kw. of demand, but as they operate from the trolley only 20 per cent of the time they rarely ever all draw their maximum capacity from the system at the same time. Consequently they are charged with 75 per cent of their capacity, which is 15 kw. per locomotive per month.

Charges Against Machines That Use Trolley

Reel and combination locomotives are charged with increased copper, trolley hangers, bonds and labor for bonding butt entries, but these charges are spread out over the total tonnage of a 1,000x300-ft. panel in a 5-ft. seam with 80 per cent recovery. The maintenance cost of the wire and bonding is not considered, as it will just about offset the value of this material when the entry or panel is worked out. But there is another charge of like nature. It is well known that if cable-reel or combination gathering locomotives are being used more substation capacity and more copper in the whole transmission system are required because a greater percentage of the total power consumption is being used in a shorter period than would be the case where straight storage-battery machines were being employed. Hence these two charges must be made against these two types of locomotives. They are divided between them in about the same proportion as the demand charge, but they are based on the total tonnage of an average-size lease or mine.

We have investigated and reduced to conservative figures another claim or charge that must be made against the cable-reel gathering locomotive. This is power failure or interruption. It is certain that if this type of locomotive is being used when there is such failure or interruption the whole mine comes to a dead



stop almost instantly, so far as the moving or transportation of coal to the tipple is concerned.

When failures of 10, 20 or 40 minutes duration occur does the cost stop? Most assuredly not. Can we prevent these interruptions? No; they are not within our reach. Are they the fault of the locomotive? They certainly are. They should continue working, power or no power, for that is just what a battery locomotive does. Consequently we must admit that when it comes to the question of considering merits and demerits the reel type of locomotive should be charged with at least a portion of the additional cost arising from this weakness and inflexibility.

The power company's record in this locality from a time standpoint shows 98 per cent supply. This means that during 2 per cent of the time no power is available at the mines, and we accept this as a pretty fair degree of service. But it also means that on an average during 28.8 minutes out of every 24 hours no power is available. It is reasonable furthermore to believe that 75 per cent of this failure will come during the 8-hour working shift, because this is the period of heaviest load. This being the case, the period when power is lacking averages 21.6 minutes during each working shift, or is equivalent to 4.5 per cent of the working time.

Assuming the average cost of production throughout the period of time under consideration as being about $1.75 per ton, 4.5 per cent of this is 7.88c. of cost per ton arising from power failure. The coal company's records show that the mines operated only about half time and as power failure would not be particularly injurious on the days when coal was not actually being produced we cut the above figure in half, which still leaves 3.94c. per ton. Because this figure still looks too high and because we might have overlooked something this charge is further cut and entered against the reel-type gatherer at 1.75c. per ton.

We realize that a battery locomotive could not continue its work over any protracted period of time should

the power not be restored, because the mine cars would all be filled and because the mine could not continue to operate without ventilation, but the records show that the average duration of these failures is 15 to 20 minutes. It is obvious that with storage-battery locomotives these short interruptions are scarcely felt, as the main-haulage locomotives and tipples almost always have a surplus of capacity sufficient to overcome these short delays, provided the loaders at the working face are kept going.

So far, we have considered only the total power failures. These are not all, however, as in all probability the local or partial failures from the substation to the mine are as frequent and as long in duration as the total failures. We have no definite data on this detail, however, so we merely drop it here as a demerit against the cable-reel gatherer.

Another consideration in connection with power failure that we have not been able to convert to figures but one which is nevertheless pronounced in its effect on cost is the fact that miners are difficult to hold in a mine when they fail to receive cars promptly, especially when the delay comes in the afternoon; consequently a power failure of 30 minutes in the afternoon often leaves a mine badly crippled for the remainder of the shift. To those who closely watch the daily cost statements of a mine the effects of such happenings are often noticeable to the extent of 25 or 30c. per ton.

We conclude here the description of how the data to be presented have been assembled. We have been highly conservative in the few estimated figures entering into this comparison, and without question the locomotives against which charges have been made have been given the benefit of all doubt. Therefore, Table I is presented to show the relative merits of combination, straight battery and conductor-cable-reel locomotives.

TABLE I—RELATIVE MERITS OF COMBINATION, STRAIGHT BATTERY AND CONDUCTOR-CABLE-REEL LOCOMOTIVES

Tonnage Data

Locomotives	Total Tons	Tons per Locomotive	Tons per Locomotive per 8-hr. Day
9 Combination	718,343	70,615 9	174 6
7 Straight battery	333,852	50,836 0	125 7
1 Conductor-cable-reel	150,387	50,102 3	123 9
Total	1,241,782	60,899 6	148 6

Percentage

Combination	100 00
Straight battery	71 99
Cable-reel	70 96

Cost Data on Nine Combination Locomotives

		Cost per ton, Cents
Total repair cost	$13,431 49	2 11
Total battery depreciation	19,774 50	3 11
Increased power demand, 15 kw. x $1.60 x 9 x 28	6,565 00	1 03
Increased cost of wire and of handling [illegible]	1,334 64	21
Increased substation expense	254 22	04
Increased track haulage and main-line haulage	63 55	01
Operating cost 404 8-hours at $1.59 x 2 x 9	40,780 79	6 40
Totals	$82,124 19	12 91

Cost Data on Seven Straight Storage-Battery Locomotives

Total repair cost	$3,657 75	1 03
Total battery depreciation	10,385 10	2 92
Operating cost 404 5 days at $5.59 x 2 x 7	31,656 17	8 89
Totals	$45,699 02	12 84

Cost Data on Three Conductor-Cable-Reel Locomotives

Total repair cost	$3,394 78	2 26
Increased power demand 30 kw. at $1.60 x 3 x 27	4,381 29	2 91
Increased cost of wire and of handling [illegible]	1,608 28	1 07
Increased cost of main Cables and [illegible]	90 18	0 06
Increased substation expense	270 55	0 18
Cost arising from power interruptions	2,630 37	1.75
Operating cost 404 5 days at $1.59 x 2 x 3	13,566 93	9 03
Totals	$25,942 38	17 26

Tonnage Cost Data on Various Locomotives

Total tons 1,241,782 Total cost $153,766 79 Average cost per ton 13.47c.

Battery cost combination 0.07c. per ton, saving on above tonnage	$799 19
Battery cost straight type 4.43c. per ton, saving on above tonnage	50,463 23
Combination cost cable-reel type 4.36c. per ton, saving on above tonnage	49,664 04

The foregoing tabulated data show that the straight storage-battery locomotives have an advantage of 0.07c. per ton over the combination machines. Although this is correct, if we stop here we will not do justice to the straight battery locomotive; therefore we present Table II, showing the comparative capacity of the two.

TABLE II—CAPACITY OF COMBINATION AND STORAGE-BATTERY LOCOMOTIVES

	Cells	Plates	Total Positive Plates	Kw.-hr. Capacity, 6 hr.
Combination	88	13	528	35 38
Straight battery	48	19	432	28 94

From this it may be seen that the combination machine drawing 20 per cent of its power from the trolley has a battery equivalent of 44.23 kw.-hr., which gives it an advantage of 35 per cent in capacity over the straight battery locomotive. The table of percentage shows that the combination has led the straight battery machine by only 28 per cent in tonnage notwithstanding its 35 per cent advantage in capacity.

Increasing Size of Storage-Battery Machine

This difference in tonnage cannot be traced to anything but a difference in capacity resulting from the fact that the mileage rating of both types of locomotives under consideration is the same when operating from the batteries, but the combination has 42 per cent advantage in speed over the straight battery machine while operating from the trolley, providing 250-volt pressure is maintained on the section from which cars are being gathered. This latter condition is possible but not practical, consequently we drop this apparent advantage and assume that the straight battery machine equipped with the same capacity as the combination locomotive will gather the same tonnage under the conditions being considered. This would require about a 27- instead of a 19-plate battery, which is approximately a 50-per cent increase.

If we go back to the data in Table I referring to the seven straight battery locomotives and increase the battery depreciation 50 per cent and the repair cost and tonnage 28 per cent based on the combination tonnage, while the operating cost remains the same, it will give the results set forth in Table III, showing what the cost and tonnage figures would have been on these locomotives had they been equipped with this additional capacity.

TABLE III—TOTAL TONS INCREASED BY 38.9 PER CENT, OR FROM 355,852 TO 494,278

		Cost per Ton, Cents
Total repair cost increased by 38.9% or from	$3,657 75 to $5,080.54	1 03
Total battery depreciation by 50% or from	10,385 10 to 15,577.65	3 15
Operating cost remaining the same	31,656.17	6 40
Totals	$52,314.36	10 58

Had the data already given in this paper been procurable at the time the above equipment was purchased Table IV could have been prepared.

TABLE IV—RELATIVE MERITS OF STORAGE-BATTERY, COMBINATION AND CONDUCTOR-CABLE-REEL GATHERING LOCOMOTIVES, LOGAN MINING CO.

Advantage of Straight Battery Locomotives

Over combination 2.33c. per ton. Saving on total tonnage	$26,601 66
Over reel type 6.68c. per ton. Saving on total tonnage	76,265 69

By comparing the repair cost alone of the three types of locomotives the combination will seem a little high, as it has no cable cost or reel maintenance. This is due to a rather delicate equipment originally installed in eight of these locomotives. This equipment was taken out about eight months ago and replaced with a later

and more rugged type, which has already lowered the maintenance from 2.51c. per ton to 2.11c. over the whole time period of 27 months.

Figured on the last eight months alone it is down to 1.42c. per ton. This is one pronounced advantage that the cable-reel locomotive has had over the combination machine in this comparison. Had the combination had this latter equipment in the beginning the difference would have been 0.69c. per ton more in its favor. Having been in service for many years, the design of cable-reel locomotives has reached a comparatively high state of perfection. This has been greatly in their favor wherever they have been called on to compete with storage-battery locomotives.

The cost of motor cable is used as a common argument by battery-locomotive "boosters" as an item sufficient to just about offset battery depreciation. This we do not believe can be verified except possibly in a few extreme cases. The average life of a cable on the locomotives for which results have just been given is eight months. Worked out in cost per ton it stands at about 0.3c. compared to battery depreciation of 2.92c. and 3.11c. per ton.

Battery Locomotive Has Low Repair Cost

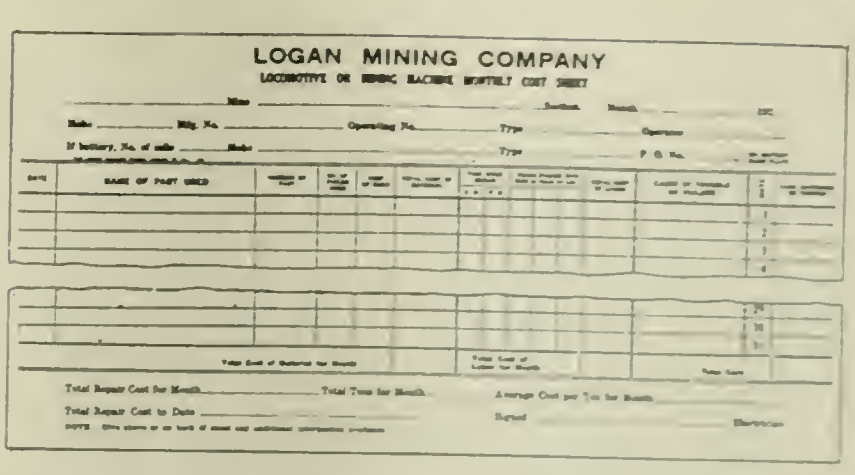
The straight storage-battery locomotive has a clear advantage over both the other types in maintenance cost, and it is not likely that either of them will ever be able to compete with it in this particular. Its entire electrical circuit is insulated from the ground. There is thus no difference in potential between the motor windings and frame, and for this reason the tendency to ground is eliminated, for the insulation must break down on both sides of the circuit before a short-circuit can exist.

Moreover, as the straight storage-battery locomotive has its whole source of power on its back and is not subject to transmission troubles or losses, the electrical equipment is designed for a much lower voltage than the combination or reel type. This, in addition to the double insulating feature, almost entirely eliminates electrical trouble. Records show that the number of such troubles with this kind of locomotive compared with that of the other types is about in the ratio of 1 to 12.

This brings in another important point of merit for which for want of more definite data this locomotive receives no credit in the tabulation. Had we had a record of the actual working time that these other locomotives lost by reason of their various electrical troubles we could have worked out fairly closely the additional cost incurred by them. The magnitude of these seemingly little disadvantages surprises us when we dig into them.

What does it mean to have a locomotive in the middle of the shift come hauling in another that is incapacitated from a burnout? It means that one locomotive is taken from its work for at least 15 or 20 minutes while the cost on that section goes right on. The other machine is out probably for the rest of the day; the miners on its section go home; the day is finished with 50 or 100 tons of coal short, yet with no curtailment of the day's expense. Do we notice these things? They certainly take place around all coal mines utilizing electrical haulage. These are the things that really count when it comes to considering the relative merits of various types of equipment.

The lower voltage of the straight storage-battery


LOGAN MINING COMPANY

machine gives it another advantage over the combination type from the battery point of view. The first cost of the battery is less per kilowatt-hour of capacity, because of the smaller number and the larger size of the cells. This reduced number of cells and lower voltage reduce the battery maintenance cost, there being fewer cells to keep up and less tendency for grounds and leakage due to lower voltage and a completely insulated battery circuit. From this company's records this consideration seems to have netted 12½ per cent longer life on this battery. Of course this is all worked into the data given and it also is noticeable to the extent of 0.19c. per ton on the battery depreciation, notwithstanding the fact that the combination locomotives did 20 per cent of their work from the trolley.

Another misfortune that to some extent has held down the tonnage of the straight battery machine is that it did not have sufficient battery capacity to even get a chance in competing with the combination locomotive for the larger producing territories. Consequently it has been forced to take the odds and ends of territories, in some of which enough miners could not be placed for the battery locomotive to make use of what capacity it had.

Delays Kill Chances of Reel Locomotive

It seems that the greatest disadvantage of the reel type of locomotive lies in its inability to compete with the battery machine in tonnage under average gathering conditions. This is due to a number of considerations, the majority of which probably have already been pointed out in this report and entered as dollars and cents in the comparison. They may be summed up, however, in three primary causes, some of which are made up of many details. They comprise power interruptions or failures from various causes, cable and reel troubles, inconveniences of changing from trolley to cable, and vice versa. These all represent delays, and the more concentrated the work and ideal the conditions for battery operation the more these delays are multiplied and the greater is the difference in favor of the storage battery.

In considering efficiency from a power standpoint it is generally thought that the cable-reel locomotive is more efficient than the battery. We do not believe there is much difference in the controllers of the two types of machine as the loss in a battery usually just about equals the line drop sustained in the other type. But from the controller to the rails sufficient reason exists to believe that the battery considerably leads the other type. In the first place the reel type almost always has a higher mileage rating, which tends to give quicker acceleration but which also results in considerably more slippage, thereby consuming energy uselessly.

From an investigation covering several days spent

to riding battery locomotives to determine whether or not they could make use of any additional speed it was found that they did not operate with their controller wide open more than 10 per cent of the time. The reason for this is that a series-wound motor which may have a comparatively low full-load rating will move off under extremely light load at several times normal speed, which is the case with a gathering locomotive picking up one and two cars at a time under average gathering conditions.

Careless Battery Motorman Gets Home Early

This being true, then the reel type with a higher mileage rating must necessarily under the same conditions operate with more resistance in the circuit than the battery machine. Another argument in the same direction is that in almost every case where the operator is changed from a reel-type to a battery locomotive, he "kills" the battery on much less tonnage than the old operator who has learned to save through a realization that his supply of energy is limited. There is no question but what a battery teaches economy in this respect. We believe that if an accurate test were made regarding this saving it would show that the storage-battery locomotive is about 40 per cent more efficient from a power standpoint than the cable-reel type.

So far in this discussion we have found no economical place for the cable-reel or combination locomotive; the straight battery machine has had the best of them on every hand. We have considered, however, only one condition, or what we have called normal or average, with a grade range of not over 4 per cent and that only locally. This leaves, however, quite a field to be covered by the other two types, with which the straight battery machine is almost sure never to interfere, for its usefulness is certainly limited to moderate grades and concentrated work. Even if the question of weight did not enter and it was practical to get a battery with sufficient capacity on a locomotive for such work the heavy battery depreciation would prohibit its use.

Cable-Reel Locomotive for Steep Grades

The combination locomotive is a cross, or compromise, between the straight battery and the cable-reel machine, embodying some of the advantages of both. The place for the cable-reel type is down over the hill, the combination just over the brink a little and the straight battery on top of the hill. If they will stay in their respective places there should be no trouble or argument, but if the battery goes down over the mountain it can expect to be run out by the cable-reel locomotive, or if the cable-reel persists in coming up or staying at the level it will be put out of business by the battery machine. In like manner the combination must not go too far over the hill or try to cover too much of the top. This designates an economical place for each of the above types of gathering locomotives, and it is doubtful whether there is a single large mine in the country that should not have just such a mixture of equipment if economy is its slogan.

The Logan Mining Co. was among the first in the country to install storage-battery locomotives. It started in when their use in coal mines was an experiment and made the mistake that nearly everyone else made in its first installation. It accepted batteries too small for the work. This no doubt has caused more failure and held back the use of storage-battery locomotives more than any other one consideration. The locomotive manufacturers, it seemed, were slow to design their machines so as to accomodate batteries of sufficient capacity.

The Logan Mining Co. is still confronted with some of this trouble, as it is now trying to install 25-plate batteries on locomotives originally designed for accumulators of 17 and 19 plates. The last five locomotives purchased are 48-cell 25-plate machines, and it is desired to replace all of the 48-cell batteries with 25-plate accumulators, and those with 88 cells with 15-plate batteries as fast as renewals are made. This is about what experience has taught is necessary under existing conditions.

From the above paragraph as well as in view of considerations mentioned elsewhere in this report it will be noted that practically all the batteries that have entered into this comparison have been at a disadvantage because of undercapacity. There probably is nothing so detrimental to the life of a lead battery as excessive overdischarge, yet this has been unavoidable with the above batteries. The only reliable safeguard against this contingency is plenty of capacity. Because of this difficulty and improper charging facilities this company realizes that it has not been able to exercise the proper care in the handling and operation of its batteries, but despite the short life that this lack of capacity has caused it knows that it has saved money. It is now making arrangements to install the modified constant-potential charging system, and as it is also installing larger batteries it expects much better results in the future than have been shown here.

In conclusion it should be reiterated that there is an economical place or condition in almost every coal mine for each type of locomotive, the relative merits of which have been here considered. The field is large and the conditions many; therefore, only a question of the right application remains.

An urgent request is made that electrical and mechanical men connected with coal mining adopt some system of cost accounting and record keeping as to the performance of the locomotives under their charge, to the end that their companies may be profited, they themselves may become better posted and the inquirer be able to obtain more reliable information whereon to base conclusions.

An example of the effect on the cost of production of such record keeping over a period of 27 months divided into three periods of 12, 8 and 7 months is presented in Table V. The figures include total maintenance and battery depreciation on all the locomotives that the Logan Mining Co. possesses. Some of these results were not considered in making the comparisons here set forth because of the comparatively short time during which they had been in service.

TABLE V—SHOWING HOW MAINTENANCE AND BATTERY DEPRECIATION COSTS DECLINED

	Tons Moved	Cost	Cost per Ton Cents
First 12 months	505,300	$29,435.33	5.83
Next 8 months	476,810	17,610.06	3.69
Next 7 months	417,963	8,745.88	2.09
27 months	1,400,073	$55,791.27	3.98

Note the uniform reduction after the first twelve months. It may be correctly assumed that had it not been for the record keeping the cost would have continued somewhere near that of the first year, and if so the total outlay on the above tonnage would have been $81,624.26 instead of $55,791.27. This shows a net saving of $25,832.99, or approximately $1,000 per month. If the cost is held down to 2.09c. per ton the

saving on the next 1,400,073 tons will be $52,362.73, or approximately $2,000 per month at the assumed rate of production. About 25 per cent of this reduction in cost was affected by the introduction some time ago of a combined daily and monthly detailed battery report, the use of which has already netted this company a 32-per cent increase in battery life.

This company was not behind its neighbors in efficiency when it began this record keeping. In fact it has always been considered an efficient and progressive coal producer by those engaged in similar business. The question will naturally arise as to how such a system of reports could be effective in reducing cost. First, it points out the sum which it is actually costing to maintain the operation of certain equipment; second, it provides a means whereby the many details of maintenance may be studied. By such study and familiarity certain items of cost may often be reduced and sometimes entirely eliminated by removal of the cause.

Causes, and not symptoms, must be treated if worthwhile results are to be obtained. That which interrupts the service of a piece of equipment one day will do it again under like conditions tomorrow. A record of the past is an index to the future. But for history we would be groping in the dark. A specialist can watch symptoms, prescribe treatment and effect a cure for many ills through the reports of a good nurse.

Alternating-Current Motors with Unusual Range in Running Speed

MULTI-SPEED alternating-current motors capable of being run at 600, 720, 900 and 1,200 r.p.m., thus having a range closely approaching that formerly attained only with direct-current motors, are now being constructed to meet the demands of industry. These motors are made of many sizes.

Until recently the standard four-speed windings of alternating-current motors afforded speeds of 600, 900, 1,200 and 1,800 r.p.m., the latter two speeds being twice the two former. Introduction of the new speed of 720 r.p.m constitutes an important improvement in design and gives this motor a marked advantage over its predecessors. The speed increments of 20, 25 and 33⅓ per cent as contrasted with those of 50, 33⅓ and 50 per cent, the former range in such machines, makes it possible to obtain almost as accurate an adjustment of motor speed to required machine speed as has in the past been obtainable only with direct-current motors.

These new units are known as Watson multi-speed motors and are manufactured by the Mechanical Appliance Co., of Milwaukee, Wis. They are all rated on the 40-deg. basis, that is, they will carry full rated load indefinitely without exceeding a 40-deg. rise in temperature. A 25-per cent overload may be carried for two hours with a temperature rise not exceeding 55 deg. C.

Motors can be supplied to furnish either constant horsepower or constant torque or any combination of horsepower and torque in two, three or four speeds on 60-cycle current. The same ratings can be furnished for other frequencies and in either two- or three-phase.

Suitable control apparatus for these motors has been developed and tried out so that these machines may be operated on either automatic or remote control. Adequate protective apparatus has also been developed for use with this equipment.

It will be evident that effective individual alternating-current drive is now available for many types of machines that heretofore have been actuated by direct-current motors only. Machine tools, conveyors, fans and the like can be operated at a variety of speeds without loss of efficiency, while such machines as air and ammonia compressors may be run at only a slight deviation from the exact speed required.

Dr. Finegan Praises Educational Work Of Nanticoke Mining Institute

"THE finest instance of co-operation between industry and public education in providing right training for the men who work," is the way Dr. Thomas E. Finegan, superintendent of the state school system of Pennsylvania, describes a conference initiated by the Nanticoke Mining Institute. The institute is composed of mine owners, mine operators and mine workers. Dr. Finegan's remarks were part of a statement issued at the Department of Public Instruction, at Harrisburg.

"At the suggestion of the officers of this institution," he said, "the Department of Public Instruction called a conference of representatives of the institute, the Pennsylvania State College and the Nanticoke public schools to determine the kinds of industrial courses needed in the Nanticoke region for the training of mine workers and to lay plans for the development of these courses.

"In planning courses for the men who work at the occupation of mining the thing that was uppermost in the minds of the conference group was the welfare of the workers. After careful deliberation it was agreed that there were three courses that would be most helpful to the men who worked at the mining industry: A course for the preparation of mine foremen, a course in mining machinery and a course in mine electrical machinery. The major objective of each of these courses is to increase the occupational intelligence of the men who are engaged in work in and around the mine, to make them skillful in their different trades and occupations, and, in so far as possible, to prepare them for advancement.

"In addition to the technical information to be given in connection with each course each individual is given some instruction in first-aid treatment, and all persons who work underground are given a certain amount of instruction in methods of preventing explosions, in general principles of mine ventilation, in air currents and such other information as will make mining a safer and thus a happier occupation. More than this, each individual is given certain elementary instruction about the formation of coal and the classification and characteristics of coal, in order that they may more fully appreciate the industry with which they are closely associated. Workers in industry must have something more than skill if they are to live more completely and give to the world their best efforts. They must be contented, they must be happy, and they must have a pride in their work if industry is to get the best results from the energy that goes into it.

"The Department of Public Instruction is co-operating with industry and with local school districts in the establishment of such industrial courses as will increase the intelligence, broaden the horizon and add to the happiness of the men and women who work. Public education is deeply interested in the education and welfare of the unskilled workman and his family, of the skilled workman and his family and of the professionally trained person and his family. And this interest is not peculiar to the public schools. One of the most wholesome signs of progress today is the interest exhibited by industry in the training and welfare of its workers. It has not been many years since employers of industry paid little or no attention to the education and training of the workers in unskilled occupations, and little enough attention to the training of skilled workers. The attitude today is wholly different."



M. A. WHITING
Paper "Automatic Electric Apparatus



J. H. EDWARDS
President



HERBERT SMITH
Secretary - Treasurer



E D KNIGHT
Vice - President



M. W. CRENSHAW
Paper "The Wireless Telephone



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In the upper left corner and lower right corner are two authors of papers which are to be presented at the coming sessions. Marshall College, which decorates the lower edge of the page, is one of the older institutions of the convention city, a state college with 600 students and 42 teachers. This shows only the parent building. To it has recently been added a science hall and a gymnasium.



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Relative Value of Cast Grids and Grids of Steel Plate For Use as Resistors in Mine Locomotives*

Cast Grids Do Not Warp as Much as Plate Grids—They Rust Less and Are More Rigid and Require Fewer Tie Rods—Punched Sheet-Metal Grids Resist Shocks Well

RESISTOR grids are used on mine locomotives mainly for the purpose of protecting motors and controlling their speed when they are connected across the source of supply, whether that source be a battery or a trolley system. Much effort has been made to eliminate resistor grids, but alternative devices are either excessive in first cost or too bulky and too much attention may be needed to keep them in order. In fact practically all the devices designed for this purpose have all three of these objections, particularly for equipment like the mine locomotive. Needless to say, resistor grids have been the subject of much study, the object being to provide units having the following characteristics:

(1) Small change in resistance for any given change in temperature, (2) greater thermal capacity, (3) minimum warping, (4) greater rigidity, (5) non-rusting qualities, (6) fewer tie rods, (7) fewer contacts between grids when assembled, (8) lower first cost and (9) fewer expenditures for maintenance.

Cast Grids Fill Specifications Closest

As a whole cast grids fill the above requirements much more satisfactorily than any other type of grid so far developed, particularly in mine service. Grids of smaller cross-section which have lower capacity and a higher resistance per unit do not, as a rule, give the satisfaction that is obtained with grids of larger cross-section and lower resistance per unit. The electrical characteristics are the same regardless of the difference in cross-section, but grids of small cross-section usually are mechanically weaker than those with large cross-section.

This, of course, might be expected. It is, however, possible to overcome this difficulty to a great extent by the proper design of the grid convolutions and by the location and number of grid supports.

The resistor grids used on stationary apparatus are less likely to be subjected to severe shocks and vibrations than those in haulage or gathering locomotives or in portable equipment such as is used for battery charging or arc welding.

In both stationary and portable apparatus, particularly in mines, resistor grids are often subjected to the effects of moisture and often come in direct contact with sprayed or flowing water. The latter, being more or less contaminated with impurities of an acid nature, readily attack metal and also destroy the insulating qualities of various dielectric materials.

Theoretically cast resistor grids have a hard surface, which, as is well known, has much higher rust-resisting qualities than the surface of steel plates or punched grids. As a result cast grids corrode less than those of punched sheet steel. Much research, however, has been made into the possibility of combining this rust-resisting with the qualities that are required of a resistor grid.

Resistor units traversed by high currents are subjected to widely varying temperatures. The electrical resistance of any of the metals will be altered with a change in temperature, each material having its own temperature coefficient of resistance. Metal of the nature used in grids of the cast-iron or cast-alloy type, as well as sheet metal used for punched metal grids, has an increasing resistance with increasing temperatures—that is, a positive temperature coefficient of resistance. Different metals, whether cast or in sheets, have different values for this coefficient.

The resistor grids for mine locomotives should be made of metal having a low temperature coefficient of resistance. Much effort has been expended to develop such a metal, consideration being given, of course, to the possibility of manufacturing the material so that the results always will be consistent. Cast-iron grids and cast-alloy grids when manufactured in large quantities and by men experienced in the casting and running of the heat can be produced with consistent results as to weight per unit, resistance per unit, thermal capacity and temperature coefficient of resistance. Reliable manufacturers make it a practice to have each grid unit tested, and they require that it shall come within fixed limits as to the above characteristics.

Owing to their lower cost cast-grid products have been more generally used than grids of any other type so far developed. To give a product with electrical characteristics equal to those of the cast grids it is necessary to use a special alloy steel. Grids punched from sheet metal have mechanical characteristics of some merit, the principal one being their ability to



RESISTANCE GRID MADE OF PUNCHED STEEL PLATES

This is a Post-Glover grid of the type to which reference is made near the close of this article. Some prefer the punched steel plates wherever the grid is exposed to repeated shocks, as in locomotive service.

*Report made by the committee on "The Use, in Mine Locomotives, of Resistance Grids Made of Rolled-Steel Plate as Compared with Cast Grids." This report was presented at the Huntington convention of the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers, Sept. 19 to 22. The committee consists of Reese Weltz (chairman), George Suter, A. Fred Phelps, J. E. Perman and C. E. Lesher.

COMPARISON OF RESISTANCES USED ON 10-TON, 250-VOLT MINE LOCOMOTIVE

	Post-Glover "Everlasting" Steel Resistance								Original Cast-Iron Resistance					
	Set in Use At No. 1 Division		Set in Use At No. 1 Division		Set Before Put Into Use At No. 2 Division		Set Before Put Into Use At No. 2 Division		Set In Use At No. 1 Division		Set In Use At No. 2 Division		Goodman Co.'s Standard	
	Ohms	Per Cent	Ohms	Per Cent	Ohms	Per Cent	Ohms	Per Cent	Ohms	Per Cent	Ohms	Per Cent	Ohms	Per Cent
R1-R2	1.32	63.0	1.420	73	1.18	73.0	1.15	72.0	0.84	43	0 58	25 0	0 700	46
R2-R3	0.36	17.0	0.250	13	0 24	15.0	0.21	13.0	0.57	29	0 285	12 5	0 420	28
R3-R4	0.32	15.2	0.180	9	0 15	9.0	0.17	10.0	0.27	14	0 83	37 0	0 186	12
R4-R5	0.077	3.7	0 078	4	0 03	1.8	0.05	3.2	0.155	8	3 44	15 5	0 140	9
R5-R6	0.023	1.1	0.019	1	0.018	1.2	0.028	1.8	0.116	6	0 222	10 0	0 070	5
Total	2.09	100.0	1.93	100	1.618	100.0	1.608	100.0	1.94	100	2 261	100 0	1 516	100

withstand more severe shocks than cast grids, particularly those of the smaller cross-section, but cast-iron grids of the larger section are seldom affected by the most severe shock found in locomotive service. Cast-alloy grids are tougher than cast-iron grids and, therefore, small grids of cast alloy can be used in more severe service than similar cast-iron grids.

When overloaded both cast- and punched-steel grids are susceptible to overheating. When, however, the overloading is of but short duration the grids are in no way injured, but if the overload lasts for a long time it will burn out the resistor. In locomotive service the frequency and duration of overloads depend on the care of the motormen; especially is the overload unduly prolonged when the locomotive is allowed to run for a long time with the controller in the resistor notches.

Grids Warp When Severely Overheated

The units of punched-metal grids are less rigid than those of cast grids and more supports for the grids are, therefore, necessary. It has been found that when these grids are heated to high temperatures such as are common in resistors used in locomotive service, the grids warp excessively. Cast grids also will warp, but not as much as those that are made of punched metal. When the grids warp, adjacent elements come in contact and are short-circuited. This imposes on the other grids a heavier load, and once the warping starts and causes contact with other grids, it is likely that this will continue to a further destruction of the grid units if attention be not given to remove the faulty grids first found to be warping.

In the assembly of grids, particularly of the type from punched metal, care must be taken to have sufficient spacing between the grid units. The reason for this is two-fold:

First, on account of the rapid corrosion, for rust particles soon make a contact between the grids if the spacing is small. This usually causes pitting and ultimately has the same effect as a warping of the grids. It causes short-circuiting of a part of the resistance till finally all the resistors become short-circuited. These difficulties are largely the outcome of faulty design and to a great extent may be prevented by a wider spacing of the grids and by the proper arrangement of the insulation between them.

Second, adequate spacing is necessary because of the heat from the assembled units, which must be effectively dissipated or it will become too intense. If sufficient spacing is not used between the grids hot spots are likely to be found in the grid assembly; these usually will be at the center of the grids and at the center of the grid assembly.

In connection with my attempt to get some tangible comparison between the two types of grids I have had a number of reports that the steel-plate grid gave better service than the cast grid which it replaced, but these reports do not mean much unless we know the characteristics of the cast grid that was removed and also know that the cast grid, of whatever type it may have been, was in good condition, the points properly proportioned, etc.

For instance, in my experience, trouble with the resistance on several occasions has been reported, especially on gathering locomotives where it is necessary to run on points a considerable length of time. In a number of instances I found the resistors were not properly assembled and the terminals not properly spaced, and in other cases I have found that an inefficient type of grid had been installed.

I have had occasion recently to inspect two main-line haulage locomotives at one operation and a gathering locomotive at another. These have been equipped with steel-grid resistors for a number of years, and I found them to be in unusually good condition, and yet the maintenance cost had been negligible. The gathering locomotive, however, accelerated somewhat too quickly. This probably was due to a lack of space for mounting a sufficient number of the steel grids.

Experience with Two Types of Grids

Below is a report from an engineer of one of the larger coal companies, giving the experience of that corporation with the steel-grid resistor:

"To date we have used the steel grids only on 10-ton haulage locomotives. A trial of the steel grids was prompted by excessive trouble due to breaking of the standard cast grid which was supplied with this locomotive. On long, heavy hauls it sometimes happened that the locomotive would get a severe jolt when the grids were red hot and almost a whole set would go to pieces at once.

"In 1919 we allowed the Post-Glover Electric Co. to send us a set for one locomotive, this set consisting of three stacks of a specification which they recommended for the purpose. The cost of the set was approximately $290. After using it for one year without trouble we decided to replace cast-iron with steel-grid resistances on nine of these 10-ton locomotives at our various properties. As the first set was still giving apparent satisfaction we again allowed the Post-Glover Co. to furnish the type which they recommended for the service. At this time the steel sets cost $300 against $150 for the cast-iron sets.

"Soon after the installation of this second order we had many complaints to the effect that the locomotives did not accelerate uniformly on the controller notches. We then made tests to find the actual resistance between controller points. Attached is a copy of a few of these tests. You will note that the steel resistance was not properly proportioned; for instance, R1 to R2 contained 63 per cent and R5 to R6 only about 1 per cent of the

total resistance. The first set which was tried gave apparent satisfaction because the locomotive in which it was placed had been used on a voltage so low that this lack of proper proportion was never noticeable. Our experience with these steel resistances has been somewhat varied. In three or four cases we have had a complete stack or complete set practically ruined in a short time. In most instances we were unable to determine what was the real cause, and to date we have never been able to repair satisfactorily one of these steel resistance stacks. In spite of all the troubles we have had, we consider that it pays to use steel resistances, and in January, of this year, ordered another set. However, this time we asked the manufacturer to build it to our specifications as follows:

"One set 'Everlasting' steel resistance for use on 10-ton 250-volt mine locomotive. Total resistance to be 1.75 ohms (manufacturer may recommend and furnish grids of different resistance if he does not vary more than 10 per cent above or below this quantity). Resistance to be proportioned so that R1-R2 contains 48 per cent; R2-R3, 28 per cent; R3-R4, 12 per cent; R4-R5, 9 per cent, and R5-R6, 5 per cent of total resistance. Below is the result of a test on the grids received.

"Total resistance, 1.753 ohms; R1-R2, 0.753 ohms, equal to 47.8 per cent; R2-R3, 0.412 ohms, equal to 26.2 per cent; R3-R4, 0.190 ohms, equal to 12 per cent; R4-R5, 0.143 ohms, equal to 9.1 per cent; R5-R6, 0.075 ohms, equal to 4.79 per cent.

"You will note that this last set had the total resistance better distributed between points. Apparently the people building these grids have made a radical change for the better in their design and engineering. This last set of resistance contains grids of the same thickness throughout instead of a number of varied thicknesses, as in their older type. Also this latest resistance is built with larger spaces between adjacent grids, so that buckling will not so easily cause shorts.

"So far we have not considered the use of the steel grid on any of our gathering locomotives, mining machines, etc. However, in the light of the much improved type which we last received, it appears that the steel resistance has a great advantage in severe service.

"In this connection we wish to call your attention to the fact that the manufacturers of the locomotive have recently developed what they assert is a much improved type of cast resistance for these 10-ton type locomotives. Instead of being in three stacks their new resistance is all in one stack, and the grids are of a much heavier section. They offer complete sets of this new-type cast-iron resistance for $140."

In general, summing up the relative merits of cast-iron, cast-alloy and punched-metal grids, it can be stated that the cast-iron grids will, for stationary apparatus, be the cheapest from the standpoint of first cost, maintenance and consistent electrical characteristics. For portable equipment the cast-alloy grids will have a slightly higher first cost, have approximately the same electrical characteristics as cast-iron grids, but the alloy will give the desired toughness. At a considerably greater first cost the punched-metal grids will give practically an unbreakable resistor element. In obtaining this quality some of the better electrical characteristics found or obtained in cast grids are sacrificed, namely low temperature coefficient of resistance, thermal capacity, few tie rods or grid supports and ease in making repairs.

Low-Roof Trolley Ear Carries Any Kind of Wire That at Any Time May Be Desired

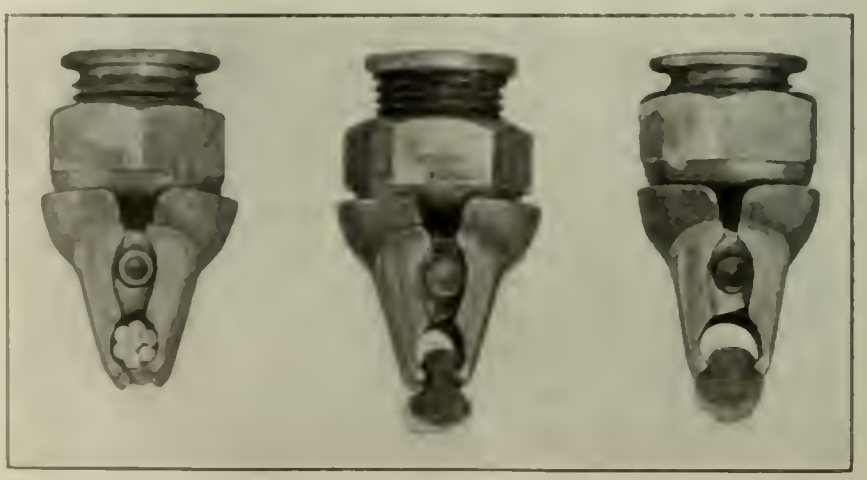
A NEW highly compact trolley ear for mine service is so constructed that not only grooved or figure 8 trolley wire, but also round feeder wire in sizes up to 0000 can be strung from it. When desired, this latter may be replaced with trolley wire, using the same ears.

Chief among its advantages are its simplicity, holding power and the high headroom that it affords. It consists of two parts: the stud and the wings, or jaws, that grip the wire. The stud is threaded both inside and out; inside for screwing into the suspension, and outside for the clamping nut that forces the jaws together. The lower end of the stud terminates in a button around which the jaws are clamped. In installing all that is necessary is to screw the stud on the suspension, insert the trolley or feeder wire between the jaws, and screw down the holding nut.

Tests have been made on the holding power of this ear. These show that in all cases where grooved or figure 8 wire was under test for pull-down strength a section of the wire sheared off before the ear was damaged or let go. The average downward pull for four such tests, using different sizes of wire, was about 2,600 lb. With round wire (00) the pull needed to remove it from the ear was 2,100 lb. When tests were made for side-pull strength an average pull of about 1,950 lb. had to be exerted with grooved or figure 8 wire before the ear let go. In side pull with round wire the ear relinquished its hold only when a tension of 2,350 lb. was reached.

In addition to those just mentioned this ear possesses other advantages, both mechanical and electrical. Being only 2½ in. in height over all, it allows plenty of headroom, which is an important consideration in low roadways. The jaws are so shaped that they offer no obstruction to the passage of the trolley wheel, thus eliminating arcing, which always is dangerous. As this support can be used equally well with both grooved and figure 8 wire, a double stock of ears need not be carried in mines where both sections of wire are used.

This ear, known as the form W, has been developed by the General Electric Co. As it will hold round or cable wire up to 0000 it can be used to support the temporary feeder wire by which current is supplied, in developing entries, and for the operation of pumps, drills and cutting machines. Later, if it is decided to operate locomotives in these headings, the temporary feeder may be replaced with trolley wire, and the same ears will be found equally suitable.



TROLLEY EAR HOLDS ANY KIND OF CONDUCTOR

The trolley ear that at the beginning of development carried a light feeder cable later may be found supporting a trolley wire of grooved or figure 8 section.

Safety Council Debates Hazards to Health and Limb—I

Sanitation in Mines—Septic Tanks—Water Supply—Carbon Dioxide Added to Oxygen in Resuscitation—Better Accident Records—Pressure of Water and Diameter of Hose in Fire Fighting—Standard Couplings

By R. Dawson Hall*

DESPITE the present uncertainty in industry the National Safety Council held a most successful convention in the Cass Technical High School, Detroit, Mich., Aug. 28 to Sept. 1. Even in the mining section little or no falling off was to be noted in the attendance and certainly none in the number and quality of the papers presented. About 2,500 persons registered. As usual the registration represented inadequately the number of persons present, for Detroit being a big manufacturing center many people attended who were not members or delegates of the organization.

In the opening session on Monday in the auditorium of the magnificent but only partly completed wing of the technical school, a large number were present to hear the extremely hopeful and satisfactory reports of the president, A. H. Young, and the secretary-treasurer, W. E. Worth. No one can overlook the fact that the treasury was in grievous condition at the close of last year and during the early part of this. Stringent economy, clever financing and the recovery of business have, however, changed a heavy deficit to a small surplus. The decline in membership has been stopped, and since the date of the report—July 1—the memberships have been slowly but steadily increasing in number.

Council Has Quarter-Million Dollar Income

The loss in membership in the fiscal year ending July 1 was 566, making the membership 3,060. The gross revenue was $205,996.32. At the beginning of the fiscal year the notes payable were $21,968.80 and at the closing of the books these were entirely wiped out. The accounts payable had also been reduced from $6,222.48 to nothing, and $4,662.78 was added to the surplus, making that reserve $34,819.78.

The National Safety News brought in $20,386.24 and cost $24,220.40. It should be said that the former figure did not include any of the allocated dues from members of the Council, though it did cover a number of extra copies which are sold to members on their order. The 120,000 calendars distributed cost $16,490.10 and brought in $23,358.81, a profit of nearly $7,000.

On Monday evening a dance was held at the Statler Hotel, on Tuesday evening a smile party, on Wednesday evening a boat ride and on Thursday a banquet. At the function last mentioned the speakers were A. H. Young, the president of the Council; Marcus A. Dow, general safety agent of the New York Central Lines, and Edgar A. Guest, of the *Detroit Free Press*. The new officials of the National Safety Council were announced. These were M. A. Dow, president; Charles B. Auel, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., vice-president in charge of industrial safety matters; David Van Schaak, Ætna Life Insurance Co., New York City, vice-president in charge of public safety matters; George T. Fonda, Fonda & Tolstead, Washington, D. C., vice-president in charge of sectional activities; L. A. De Blois, Delaware Safety Council, Wilmington, Del., in charge of local councils; Homer Niez, Commonwealth Edison Co., treasurer and chairman of finance committee, and William H. Cameron, managing director and secretary.

During Thursday morning's session of the mining section the nominating committee, consisting of Dr. R. R. Sayers, J. W. Reed and J. T. Ryan, brought in a report advocating the retention of the present official roster: B. F. Tillson (chairman), G. M. Gillette, J. L. Boardman, William Conibear, vice presidents, and R. H. Seip, secretary. The report was unanimously adopted. These then will be the officials for the coming year. The chairman will appoint his own committeemen.

The mining section had its first session on Tuesday, Aug. 29, the first paper being that of Dr. R. R. Sayers on "Mine Sanitation." In the discussion B. F. Tillson inquired whether any mine had established underground a regular toilet installation with a flushing system and septic tank. Apparently no one was able to report that any company had to date such an installation.

M. S. Murray, of Curtisville, Pa., reported that his concern, the Ford Collieries Co., had installed a septic tank with three stools on the top of it. The tank was fed with some form of deodorizer and disinfectant which converted the fecal matter into a clear fluid which in turn passed to the sump and was of such a character that it did not foul the pumps as does the discharge of ordinary fecal matter not so treated. B. F. Tillson stated that at the New Jersey Zinc Co.'s mines cans were used and to prevent splashing sawdust was provided in place of water. These cans when brought to the surface were cleaned and disinfected by steam. Difficulty was experienced in incinerating the sawdust as it was so thoroughly saturated with water as to be dripping wet.

Caustic Soda Turns All to a Fluid Mass

Dr. Sayers declared that a 3-per cent solution of commercial caustic soda would thoroughly disinfect and deodorize sewage and liquefy paper of a suitable character. Unfortunately galvanizing will not resist the action of the solvent, but when the tank is properly covered with an asphalt paint and handled with a proper degree of care the caustic soda will not destroy or seriously injure it.

Dr. Black, of Connecticut, requested Dr. Sayers to state what showing of *bacillus coli* was considered evidence of contamination of drinking water and took exception to the moderation of advice that the watershed should be inspected before water from it was used. He said that the inspection should be repeated at frequent intervals to make sure that the watershed did not become polluted. Dr. Sayers said he did not regard the presence of a single bacillus in any one tube out of ten, each of 1 c.c. capacity, as evidence of a

*Engineering editor, *Coal Age*.

dangerous contamination because *bacillus coli* was found in all animal feces, and deer, rabbits and like animals might well be the source of such impurity, which was not in any way objectionable in itself. The objection to its presence was that where the *bacillus coli* was found the water must contain animal feces and at any time such feces might become harmful by the introduction of the germ of some communicable disease.

J. S. Beardman stated that the Anaconda Copper Mining Co. piped cold water to every level, the pressure being regulated by the use of tanks. The water is passed through pipes in each tank, ice being placed around the pipes. Miners obtained their water through a faucet. Most of the men bring the liquid containers of their dinner pails to the tank, but the use of the common drinking cup has not been entirely eliminated.

Leaving the main subject, someone asked Dr. Sayers whether the Bureau of Mines favored the use of 5 per cent of carbon dioxide in the oxygen used for resuscitation, and he replied that the Bureau had so far not given its approval. He added that oxygen, if taken pure, is a long time removing carbon monoxide from the system. With 5-per cent carbon dioxide present the work is performed in a fourth and with 8 to 10 per cent one-fifth or one-sixth of the time.

Helps Clean the Blood but May Harm the Heart

Dr. Yandell Henderson strongly favors the use of 5 per cent of the dioxide. Most of Dr. Sayers' experiments with animals had been made with 8 per cent and in some cases death resulted. The use of dioxide was injurious to the action of the heart, and if the heart was weak the effects might be undesirable—even fatal.

Dr. Henderson, however, believed that 5 per cent of dioxide would in no case kill the patient. Dr. Sayers was not yet sure and would feel better satisfied had he made experiments on animals with that percentage. With such an authority as Dr. Henderson in favor of the use of such a proportion of dioxide Dr. Sayers felt that it was in all probability safe, but only a medical man should use such an admixture, for the administrant should be able to judge of the effect which the dioxide was having on the heart.

Discussing his statement that in several Southern states hookworm had been found in the mines, he declared that the Public Health Service stood sponsor for that declaration and felt confident that the mines were the source of the particular infection that they discovered and not the surface. He also believed nystagmus to be a disease resulting from the effect of working in bad light or light falling at an improper angle, or both, for men had been afflicted by nystagmus who had never worked in the mines. He hardly credited the notion that it was a germ disease, though the theory had advocates. It may be said in passing that some believe that changes in blood pressure due to depth may be the cause of the disease, which is of quite frequent occurrence abroad. This is about to be investigated by the U. S. Bureau of Mines.

W. W. Adams, statistician of the Bureau, introduced several forms of accident reports and occupational censuses for such members of the National Safety Council as desired to use them in making returns to the Bureau. These were prepared with the aid of C. L. Colburn. Their purpose is to discover not only the number and kind of accidents, fatal and non-fatal, and their minute causes but also the occupational hazard for each type of work in the mine. The definition of an accident is a casualty that causes a disability extending beyond the shift in which the accident occurred.

This goes far beyond the general practice today, which is to pay attention in most cases only to fatal accidents or to such as are of compensable severity. Several members of the National Safety Council want for their own use figures which will give this information relative to their own mines. They want similar aggregate figures from the mines which already are preparing such data and they want to formulate a practice in reporting accidents in all such mines as will make the figures from them comparable. No one, of course, need give such information, and when the bureau gets it it will use it solely for tabulations which will not reveal the figures of any one company or the name of that company. The data of any one corporation or any one mine will, however, be furnished to the company headquarters of the mine reporting.

Many changes were made in the original draft, the whole matter being discussed at length at the first session and at a special meeting in the afternoon of Wednesday. That meeting lasted three or four hours, and the blanks will be corrected by Mr. Adams to accord with the outline then agreed upon. Simplification, uniformity between coal-mine and metal-mine reports, elimination of questions which it was thought could not be answered from facts already being collected and the deletion of questions that could only bring forth matters of opinion were the directions in which most of the changes were made.

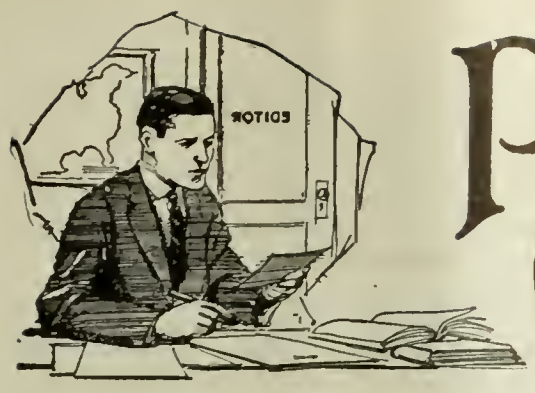
The second meeting, that of Wednesday, Aug. 30, was addressed by R. H. Seip, safety engineer of the New Jersey Zinc Co., of Franklin, N. J., the subject being "Mine-Fire Prevention and Fighting."

In discussing this subject B. F. Tillson desired to know what size of stream should be used in fighting fires underground. He himself believed in high pressures and small nozzles. The pressure available usually was high—too high if anything. Consequently no great harm would result from the loss of pressure consequent upon the friction encountered when passing water through a small hose. It was important to use a high-pressure, for the nozzle could rarely be advanced near the fire and the water would have to be allowed to travel in a nearly horizontal stream. In outdoor fires the nozzle could be directed several degrees above the horizontal and could often be held at no great distance from the fire which was being fought.

Uncertainty as to "Standard Couplings"

William Conibear said that the Bureau of Mines had investigated this matter and favored 50-lb. pressure and a 2½-in. hose. To Mr. Tillson that seemed too low a pressure and too large a diameter. The smaller hose would give greater portability. J. L. Boardman said that he had been told that he should use "standard pipe couplings," so that he could connect up with the Butte fire department's equipment. He took the advice, ordered "standard couplings," only to find that the standards varied and that the Butte fire department couplings have one half thread, more or less, to the inch than the "standard" couplings of the hose furnished to the Anaconda Copper Mining Co. However, as one member pointed out, the use of one coupling of the standard of the local fire department would make it possible to connect the company's line of hose with that of the city.

(To Be Continued in the Next Issue)



Problems of Operating Men

Edited by James T. Beard



Causes of Burned-Out Mine-Motor Armatures

Poor Bonding of Rails—Bad Joints in Feedwire Conductors Cause Large Loss of Voltage—Insufficient Copper or Too Small Area of Feedwire

IN MY experience, there are just two main causes that lead to the burning out of armatures on mine locomotives and other motors. As mentioned in the excellent article of F. C. Sinback, *Coal Age*, Mar. 23, p. 492, these causes are the poor bonding of rails and bad joints in the feedwire conductors; also, the use of undersized feedwires.

In this connection, I recall reading a well written article by B. F. Grimm, which appeared in *Coal Age* some time ago (Vol. 20, p. 291). If I remember rightly, Mr. Grimm emphasized the same points in speaking of the burning out of armatures.

It is surprising to know that 75 per cent of our mines are operating, today, under these conditions. Owing to the desire to economize, or, in other words, to save copper, in making an electrical installation, it is a common occurrence to use a feedwire that is too small.

Where to Save Money in Making Electrical Installations

Comparatively few operators realize that by using more copper in making the installation, they will save money in the rewinding of armatures and cutting down of power bills, to say nothing of avoiding the consequent delay and loss in production that results from insufficient power.

Of somewhat less importance, because it can be easily remedied by going over the line, is the bad jointing of feedwire conductors. Many do not appreciate the loss of voltage due to bad joints in the feedwires. This trouble is at once shown by the joint becoming hot when the feeder is carrying a load ten the insulation is burned and fire may result.

When making a joint, the wires should first be wrapped tightly around each other and soldered. If this is done properly, a joint will have twice the current capacity of the wire, as it has twice the sectional area of the conductor.

Good Rail Bonds Needed

The bonding of the rails is not so easy and requires constant watchcare on the part of the electrician to keep the bonds in good condition. It is not generally known that a loose or a broken bond will cause a loss of from one to ten volts; and a few such defective bonds will greatly increase the linedrop and impair the service.

A little circulation will show that most mines have not sufficient copper in the feedwire installed. For example, in order to operate a 10-ton locomotive, at a distance of a mile from the powerhouse, assuming the perfect bonding of the rails and allowing a 10 per cent linedrop, with a pressure at the generator of 250 volts, there will be required a 0000-trolley wire and a feedwire of, say 500,000 circ.mil.

The average mine locomotive is rated at 10 hp. per ton, which will require 100 hp., for a 10-ton locomotive, and a current of $(100 \times 746) \div 250 =$, say 300 amp. The linedrop is $0.10 \times 250 = 25$ volts.

The amount of copper for this transmission is, therefore, $(10.8 \times 5{,}280 \times 300) \div 25 = 684{,}300$ circ.mil. Then, using a 0000-trolley wire (211,600 circ. mil.), there will be required a feedwire of $684{,}300 - 211{,}600 = 472{,}700$ circ.mil. This assumes that the trolley wire and the feedwire are in parallel and the locomotive operating at full load.

Now, if less copper is used, more current must travel through the armature and fields than what they are designed to carry to develop the required horsepower. This will cause heating of the coils, commutator and field coils. In time, the armature coils will burn out and the solder run from the commutator, making it necessary to rewind the armature in a short time.

Trouble Often Wrongly Ascribed to "Too Much Current"

It is commonly thought that the cause of a field or armature lead burning off is "too much current." This is ascribed to two causes: first, insufficient copper; second, overload on the motor. Half the time, however, it can be traced to the cause first named.

Bearing these facts in mind, what can one expect when several locomotives and a number of mining machines are operated on a 0000 trolley wire? Is it at all strange that burned out armatures are the frequent result? It is usually the case that what is saved in installation is spent later in maintenance and repairs.

Johnstown, Pa. ELECTRICIAN.

[Attention should be drawn to the fact that this correspondent has omitted to allow for the loss of voltage in the rail return. For example, using 40-lb. 30-ft. rails, cross-bonded, and 24-in. 0000-railbonds, the rail resistance for 1 mile will be 0.0748 ohm, making the loss in voltage for a current of 300 amp. $300 \times 0.0748 =$, say 22.5 volts.—EDITOR.]

Slowing Down Fan at Firing Time

Explosion in heading, fan running at normal speed—Better results follow slowing down of fan.

AN ACCOUNT is given by a Kentucky engineer, in *Coal Age*, July 20, p. 95, of a mine explosion that he ascribes as due wholly to the lack of sufficient ventilation. It is not my purpose to controvert that conclusion, but merely to recite an instance in my own experience that was the direct reverse of the one he has given.

The circumstances were about as follows: Some four years ago I had a pair of entries driven in the solid coal and shot with black powder. Rooms were turned off both entries by the entrymen, who always drove the roomnecks. There was an air current of 10,000 cu.ft. of air sweeping the faces of these headings.

When three rooms had been turned on each entry, I would put six loaders at work in the rooms, who with the entrymen made eight loaders in all those headings. An old experienced shotfirer was employed to fire the shots and this was done at night, after the men had left the mine.

A Series of Explosions

One night the shotfirer had an explosion that blew out all the brattices and trapdoors for a distance of 2,000 ft. back on these entries. The following week another explosion occurred with the same result and, again, still another a few nights after that one. Naturally, the shotfirer became alarmed and quit.

At this point, another shotfirer was secured and he decided to slow down the fan when firing shots in the mine. The result was that we had no more explosions, until the rooms had been driven to a depth of 70 or 80 ft. The fan was, then, again running at normal speed when, one night, an explosion occurred and the shotfirer was burned, although he was able to come out of the mine and report it to me before I had left for home.

In performing his work, the shotfirer stated in making his report, that he had found a small amount of gas in a crosscut at the face of the entry. He

told me that he had one shot at the face of the entry, one in the crosscut and one in No. 4 room, which had only just been widened out. There being no shots prepared in the next two rooms, he said he was just entering room No. 3 when the shots he had lit at the face went off and the explosion followed.

Leaving him on top in the care of a first-aid man, I took his buddy and went below. We found a trapdoor open and three brattices blown out by the force of the explosion. I examined both entries and rooms for gas, but found none. My conclusion was that the entry shot went off first and raised a cloud of dust that was ignited by the other shots, making this a dust explosion.

As that was the only section in the mine with which we had any trouble, I had the entries cleaned up and kept them well sprinkled. I also arranged to short-circuit the air on these headings at the time of firing the shot. The result has been that we have had no further trouble from that source on those entries.

Herrie, Ill. PETE BOLAND.

When to Seal

Ventilation insufficient—Sealing off to extinguish fires — Draining gas through boreholes.

PERMIT me to offer a word giving my view in regard to sealing off abandoned areas in mines, which has been under discussion in *Coal Age* and in which I am greatly interested. What I have to say will bear more particularly on mines that are generating gas.

There are, no doubt, instances where the only thing to do, in order to make the mine safe is to seal off abandoned places. This is particularly true where the ventilation is normally insufficient to dilute and render harmless the gases generated in the old workings.

Under such conditions, we realize that any drop in atmospheric pressure (fall of barometer) will be accompanied by a considerable outflow of gas, from abandoned places, into the live workings. Then, if the volume of air in circulation is not adequate to meet this condition, there is danger arising from the unsealed areas where the gas has accumulated.

SEALING TO EXTINGUISH FIRE OR TO CLOSE WORKED-OUT PANEL

Mention has been made, in this discussion, of the need of sealing off places for the purpose of extinguishing a fire that has started from one cause or another and defies other means of treatment. It is unnecessary to dwell on this aspect of the subject, which we all agree is the thing that must be done.

Again, when it is necessary to adopt costly method of panel working, sealing will often require the complete sealing off of a panel. That will generally prove the safest plan to follow when such panels have been worked out and abandoned. The sealing off of a panel will regulate, or control the flow of stythe or other gases from such areas.

We have, doubtless, many mines in such a bad condition, in respect to ventilation, that it is impracticable to deal with certain abandoned areas by any other method than sealing. In this Dugger coal field, there is No. 10 mine that affords an example of such a case. In that mine, it would not be safe to handle the large abandoned areas in any other manner.

GAS DRAINED THROUGH BOREHOLES AVERTS DANGER IN MINE

The management of No. 10 mine have adopted the plan of drilling boreholes from the surface, into each abandoned and sealed area. This plan gives a vent for the gas generated in the sealed portions and avoids the danger of those gases being forced out through the seals into the live workings.

In my opinion, it is a dangerous practice to allow these pent-up gases to be released and flow into the mine through a pipe built into the seal. According to all accounts, this is the procedure in some districts. It may seem a radical statement to make; but, to my mind, such a practice should be prohibited by state laws that would close down the mine where it is done.

I firmly believe that the continuance of such practice will eventually pay a high price in life and property. Certainly, men employed in mines where the gas is led through boreholes extending to the surface will feel safer than where this gas is released into the mine. W. H. LUXTON.

Linton, Ind.

Timbering Hard Roof and Bottom

Experience of a timberman—Setting posts on pieces of slate and mounds of slack unsatisfactory — Tapered posts give best results.

MY EXPERIENCE in timbering mines where both the roof and floor are hard may be of interest to "Timberman," who writes from Iowa, *Coal Age*, July 27, p. 136, saying that he has had trouble by reason of the roof pressure breaking the timbers where the roof and bottom are hard.

In reply to that inquiry, the editor has described the main principles of post timbering, and mentions several methods that have been employed to avoid the destruction of posts, under the condition named.

In a practice of several years, I have used all of these methods and still another not mentioned; namely, setting a post on a piece of slate, after the custom of some miners. However, my conclusion is that there is but one reliable method on which dependence can be placed with certainty. That is to employ tapered posts and use good cap-pieces at the roof. A post set in this manner will take the weight slowly and seldom be broken.

When a post is set on a piece of slate, the latter is almost sure to be broken when the weight comes on the timber, or the post will fall out. The same result follows when a post is set on a mound of dirt or slack, unless the work is done properly and just the right amount of soft material used to take up the settlement of the strata.

EXPERIENCE MUST DETERMINE

Experience in a given district may enable this method to be used successfully. But, my observation is that when too much slack is used, the timber will either be shot out, or will fall out of itself. Again, if too little slack is used, the oncoming weight will break the post, the same as if it was set on the hard floor.

The one method that I have found seldom, if ever, fails is to taper the foot of the post, as described and illustrated in the reply given to the inquiry, on page 136. A good cap-piece must also be used above the post, which will help to distribute the pressure on the roof and bind the top of the post together.

FOOTBOARDS AND CAP-PIECES USED

Some prefer to use footboards on the floor and cap-pieces at the roof, in preference to tapering the posts. With any amount of roof pressure, however, the timber will generally be forced through both the footboard and the cap-piece and, in some cases, the pressure will break the timber.

At times, I have known tapered props to yield as much as four or five inches, under the pressure of the overburden. Indeed, I have observed tapered posts still standing, after two or three years. Seldom have I known a post that is carefully tapered to be broken or fall out. TIMBERMAN

Herrin, Ill.

ANOTHER LETTER

AFTER reading, with deep interest, the reply to an inquiry in reference to avoiding the trouble often experienced in setting posts between a hard roof and floor; and after giving the matter careful consideration, I am inclined to believe that the chief cause of trouble, in this case, is the lack of a suitable system of timbering.

Notwithstanding the hard roof and floor, it should be possible to timber this 6-ft. seam of coal, under 250 or 300 ft. of cover, without serious difficulty if the system adopted is suited to the conditions in the mine.

ONE GOOD RULE TO REMEMBER

While it is possible to make numerous suggestions regarding troubles experienced in timbering, there is one general rule to remember. It is always practical to keep the working places well timbered, as the coal is mined, and to maintain a good supply of posts in every place.

My advice to this correspondent is to keep his timber within 4 ft. of the face, setting the posts in rows and at a distance of 3 ft. 6 in. apart. Use only oak timbers, 8 in. in diameter at the small end, using a soft cap-piece over

each post. Chestnut makes a good wood for that purpose, though there are other soft woods that can be used.

Not long ago, I visited a mine, in Kentucky, where the coal varied from 4 to 6 ft. in thickness. After a careful examination, I was unable to find an oak timber in the place. To my surprise, I was informed that the mine officials would furnish no other than soft timber.

Throughout the mine, the posts appeared very old, many being decayed and full of worms. The diameter at the small end ranged from 3 to 6 in., and the bark was still on the timber. Many of the posts were broken and others had fallen out. The rooms were driven very wide, with narrow pillars between them, which would explain the general condition of the timber.

I cite this case as showing the little attention given, in some mines, to the use of a good system of timbering—one that is adapted to the conditions. This, to my mind, is the keynote of the situation in most every case.

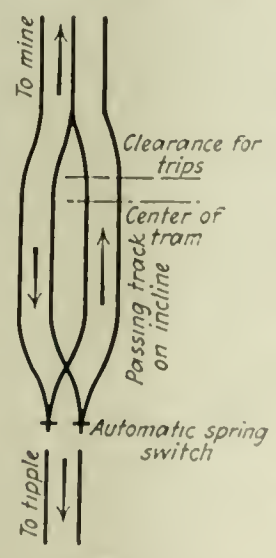
Wilder, Tenn. OSCAR H. JONES.

Self-Acting Gravity Plane

Difficulty with rope on a single-track plane—Three-rail system above passing track avoids trouble—Clearance at upper end of siding marks center of tram.

REFERRING to the inquiry on the question of installing a self-acting gravity plane, *Coal Age*, Aug. 10, p. 211, kindly permit me to offer a suggestion that, if adopted, will greatly simplify the operation of such a plane.

With a single-track tram, there is always considerable trouble experienced in keeping the rope clear, above the siding. It is evident that when the empty trip reaches the switch at the upper end of the siding, that branch of the rope attached to the loaded trip must be carried on the outside of the track, or it will interfere with the ascending empties.



SELF-ACTING GRAVITY PLANE

In order to avoid this difficulty much skill will be required in placing the sheaves and rollers; and, even then, there is bound to result considerable annoyance and expense in the operation of the plane. It is far better to adopt some method that will keep the rope clear and avoid a possible accident by reason of the rope jumping the sheave at the side of the track.

Experience has shown that the proper procedure is to carry a single track from the tipple up to the siding or passing track. Then adopt a three-rail system above the siding and reaching to the top of the plane.

This arrangement will cost a little more to install, but it will give far better satisfaction than to use a single-track system throughout. Moreover, there will be required but one switch at the lower end of the siding, which means less labor to keep it clean and in working order.

The accompanying figure makes clear the arrangement of the system. Care must be taken, however, to have the point of clearance a little above the center of the tram, so that the ends of both ropes will be a little below the point where the trips clear each other. It hardly seems necessary to state that the clear length of siding should be sufficient to hold the number of cars that are to be hauled in a trip.

D. S. ALLISON,
Sullivan Machinery Co.
Salt Lake City, Utah.

Inquiries Of General Interest

General Mine Potential for Split Circulations

Every Mine Has a Certain Potential Value — The Potential Evaluates the Mine in Respect to the Circulation of Air—Summation of Split Potentials Explained

SOMEWHERE I have seen it stated that a mine ventilating fan, running at the same speed, will not give the same volume of air, at different mines. While this has always seemed strange to me, I have never had the opportunity of testing the truth of the statement until recently.

The matter was forcibly impressed on my mind, however, when I undertook to transfer a 14-ft. Jeffrey fan, from No. 1 to No. 2 mine. In the old location, this fan had been giving 280,000 cu.ft. of air per minute, under a 2-in. water gage, when running at a speed of 100 r.p.m.

Much to my surprise, at the new location, while the same speed of fan developed about the same gage, it produced a very much smaller air volume; and it was necessary to increase the power of the engine and drive the fan faster, in order to obtain the volume of air at which this fan was rated, at a 2-in. gage. I would very much appreciate information that will throw more light on this matter. MANAGER.

———, Colo

Only a few years ago, when a mine operator ordered a fan, he thought it was sufficient to specify the volume of air he desired to circulate in the mine. It is now generally understood that the order for a fan must also specify the water gage against which the fan is to operate when delivering the required volume of air. In other words, the present circulation (air volume and gage) must be given as a basis of calculation for determining the size of fan needed.

Every mine has a certain resisting power in respect to the passage of air through the shaft and the underground entries. This resisting power has been called the mine potential. It is the ratio of the sectional area of the airway (or area of passage in the mine, depending on the number of splits) to the cube root of the product of the coefficient of friction and the rubbing surface ($a/\sqrt[3]{ks}$), as expressed in terms of the airway.

This is the power potential. It evaluates the mine in respect to the volume of air that can be circulated therein by a given power. Expressed in terms of the circulation, its value is the ratio of the quantity of air in circulation (cu.ft. per min.) to the cube root of the power on the air (ft. lb. per min.) ($Q/\sqrt[3]{w}$).

On the other hand, the pressure potential is the ratio of the quantity of air in circulation (cu.ft. per min.) to the square root of the unit pressure (lb. per sq.ft.) But, since the quantity of air circulated, in a given airway or mine, varies as the square of the pressure, or the cube of the power, producing the circulation, it is easy to see that the cube of the power potential is equal to the square of the pressure potential. Therefore, calling these potentials N_v and N_p, respectively, we have the following equal values:

$$N_v = N_p = \frac{Q^3}{w} = \frac{Q^2}{p} = \frac{a^4}{ks}$$

Now, applying these values to the solution of the question in hand, the mine-pressure potential, at No. 1 mine where the fan passed 280,000 cu.ft. of air per minute, under a water gage of 2 in., or a unit pressure $p = 2 \times 5.2 = 10.4$ lb. per sq.ft., is

$$N_p = \frac{Q}{\sqrt{p}} = \frac{280,000}{\sqrt{10.4}} = 86,820$$

The correspondent has not given the circulation in No. 2 mine previous to the change; but we will assume the mine was passing 125,000 cu.ft. of air per minute, under a 2-in. water gage. In that case, the pressure potential of No. 2 mine is

$$N_p = \frac{Q}{\sqrt{10.4}} = \frac{125,000}{\sqrt{10.4}} = 38,760$$

In fan design, the best results are obtained when the pressure potential of the fan is from two to two and one-half times that of the mine. A fan so de-

speed will give its highest efficiency. Now, it is clear that a fan designed for No. 1 mine, if operated at No. 2 mine where the potential is practically 4/9 of No. 1 potential, will not produce the same results. While the efficiency of the fan will be increased, say 20 per cent, the volume of air delivered will be little more than one-half of what it circulated in No. 1 mine, at the same speed, or say less than 150,000 cu.ft. per min., at 2-in. gage.

Practically, for the same power applied to the fan shaft, the volume of air in circulation varies directly as the mine potential. As the potential is decreased, a constant power applied to the fan shaft will slightly increase both the speed of the fan and the efficiency, while the quantity of air decreases.

It is interesting to note that the pressure potential times the square root of the pressure, or the power potential times the cube root of the power gives the quantity of air in circulation, in each case. The practical value of the mine potential is shown in estimating the circulation produced by a given pressure or power, in a mine where the air is conducted through a main airway and then divided into a number of splits, before passing into the main return airway and out of the mine.

In that case, the general mine potential is obtained by the summation of the several split potentials. In other words, the potential for the entire mine is found by adding together the reciprocals of the cubes of the several power potentials and extracting the cube root of the sum. The reciprocal of this root is the mine potential for power.

In like manner, the reciprocal of the square root of the sum of the reciprocals of the squares of the several pressure potentials will give the pressure potential for the entire mine. This will be found a useful application of the potential, in problems that admit of no other method of solution.

Examination Questions Answered

Alabama Mine Foremen's Examination, Birmingham, July 24-27, 1922

(Selected First-Class Questions)

QUESTION—*In what condition and in what parts of a mine is coal dust most dangerous and why?*

ANSWER—Coal dust is most dangerous when it is in a finely divided state and carried in suspension in the air. In this condition, it lodges on the timbers, the roof and sides of all roads and air-courses. In mines where blasting is performed, the accumulation of fine dust at the working face is a source of grave danger, because of the dust being blown into the air by the force of the shots and ignited by the flame produced in blasting.

QUESTION—*How is dust, without being removed from a mine, rendered harmless and non-explosive?*

ANSWER—The surest method of dealing with dust, in mines, is to effect its regular and complete removal, as far as that is practicable. Permit no accumulations of fine dust in the working places. In mines where the dust danger is serious and the coal highly inflammable, an efficient sprinkling or spraying system should be installed on the roads and air-courses and every means adopted to prevent the accumulation of dust. Strict regulations should be enforced in respect to blasting the coal and only permissible powder should be used. It has been suggested that a mixture of salt with the stemming, in blasting, is an effectual means of distributing salt in the working places and in the waste. The trial of this means of overcoming the dust danger has proved effective in numerous instances and is now employed in many dry and dusty mines. The salt acts to reduce the tendency of the fine dust and slack to fire in the waste.

QUESTION—*What measures, if adopted and properly executed, would reduce the production of dust or the accumulation of dust?*

ANSWER—No means is more effective for reducing the production of dust, in mines where blasting is performed, than the enforcement of strict regulations limiting the amount of powder to be charged in the holes; and determining the location, direction and depth of drilling the holes, the exclusive use of permissible powder and the careful inspection of all holes by safety inspectors before shots are fired. In machine mines, the cuttings should be removed in dust-proof cars. Greater safety is insured and a less production of dust occurs in mines where all holes are drilled, charged and fired by competent shotfirers.

QUESTION—*Give, in detail, the plans you would recommend for keeping a dusty mine in a constantly safe condition.*

ANSWER—First, employ the method of mining the coal that is best adapted to the particular conditions existing in the mine. This will require a careful and close study of the character of the coal and the method by which it can be extracted with least danger. Second, employ safety inspectors charged with the duty of inspecting the mine during working hours and preventing all unsafe practices. Third, provide an ample circulation of air and an efficient method of ventilating all working places in the mine. Where blasting is performed, use only permissible powder and employ shotfirers to examine, charge and fire all shots, and having authority to forbid the firing of any holes that, in their judgment, are unsafe. Lastly, install an efficient spraying system in the airways and working places.

QUESTION—*What precautions would you take in the management of a dry and dusty mine generating explosive gas, with reference to the protection of life and property?*

ANSWER—Equip the mine with duplicate ventilating fans of ample capacity. Adopt a method of working that will insure the production of a minimum amount of dust in the mining of the coal. Use only permissible powder in blasting and employ dust-proof cars for hauling the coal in the mine. Employ shotfirers to examine, charge and fire all holes drilled by the miners. Install an efficient spraying system throughout the mine. Make and enforce strict regulations in regard to the examination of the mine by fire-bosses and safety inspectors. Permit no open lights, but furnish the miners with electric cap lamps. Permit no accumulations of dust in the working places and have all roads and travelingways cleaned at regular short intervals.

QUESTION—*What precautions should be taken in blasting to safeguard the employees in mines that are dry and dusty and generating explosive gas?*

ANSWER—Use permissible powders only and employ competent shotfirers to examine, charge and fire all holes drilled by the miners. This work must be done after the men have left the mine. The firing should commence on the end of the air and proceed in order against the air current. Each place must be carefully examined for gas before a shot is fired therein.

QUESTION—*What, in your opinion, are the principal causes of the greatest number of fatalities in our mines? Give a list of six causes in the order in which you have seen them occur.*

ANSWER—The principal cause of fatal accidents in mines is falls of roof and coal at the working face. The following six causes of accidents in mines may be given: 1. Falls of roof and coal. 2. Premature blasts or unsafe practices in blasting. 3. Movement of cars and motors in mines. 4. Overcome by gas. 5. Contact with live wires. 6. Hoisting accidents or falling down shafts or slopes.

QUESTION—*If a water gage placed in a door 4 ft. 6 in high and 5 ft. wide showed a reading of 2.7 in. what is the total pressure on the door?*

ANSWER—A water gage reading of 2.7 in. corresponds to a pressure of $2.7 \times 5.2 = 14.04$ lb. per sq.ft. The sectional area of the door is $5 \times 4\frac{1}{2} = 22\frac{1}{2}$ sq.ft. The total pressure on the door is then $14.04 \times 22\frac{1}{2} = 315.9$ lb.

Texas Unaffected by Strike Developments; Large Mines Operate Open-Shop

RECENT DEVELOPMENTS in the national coal strike have not affected Texas mines. Most of the larger mines in Texas are operated on an open-shop basis, while those involved in the strike at this time are involved because of local labor disturbances and not because of the national strike, according to W. N. Willis, secretary of the Southwestern Electrical, Coal & Gas Asociation, with headquarters in Dallas, Texas.

The larger coal sections of Texas are in the vicinity of Eagle Pass, Thurber and Laredo. The mines at Eagle Pass and Laredo are not affected by the strike, being worked by non-union labor. In the vicinity of Thurber, the Texas Pacific Coal & Oil Co. is the largest operator. One mine of this company has been in operation since a few weeks after the strike was called, an agreement having been reached. Another is being operated on the open-shop basis. The two mines in operation are working about 200 men, against a normal working force of about 800 men. Output of the mines, which in normal times ranges from 1,000 to 1,400 tons of coal daily, is now about 300 tons.

While the coal shortage has not been felt in Texas during the summer, it is likely to become acute, especially if cold weather comes early, according to wholesale and retail coal dealers, many of whom maintain distributing plants at Dallas. If the railway strike continues and the railroads are unable to handle the coal cars promptly when the mines are reopened, the shortage will become much worse.

"The shortage of coal is being felt now in Texas," R. H. Young, vice-president of the Southern Fuel Co., of Dallas, declared. "The Southwestern mines are to be reopened under the recent agreement reached between operators and miners. Although the mines may be reopened at once and operated on full time, the supply of coal will not be adequate to the demand for months, and not then if a car shortage results on the railroads as is now indicated."

"If the Southwestern mines were reopened immediately, the coal shortage could not be relieved until late in the winter," Charles C. Taylor, manager of the Southern Coal Co., declared.

Harry Penniman, Jr., of the Penniman Coal Co., declared that although the situation is bad, coal consumers of Dallas will be able to obtain sufficient supply for all emergency needs, provided the railroad strike does not interfere with the movement of coal to a great extent.

"Coal is wanted everywhere at present," according to W. H. Pulliam, vice-president of the Pulliam-Trewitt Coal Co. "We are receiving orders for coal from many of the smaller towns in Texas, and it is almost a certainty that the smaller towns will suffer most from a fuel shortage when cold weather comes. It will require several months, at least, for production to meet needs. Virtually all coal yards are empty, but our company has been fortunate in obtaining a supply from Colorado and New Mexico mines."

The supply of anthracite coal has been exhausted at Galveston, which draws its supply of domestic coal mainly from non-union soft coal fields, and this source has been ample for all needs. Bunker coal for Galveston ships is also drawn from such non-union fields as have been little affected by the strike.

Coal operators in Oklahoma have made no attempt to open the mines since the strike of coal miners was called, according to officers of the Oklahoma Coal Operators' Association. According to these officials, conditions in Oklahoma are somewhat different from conditions in other states. It is pointed out that most of the railroads and practically all the public utilities of Oklahoma burn crude oil as fuel, and large stocks of crude are in storage for the future. Very few industries use coal for fuel and it is declared that coal mined during the summer months never finds ready sale, but the operators are forced to place it in storage.

Utilities Consume More Coal During June And July Than in Earlier Strike Months

Coal consumed by electric public utility power plants during June was 2,489,321 net tons, according to the recent report of the Geological Survey. June consumption by these plants was the heaviest of any month since the beginning of the strike—April, 2,456,592 tons and May 2,471,123 tons. During March, the latest pre-strike month, 2,722,146 tons were consumed.

The average daily output for June was 127,700,000 kw.-hr., the highest rate of daily production of electricity yet reached and exceeding the daily production in May by 3.5 per cent. The proportion of the total output of electricity produced by water-power declined from 43 per cent in May to 41.4 per cent in June.

During July 2,566,658 net tons of coal was consumed by these plants. Although this is slightly greater than the tonnage consumed during June, the increase is due largely to July being a 31-day month. Average daily consumption in July was 82,800 tons, compared with 83,000 in June.

The average daily production of power during July was 124,000,000 kw-hr., a decrease of 3 per cent from the record rate for June. The decline in the production of power was in plants operated by water power, due to the decrease in water available during the summer for power purposes.

Railways Consume Less Coal in June Than In May; Six-Month Total Below Last Year

Class 1 railroads consumed 6,787,000 net tons of coal in June, 1922, as charged to account 394, compared with 6,774,000 tons during the corresponding month last year and 6,953,000 tons during May, according to a report made by the Bureau of Statistics of the Interstate Commerce Commission, covering 182 steam roads. For the six months ended June 30, 1922, these roads consumed 45,077,[illegible] net tons; during the same period last year they used 45,619,[illegible] tons.

The delivered cost per ton of the coal used during June was $3.83; last year it was $4.09. For the first five months of 1922 the per-ton cost was $3.58 as compared with $4.42 in 1921.

Consumption of fuel oil by these roads is steadily gaining. During June 119,359,000 gallons was used, as compared with 108,899,000 gallons in June, 1921, and 118,[illegible],000 gallons in May. For the first six months of this year 711,296,000 gallons was consumed, as compared with 696,808,000 gallons in 1921.

Lake Coal Loaded During Season to End of July*

(In Net Tons)

Ports	Railroads	1922 Cargo	1922 Fuel	1922 Total	1921 Cargo	1921 Fuel	1921 Total	1920 Cargo	1920 Fuel	1920 Total
Toledo	Hocking Valley	1,492,210	46,331	1,538,541	2,148,333	64,521	2,212,854	382,158	17,475	399,633
	Toledo & Ohio Central				843,417	19,200	862,617	421,500	21,300	442,800
	Baltimore & Ohio	1,348,121	48,116	1,396,237	1,365,642	38,586	1,404,228	298,521	11,775	310,296
Sandusky	Pennsylvania	973,162	27,879	1,001,041	890,263	22,078	912,341	400,116	8,886	409,002
Huron	Wheeling & Lake Erie	7,612	344	7,956	1,139,112	33,192	1,172,304	899,227	18,954	918,181
Lorain	Baltimore & Ohio	17,823	14,062	31,885	1,194,240	38,160	1,232,400	1,111,140	40,260	1,151,400
Cleveland	Pennsylvania	44,805	22,543	67,348	1,312,356	44,976	1,357,332	970,644	37,092	1,007,736
	Erie				276,141	8,448	284,589	19,962	1,062	21,024
Fairport	Baltimore & Ohio	31,563	15,181	46,474	817,860	33,360	851,220	955,536	108,864	1,064,400
Ashtabula	New York Central	30,492	16,788	47,280	1,329,432	48,168	1,377,600	897,528	40,320	937,848
	Pennsylvania	58,128	1,200	59,328	72,120	2,640	74,760	1,566,888	77,496	1,644,384
Conneaut	Bessemer & Lake Erie	28,608	31,146	59,754	511,368	15,816	527,184	71,904	40,716	112,620
Erie	Pennsylvania									
Total		4,556,045	298,590	4,854,635	15,019,962	463,167	15,483,129	8,234,724	424,171	8,658,895

* Compiled by Ore & Coal Exchange, Cleveland, Ohio. H. M. Cooper, Mgr.

Plaintiffs Urge Rehearing of Coronado Case

Petition for rehearing of the so-called Coronado coal case, in which the U. S. Supreme Court on June 5 handed down a mid-session decision holding that labor unions, although not incorporated, are liable for damages resulting from acts of their members on an authorized strike in matters affecting interstate commerce, was filed with the court Thursday by John W. Davis in behalf of the Coronado Coal Co. and others, plaintiffs in the original suit against the United Mine Workers of America.

The Supreme Court, while rendering a broad opinion in the case and establishing a new principle of legal procedure against labor unions, held that it could not sustain the award of damages to the original plaintiffs because it had not been established to the satisfaction of the court that the acts complained of were in restraint of interstate commerce during an authorized strike, and expressed regret that this was so.

In the petition for rehearing the petitioners set forth that "Encouraged by the statement with which the court closes its opinion, and believing that the court will recognize the ready possibility of error in drawing inferences of fact from a record so voluminous and complicated, petitioners venture to assert that the decision of the court debarring petitioners from recovery in the present action is founded upon essential mistakes and misconceptions of the facts presented by the record."

The petitioners declare that when the principles of law enunciated by the court are applied to the facts the judgment against District No. 21, U. M. W. of A., must be affirmed, if not also against the International union.

The jury in the lower court declared the destruction of the mine property to be with intent to restrain commerce, the trial judge so declared and the three judges of the Circuit Court of Appeals reached the same conclusion, the petition declares. The mines were not flooded and burned until they were ready to ship coal, the petition emphasizes, calling attention to the insistence of the United Mine Workers upon interstate agreements and to the point that while the Arkansas strike was local in application it was national in policy, because of the national principle of the open shop involved. The motive of destroying the mine property was to protect union operators in Arkansas and other states against the competition of the cheaper mined open-shop coal, the petition recites, which was the motive declared by the jury, the trial judge and the Circuit Court of Appeals. Guards were driven off July 17 and the Hartford and Coronado mines were not burned until July 18 and 20, the petition states.

An award of judgment against the union is again urged because "the mere lapse of time since the injury was incurred will inevitably embarrass the further prosecution of the cause."

The Supreme Court will act upon the petition for rehearing after it reconvenes Oct. 2.

L. & N. July Car Supply in Kentucky Was 57 Per Cent of June's, Tabulation Shows

As a result of the continued argument relative to car shortage on the L. & N. lines in Kentucky, figures are here set forth from a report of the general coal and coke agent of the L. & N. to D. M. Goodwyn, freight traffic manager. They show that car supply was better than many coal men claimed since July loadings were 57 per cent of June's. The report in part reads:

The total number of actual cars of coal loaded at mines on the L. & N. R.R. and logged into destination during the L. & N. "Week" as follows:

	1921	1922	Increase	Decrease
June 1st to 7th, inc.	10,484	16,113	5,629	
June 8th to 14th, inc.	10,392	15,913	5,521	
June 15th to 21st, inc.	10,430	14,307	3,877	
June 22nd to 30th, inc.	13,920	18,125	4,197	
Total	45,235	64,558	19,323	
July 1st to 7th, inc.	7,938	8,812	874	
July 8th to 14th, inc.	10,063	8,647		1,416
July 15th to 21st, inc.	9,525	8,445		1,080
July 22nd to 31st, inc.	12,457	11,331		1,126
Total	39,983	37,235		2,748

The loading by divisions during the fourth week of July was as follows:

Louisville Division	0	2	2	
Kentucky Division	65	275	210	
Cumb. Valley Division	5,033	2,837		2,196
Knoxville Division	733	557		176
Eastern Ky. Division	3,217	2,560		657
St. Louis Division	428	0		428
O&S Division	622	754	132	
Henderson Division	968	1,491	523	
Alabama District	1,391	2,855	1,464	
Total	12,457	11,331		1,126

In June, 1922, the road established a great record in coal handled, and comparing the 64,558 cars handled in June, 1922, with 37,235 cars handled in July, 1922, it is shown that movement dropped to 57 plus per cent of the June movement, this being due to the shopmen's strike on July 1, which has held back movement of empty cars to the mines and loaded cars from mines. June movement was almost at capacity, but was held back somewhat by the fact that many large consumers did not believe the coal strike would run into July, and as a result waited for reduced freight rates to become effective as of July 1, not figuring that prices would jump.

The L. & N. R.R. was perhaps crippled worse than other coal handling roads in the state. The Illinois Central in western Kentucky has been able to handle from 75 to 100 per cent of cars needed at practically all times, the road reporting 700 to 800 cars handled daily.

Eastern Kentucky Coal Plants Improving

Activity in mining operations throughout the Elkhorn-Hazard coal field of eastern Kentucky has caused a building boom to be in evidence on every hand. At Glemans, below Whitesburg, Ky., the Reliance Coal & Coke Co. has completed a modern new tipple with conveyors and is also erecting 150 new homes for miners. The Imperial Elkhorn Coal Co. at Sergent, has a modern new tipple almost completed. The company also will do much other building. The Lotts Creek Coal Co. and the Ajax Coal Co. are each building modern new storerooms at Lotts Creek. The latter company also is erecting a large number of new houses for miners. The Petry Coal Co. and the New Duane Coal Co., at Duane, are each doing considerable building, as is also the Blue Diamond Coal Co., at Blue Diamond, in the First Creek section.

Other companies making various improvements are the Liberty Coal Co. and the Mitchell-Willis Coal Co., in the same section. Several hundred men have been added to the plants of the Consolidation Coal Co. at McRoberts and the Elkhorn Coal Corporation at Fleming and Haymond.

Central Pennsylvania Fuel Committee Names Officers and Prepares to Function

Members of the central Pennsylvania regional committee of the Pennsylvania Fuel Commission met in the office of the Central Pennsylvania Coal Producers' Association on Aug. 29, and effected an organization and formulated plans for functioning. The responsibilities of the committee have been reduced by reason of the strike's ending but the members will prepare for any emergency that may arise during the coming months.

In attendance were W. Brooke Moore, of Harrisburg, service agent of the Interstate Commerce Commission, and Attorney Thomas C. Hare of Altoona, recently appointed by Chairman W. D. B. Ainey to head the state fuel commission as the representative of the public in the central Pennsylvania district. Others present were Charles O'Neil, representing the operators on the state commission; Rembrandt Peale, H. J. Meehan, B. M. Clark, William Lamont and J. R. Caseley, operators; W. A. Jones, statistician of the Coal Producers' Association; J. T. Carbine, of the Pennsylvania Fuel Commission; W. K. Nichol, of the Buffalo, Rochester & Pittsburgh Ry.; J. D. Beaver, of the Pittsburgh, Shawmut & Northern R.R., and W. H. MacQuown, divisional freight agent of the Pennsylvania Railroad Co. at Altoona.

Charles O'Neil was elected district chairman, and W. A. Jones, secretary. It was decided to allow the business of the district to operate through natural channels as far as possible and the use of priorities will not be made at present.

Price Boosting Ford Rails Against Was Practiced by Him Two Years Ago

Cincinnati, Ohio, Sept. 12.—(Special Correspondence).—In the strong box of the U. S. Attorney in Covington, Ky., there are some interesting data relating to the Banner Fork Coal Mining Co. that would seem to put a different effect upon the complaint that Henry Ford, automobile manufacturer, of Detroit, Mich., is making against the coal trade and the jobbers and brokers in particular. It would appear that Mr. Ford in bewailing the high price of coal is coming before the great court of the general public with a smudge on his fingers, for not long ago Mr. Ford, the owner of a coal mine in southeastern Kentucky, was himself the cause of the same sort of complaint.

It will be remembered that the Ford interests purchased the coal properties of the Banner Fork company in 1920. That was the year that coal prices soared. In some places they rose as high as $10-$12 a ton. It was said at the time that Mr. Ford desired the property so that he could get coal at its original cost.

In taking over the Kentucky property with its equipment Mr. Ford did not turn in to the making of steam coal entirely. There was plenty of lump left over that could be sold on the open market. Most of this went to the Blue Diamond Coal Sales Co., which has its general offices in Cincinnati. Some of it also went to the Riddle Coal Co. of Chattanooga and some to the Bewley-Darst Co., of Knoxville. This was given to them to handle as jobbers, or on a brokerage basis. The ruling, however, was strict that this coal should be handled on a 25c.-a-ton basis, and this at a time when other operating corporations were allowing brokerage greatly in excess of this.

The stipulation also was strict that the price at which this coal was to be sold would be as high as possible, and this is the returns that were made to the Ford company. Then the complaints started to come in. Some of them went whooping to Washington at a time when complaints were no rarity—but the volume of them against the Banner Fork company was sufficient to attract the attention of the Department of Justice and in due time the selling agents for the Banner Fork mines were asked to account for the extreme high prices that were being charged for the lump coal that was being shipped from its tipples.

These reports were forwarded to Thomas D. Slattery, then the District Attorney for that section of Kentucky and located in Covington.

While most of this coal was disposed of in the South, Mr. Ford's mining interests were not askant at trying to sell it north of the Ohio river. A former president of the Cincinnati Coal Exchange who directed the sales department of a large wholesale coal firm at the time remembered this coal very well and the conditions under which it was offered.

"I should say I do," he said when asked about it, "but to the best of my knowledge our firm never was able to sell a ton of it—it was too high in price."

Other firms here recollect the period and the offer of the Banner Fork coal and say that they refrained from handling it because of the small brokerage allowed in view of the high prices that were asked.

Nor does the Ford trail of high prices end there. Others who were selling coal to the Detroit plant at the time say that there was no hesitancy on the part of the Ford interests to pay "the highest in the market" for steam coal and that when it landed in Detroit it was put to the test and that which would not come up to the requirements was resold through Detroit brokers of coal to users in the surrounding territory. It would appear at this particular time that the brokers against whom Mr. Ford now rails were a medium that he found worthy of use.

Salesmen who handled the Banner Fork coal to the south looked up their sales sheets and found that the sales ran from $9.25 to $10 a ton.

Standing upon the published statements of Mr. Ford to the effect that he thought the government price for coal was fair, Michael T. Roach, president of the Logan-Pocahontas Fuel Co., in a telegram to Mr. Ford on Sept. 5, renewed his offer to supply the Ford company with coal at the government prices and urged immediate action in the matter. In his telegram Mr. Roach said that it was possible to arrange to give the entire output of one of his mines to the company although having expressed a desire to retain 25 per cent of the output for other uses.

Following the published announcement last week that the Ford factories were to close for lack of fuel, mainly through Mr. Ford's allegation that profiteers and coal bootleggers were boosting the price, Mr. Roach on Aug. 31 offered to turn over the output of the Wallins Creek Collieries in Harlan County, Kentucky, of about 85 carloads a day and the output of some West Virginia mines. Approximately 15,000 tons a month is produced on the Norfolk & Western line and the other coal is produced on the Chesapeake & Ohio.

In response to the first telegram Mr. Ford made arrangements to have his mine representative, Abner Lunsford, confer with G. H. Marting, representing the Logan-Pocahontas Fuel Co., to determine upon the quality of the coal and arrangements also were made to have the Detroit representative of the Logan-Pocahontas Fuel Co. confer with Mr. Ford. Coal was offered to the Ford company on the basis of a two-year contract at the government prices, it being understood that when the government price changed, the price to the Ford company also would automatically change.

In an effort to get direct action on the matter of supplying Mr. Ford with fuel sufficient to run his factories, Mr. Roach on Sept. 5 sent a telegram to Mr. Ford in part as follows:

Refer to your telegram of yesterday afternoon reading as follows: "We explained to your representative, Schermerhorn, that we are not buying coal on two-year contracts at government prices and you cannot get cars for loading coal on L. & N. Are you prepared to guarantee regular routing? How many cars are you loading daily? We are not of the opinion that you can make delivery. Why should we pay you $4.50 a ton when we can load coal at our own mine in your district for $2 a ton?"

Answering the above telegram as quoted: Answering first two lines, we would not be interested in making a spot price for coal to be furnished your plant without any understanding that shipments could be continued over a definite period. Answering the third line of your telegram we can get as many cars to load on the L. & N. as you or any other shipper can get. We have been supplied at our mines today some eighty cars. Answering the fourth line we are prepared to make the same guarantee in reference to regular loading and car supply that you or any other shipper on the L. & N. could make. Our railroad allotment has increased from eighty-five cars as previously wired you, to ninety cars on allotment which will be effective the tenth of this month. Answering the fifth line of your telegram, upon what do you base your opinion that we cannot make delivery? Answering the sixth and last line, none of our telegrams to you should have brought about this inquiry from you. We made you a proposition for two years based upon government prices for coal, which would necessarily mean if the price was increased or lowered our price would accordingly change.

If you are mining coal from your mines, as stated, which is costing you only $2 per ton, and employing the same method of charging mine costs as in effect by other operators, including ourselves, which system was put into effect by the government, then indeed you are very fortunate and the balance of us are unfortunate. In addition to this you could not possibly be paying as high a scale of wages as we are paying and put coal on the cars at $2. Now, Mr. Ford, my proposition was made to you in good faith and based entirely upon press statements that you were contemplating closing down your plant on the sixteenth day of this month and giving as the chief reason the profiteering in the coal business.

If the press reports have correctly quoted you as stating that the government price was a fair and reasonable price and that you would pay no more than this for your coal, taking all these matters into consideration and trying to help prevent if possible the great calamity that might result from your closing down on the sixteenth, if you do not, having in mind the distress that might be brought about by the drastic position you say you are going to take and charging same to the coal operators, I feel it the duty of every operator in America to come to your relief. It is not my intention to enter into any controversy pro and con with your subordinates. If you want coal from us we are ready to negotiate on the basis of our first telegram setting forth our proposition.

Fix Maximum Prices for Alabama Coal

Governor Kilby and Fuel Administrator Roy R. Cox announce the following maximum prices for coal from Alabama mines: Big Seam, mine-run $2.60, domestic lump $3.45; Pratt, Jagger and Corona group, mine-run $4, domestic lump $4.15; Cahaba and Black Creek group, mine-run $4.60, domestic lump $5.20. Montevallo and Clinton group, mine-run $4, domestic lump $5 per ton. These are maximum prices for the autumn and winter. The retail prices are lower than at this time last year and the steam coal prices are regarded as reasonable, when the increase of 20 per cent in miners' wages effective Sept. 1 is considered.

Miners' Union Has 25,000 Fewer Members In West Virginia Than Before Strike

As far as it is possible to estimate, it is believed that there are now 25,000 less miners in West Virginia in the United Mine Workers' organization than at the inception of the strike, so that half the membership has been lost.

The New River field appears to be lost to the United Mine Workers entirely, so that as a matter of fact District 29 no longer exists except on paper. That means a loss in membership of from 8,000 to 10,000 miners. New River operators have declined to enter into negotiation with the miners' union and have contented themselves with simply posting the 1920 wage scale and of continuing to operate on an open-shop basis.

Operators in the Georges Creek region have advanced wages to the 1920 level. Just how many miners will return to work in view of the increase in wages remain to be seen. In the Upper Potomac region most of the miners are at work and have been for some time. Officials of the union assert that miners will not return to work until the Cleveland agreement is signed.

Operators of the Georges Creek field assign as their reason for declining to enter into a further contract with the United Mine Workers "the absolute violation of Article 11, Section 1, of the Maryland basic agreement, dated Dec. 11, 1920, which provides for no suspension of work for a period of at least 90 days subsequent to March 31, 1922."

Even under the "Maryland basic agreement," in force until March 31 and which the operators assert that the miners violated, there was no recognition of the union, nor do operators propose to accord the union such recognition now although always having been willing to engage in collective bargaining with the miners.

The new scale in Georges Creek calls for a wage of $1.30½ a ton for pick mining and of $7.26 per day for general inside labor.

The possibility of taking testimony by groups in some of the anthracite tax cases listed for hearing in the Dauphin County Court, Harrisburg, Sept. 12, may cause changes in the plans to hear all of the appeals at that time. It is probable that the eighty or more cases pending will be so grouped and heard. Appeals are now being perfected by some of the large producers, and these will be added to the list.

Mine Fatalities in July Exceed Those of June in Ratio to Output

Coal-mine fatalities during July, 1922, numbered 74 as compared with 162 in July last year, according to reports received by the U. S. Bureau of Mines from state mine inspectors. The reduction was due primarily to the fact that most of the mines throughout the country were closed on account of the miners' strike, which caused the output of coal to decline from 37,693,000 tons in July last year to 17,151,000 tons in July, 1922, a reduction of about 54 per cent. The fatality rate was 4.31 per million tons of coal produced, almost identical with the rate for July last year, 4.30. For bituminous mines alone the July rate this year was 4.05 as against 3.78 for July a year ago. Fatalities in June last numbered 92, or 4.11 per million tons.

During the past nine years (1913-1921) the month of July has averaged 203 fatalities, with an average production of 48,446,000 tons, representing a fatality rate of 4.19.

During the first seven months of the present year 917 men have been killed by accidents at coal mines, as compared with 1,163 during the corresponding period last year, a decrease of 246 fatalities, or 21 per cent. The production of coal has declined about 19 per cent (from 279,869,000 tons to 226,202,000 tons). The fatality rates for the two seven-month periods were 4.16 last year and 4.05 for 1922 per million tons.

With two exceptions, all of the main causes of accidents during 1922 compare favorably with the seven-month record last year and with the entire year 1921. The largest reduction is in accidents from explosives. The rate from haulage accidents is about the same as for the first seven months of 1921 but it is about 14 per cent higher than the average for the whole year 1921. Gas and dust explosions have resulted in a fatality rate more than double that for the year 1921 or for the first seven months last year.

COAL-MINE FATALITIES DURING JULY, 1922, BY CAUSES AND STATES

(Compiled by Bureau of Mines and Published by *Coal Age*)

State	Underground													Shaft					Surface						Total by States	
	Falls of roof (coal, rock, etc.)	Falls of face or pillar coal	Mine cars and locomotives	Gas explosions and burning gas	Coal dust explosions (including gas and dust combined).	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.).	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip, or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Electricity.	Machinery.	Boiler explosions or bursting steam pipes	Railway cars and locomotives.	Other causes.	Total	1922	1921
Alabama	4		1					2					7													7	3
Alaska																										0	0
Arkansas																										0	3
Colorado	2		1										3													3	1
Illinois																										0	8
Indiana																										0	3
Iowa																										0	5
Kansas	2												2													2	1
Kentucky	4												4			1		1							5	11
Maryland																										0	0
Michigan																										0	0
Missouri																										0	0
Montana																										0	2
New Mexico																										0	2
North Dakota																										0	0
Ohio	1		1			1							3													3	11
Oklahoma																										0	1
Pennsylvania (bituminous)	8	2	3			1							14	2				2						3	3	19	20
South Dakota																										0	0
Tennessee	1							1					2													2	2
Texas																										0	1
Utah	1	1						1					3													3	1
Virginia	2									1			3													3	0
Washington																										0	0
West Virginia	14		1	1				2					18						1	1				2	4	22	37
Wyoming																										0	3
Total (bituminous)	38	3	7	1		2		6		1			59	2		1		3	1	1				5	7	69	115
Pennsylvania (anthracite)	2					2							4											1	1	5	47
Total, July, 1922	41	3	7	1		4		6		1			63	2		1		3	1	1				6	8	74	
Total, July, 1921	68	6	30	11		12	2	10	1	2		4	146	5				5	1	5	1	1		3	11		162

Administration Coal Bills Now in Conference; Passage Expected Next Week

Washington, D. C., Sept. 12, 1922.—Conferees on the bills to create a federal fuel distribution and to control distribution and the price of coal through priority orders of the Interstate Commerce Commission continued their efforts to harmonize the House and Senate measures today with prospects of an early agreement.

The Cummins bill was taken up Sept. 11 by the conferees, who remained in session until late in the evening without reaching any conclusion. Most of the time was devoted to testimony by officials of the Interstate Commerce Commission, who explained how the proposed measure would operate.

The principal difference between the conferees developed over the inclusion in the House bill of references to intrastate coal, which the Senate conferees believed rendered the measure unconstitutional, in view of the Supreme Court's recent decision in the Child Labor case. House conferees insisted the cases were not parallel and that the broader clause was legal because of the commerce clause of the Constitution.

Senate conferees on this bill are Senators Cummins, Kellogg and Smith and House conferees are Representatives Winslow, Newton (of Minnesota) and Rayburn.

As soon as agreement is reached on this bill, conference on the fact-finding commission bills will begin. The House has the same conferees on this bill while the Senate conferees are Senators Borah, Sterling and Walsh (of Massachusetts).

As H. B. Spencer is understood to be unwilling to take over the duties of distributing coal under the Cummins bill, a new federal distributor must be found. No less than fifty names already have been suggested to Secretary Hoover. While it is believed that the position can be filled best by a traffic man, it is possible that some man known to be a good administrator will be chosen if a transportation man of the required caliber cannot be induced to accept the appointment. Among the names being put forward is that of Henry Ford. The suggestion is made seriously on the ground that he has distinguished himself as an organizer and recognizes keenly the desirability of an equitable distribution of coal and the need to suppress profiteering.

Donald D. Conn, of Minneapolis, who is in Washington representing the governors of the states of the Northwest that receive their coal supply largely from the upper lake docks, probably will be named an assistant to the federal fuel distributor to advise on the lake situation.

Varying dates for the expiration of the measure form the greatest difference between the House and Senate bills to control the distribution and the price of coal, the House bill providing a life until Jan. 1, 1924, and the Senate bill providing that it shall expire six months after enactment.

The Senate bill to create a fact-finding commission provides for a commission of five members and includes instructions to report recommendations on the standardization of mines on the basis of production and efficiency, standardization of wages and working conditions and the advisability and wisdom of nationalization of mines and of government control of the industry, while the House bill lacks the latter features and provides for a commission not to exceed nine members. The provision written into the Senate bill directing a separate investigation of the anthracite field with a report to be submitted not later than July 1, next, which was included after the settlement in the hard-coal field, probably will be accepted by the House conferees.

Both the distribution and price-control bill and the fact-finding commission bill were passed by the Senate without difficulty once the time for final vote arrived, although both encountered vigorous opposition from individual Senators. The Cummins bill, to create the office of Federal Fuel Distributor and to broaden the powers of the Interstate Commerce Commission so as to control distribution and prices of coal, was passed Thursday, 40 to 7. It was amended in only two important respects, an amendment by Senator Sutherland reducing its life from one year to six months being adopted and one by Senator Dial, providing that its terms should not apply to contracts for coal at not more than $2 per ton that were made prior to July 25, 1922, being included.

The Borah fact-finding bill was passed Friday, Sept. 8, without any amendments other than those offered or advocated by its author. The vote on this measure was without a roll call, but sentiment had been tested a few minutes before the bill was put on final passage by the rejection, 19 to 30, of an amendment offered by Senator Dial which would have stricken from the measure the instruction to the proposed commission to report on the question of nationalization of coal mines.

Senator King, of Utah, offered an amendment to the distribution and price-control bill designed to prevent speculation in coal by providing that for six years it should be unlawful to purchase coal with intent to influence the market price. After objection, he withdrew this as an amendment and offered it as a separate bill, which was referred to the judiciary committee.

Repeated efforts, through amendments in various forms, were made by Senator Dial, of South Carolina, to amend the bill so as to exempt contract coal. Senator Sutherland also offered an amendment along the same line. Objection was made that some contracts at an unreasonable price might be included and thus defeat the purposes of the bill. Finally, Senator Dial brought his amendment in so as to include coal at not more than $2 a ton on contracts closed prior to July 25, and this was accepted. The South Carolina Senator is interested in a mill which had a contract for coal at $1.90 per ton, he stated, and which could not get delivery because the mine operator could not get cars.

Mine prices of bituminous coal should range from $2.50 to $3.50 in his opinion, Senator Kellogg declared, figures which Senator Sutherland characterized as "absurd."

The whole purpose of the bill, Senator Cummins asserted, was to supply the Interstate Commerce Commission with authority "to classify preferences on account of unreasonable prices that may be charged," and while he disclaimed any intent to criticize coal operators as a class, he declared some power necessary to "check the greed" of those who would take advantage of the situation.

The most strenuous objections voiced against the Borah fact-finding bill were directed against its instructions that the proposed commission report on the advisability and wisdom of nationalization of the mines.

An effort by Senator Shields of Tennessee, to amend the Borah bill so as to exclude from membership on the proposed commission any coal operator or miner met objection from Senator Borah and was defeated. The Idaho Senator declared the President should be free in his selection. The bill as passed excludes members of Congress and executive officers of the government from the commission.

Senator Dial attempted to have the Federal Trade Commission made the investigating agency, instead of a special commission but this amendment was rejected. The South Carolina Senator then tried to have the nationalization and government-control sections of the instructions to the commission stricken out, declaring them to be merely "an invitation to all the disgruntled people of the country to appear before the proposed commission to complain and talk about nationalizing the coal industry."

The Indiana state emergency coal committee has passed into history. The passing was entirely informal. It received official word from the U. S. coal distribution administration that the federal body regards the strike as ended, that it can no longer look after allocation of coal to applicants and that normal trade channels may be relied on to take care of the country's requirements. Governor McCray had designated the Indiana Public Service Commission to co-operate with the federal administration.

May Apply Class 1 Priority to Gas Coal For Utilities Having Contracts

Washington, D. C., Sept. 9.—The Federal Fuel Distributor is receiving urgent requests from numerous artificial gas manufacturing companies for supplies of gas coal, which they are unable to obtain from West Virginia, Virginia, Kentucky and Pennsylvania districts. These requests, Mr. Spencer reports, come from New York City, Chicago and various smaller cities in Michigan, Illinois, Indiana, Iowa, Missouri and other midwestern states. The difficulty in supplying this coal is due to the inadequate car supply in the districts named and to the fact that the gas-coal producing companies are prorating their coal among all parties with whom they have contracts. This means that much gas coal, the supply of which is limited, is being taken for steam-raising purposes. Fuel Distributor Spencer is considering the policy of applying Class 1 priority to gas coal moving to public utilities with whom the mines have contracts.

Dumpings of coal at the lower Lake ports for this week will amount to approximately 600,000 tons, with 9,380 cars reported at Lake ports this morning. As coal is not moving to the Lakes under the normal No. 2 classification in sufficient quantities to make up the Fuel Distributor's program, Priority No. 1 orders are being issued today directing lakeward a sufficient tonnage of coal to insure the attainment of the full Lake program for next week. These priority authorizations are being placed with a view to causing the least possible disturbance to the normal movement of coal. Difficulties experienced in the unloading of iron ore from boats at lower Lake ports have been solved, and there is now no shortage of vessels for the transportation of coal to Lake Superior docks.

The Fuel Distributor has found it necessary to issue Priority No. 2 orders for the movement of a limited tonnage of coal necessary to keep some non-essential industries in the Southeast from closing. Authorization for the movement of 10,000 tons of coal from Norton, Va., to the State Fuel Administration of South Carolina has been given. Representations are being made from time to time that industries will be compelled to close unless given certificates of priority which will aid them in obtaining fuel supplies. These cases are being considered on their individual merits, under a general policy of issuing priority authorizations only where real emergency needs cannot be provided for by other means.

New York Coal Dealers Pledge Support to State Fuel Administrator

Receding from its policy of opposing federal or state administration of fuel supplies, the New York State Coal Merchants' Association adopted a resolution Sept. 8 at its convention at Richfield Springs supporting Governor Miller and State Fuel Administrator W. H. Woodin in their effort to provide an equitable basis for the distribution of coal and pledging full co-operation to prevent a crisis.

Use of bituminous coal as a substitute for anthracite in homes until the emergency is passed, restriction of the quantity given each consumer that all may have coal, and licensing of all dealers, both wholesale and retail, in order to curb irresponsible dealers, were among the measures advocated for dealing with the crisis. The "fair price" differential of 8 per cent fixed for jobbers' profit was denounced as four times too high.

Illinois Protests Priority Order That Favors Domestic Coal

Illinois coal trade is somewhat exercised over the recent amendment to I.C.C. Service Order 24, giving car priority to domestic sizes of coal. A protest meeting held in the office of State Fuel Distributor R. M. Medill in Chicago brought up the argument that the amendment should be lifted because if steam sizes are not readily shipped from the mines they will accumulate to a point where many mines will have to shut down. Two plans of action may result. Mr. Medill on Saturday last urged that a committee go to Washington forthwith and plead with the Interstate Commerce Commission for a temporary repeal on the ground that there is no coal shortage in Illinois now and therefore the ruling should not apply to that state. The other plan which wise heads counsel is that the ruling be observed with all possible rigor so that its effect on coal consumers would cause such loud public complaint that the repeal would be granted.

Cape Breton Miners Return to Work: Recall of District Officers Asked

All troops have left the Cape Breton mining district and the miners have returned to work. All of the mines with the exception of those flooded when the pumpmen left their places are in action again. The flooded mines are being pumped out gradually. The flooding has created much damage in the mines.

Springhill local of the United Mine Workers Union has petitioned John L. Lewis, International president, for the recall of the recently elected officers of District 26, including District President Dan Livingstone. The local asserts that the new officers of the district were instructed to agree to nothing short of the 1921 rates. Instead a compromise was agreed upon with the coal operators.

Distribution of Lake Cargo Coal Loaded at Lake Erie Ports to Sept. 1

Destinations	Net Tons	Per Cent	Net Tons	Per Cent	Net Tons	Per Cent
Lake Superior Ports						
Duluth Superior and Two Harbors	556,694	10 79	6,914,897	43 65	3,528,229	33 09
Ashland-Washburn	77,505	1 50	400,665	2 53	310,881	2 92
Copper Range (1)	222,862	4 32	471,544	2 98	250,357	2 35
Marquette	48,772	.94	103,004	.65	138,420	1 30
Ft. William, Pt. Arthur and Jackfish	63,187	1.23	1,558,876	9.84	782,456	7 34
Other Lake Superior Pts			37,750	.24	14,867	14
Totals	969,020	18.78	9,486,736	59 89	5,025,210	47 13
Lake Michigan Ports						
Milwaukee-Racine	916,564	17.76	2,012,007	12.71	1,159,862	10 87
So. Chicago, Ind. Harbor and Gary	713,243	13 81	539,205	3.40	529,438	4 97
Sheboygan to Escanaba (2)	403,165	7 81	1,195,569	7.55	727,872	6 83
Other Lake Mich. Pts	24,260	48	140,154	.88	77,293	72
Totals	2,057,232	39.86	3,886,935	24 54	2,494,465	23 39
St. Mary's River Pts.						
Detour & Lime Island	355,287	6 89	144,430	.91	262,063	2 45
Sault Ste Marie Can	46,195	89	479,446	3 03	674,214	6 32
Do American	43,193	.83	57,340	36	93,312	88
Totals	444,675	8 61	681,216	4 30	1,029,589	9 65
Lake Huron Ports	63,001	1 22	97,552	62	118,106	1 11
Detroit & St Clair River Ports	455,521	8 82	539,208	3 40	691,629	6 49
Lake Erie Ports						
Buffalo-Fairport & Toledo	892,310	17 30	22,593	14	18,574	19
Other Pts (Regular)	50,040	97	61,710	39	11,297	.09
Totals	942,350	18 27	84,303	49	29,871	28
Georgian Bay Ports	129,465	2 50	566,866	3 58	414,818	3 89
Welland Canal, Lake Ontario and St. Lawrence River Pts.	99,954	1 94	497,928	3 14	878,838	8.06
Grand Totals	5,161,218	100 00	15,840,744	100.00	10,662,526	100.00

(1) Hancock, Houghton, Hubbell, Lake, Linden, Portage and Porch Lake.
(2) Escanaba, Green Bay, Marinette, Menominee, Manitowoc and Sheboygan.

Connellsville Output Mounts, Though Strikers Flock to Union Mines

Output in the Connellsville coke region continues to increase slowly and steadily, most of the companies who are operating continuing to import labor. At the same time there is a large exodus of the strikers taking place to union mines in all directions since the union mines have been getting in operation. During the past week the H. C. Frick Coke Co. has fired additional ovens as follows: At Crossland plant, 50; at Leisenring No. 1, 40; at Leisenring No. 2, 40; at Leisenring No. 3, 70; at Davidson, 40, and at Trotter, 70, a total of 280. W. J. Rainey, Inc., has started up the Allison plant with imported labor.

Herrin Grand Jury Has Indicted 59 Thus Far; Jail Is Filling; Union Has Big Defence Fund

THE grand jury in the Herrin massacre case is making good its declared intention of doing its duty in spite of "pressure" and threats. Thus far, after two gruelling weeks of investigation through the hottest kind of southern Illinois weather, it has indicted fifty-nine men on the three charges of murder, conspiracy to murder and riot. Up to Saturday night thirteen of the fifty-nine men—most of them union miners—had been gathered into the Herrin jail and deputies were scouring the country for the others. Many of them gave themselves up through lawyers for or officials of the United Mine Workers of America who have been in Marion, county seat of Williamson County, watching proceedings from the beginning of the investigation.

This group of officials has told Attorney General Brundage it will bring in and surrender every union man who is indicted, providing Brundage will agree in advance to accept bail for their release. Brundage refuses and every man who goes to jail goes there to stay until the case comes to trial later in the month. The union's first attempt to obtain release of the prisoners on bail failed, but it is daily expected that some new effort will be made.

The main interest in the case just now is to see what further action the union forces will take. On Sept. 8 the Illinois miners' executive board, in session at Peoria, voted to assess every Illinois member of the union 1 per cent of his wages as a defence fund for the battle to be waged at Marion. It is estimated that this 1-per cent assessment would raise $250,000 if collected.

The first indictment was that of Otis Clark, which came suddenly out of the jury room on Aug. 31. Attorney General Brundage said he felt that the arrest of Clark served to advance the investigation materially because it showed that the jury meant business. Evidence came easier from the long line of reluctant witnesses after that and on Sept. 7 a list of thirty-seven more indictments was signed. The next day the jury indicted twenty-one more and then adjourned until Sept. 18, when it will resume.

It has announced in a statement to the public that the jury intends to delve thoroughly into the part which the Southern Illinois Coal Co. and its president, William J. Lester, played in the circumstances leading up to the attack on the company's non-union strip mine, June 22, the surrender of the men therein and the slaughter of nineteen and wounding of thirty which ensued. Thus far practically all the indictments have been against union men. If findings are to be made against the coal company or its employees for the killing of two union miners the day before the massacre they will have to be made after the jury resumes, Sept. 18.

The investigation thus far has been greatly hampered by the incompleteness of Coroner William McCown's records of the individuals killed in the riot of June 22 and of the records of undertakers who buried them. The coroner's list identified only ten of those buried. There was a description filed of one more. The others were merely put in graves marked "Unknown" and little or no record made of them. Even the belongings of the slaughtered men were jumbled up or thrown away. Thus the case is much befogged. There is clarity enough, however, in the case of the following dead: C. K. McDowell, mine superintendent, the first man to be killed and for whose death Otis Clark, the first union man to be indicted and arrested, is now held; Robert J. Anderson, Sparta, Mich., who was hanged to a tree and riddled with bullets; J. H. Shoemaker, civil engineer, son of the Mayor of Charleston, Ill.; John Emil; Fred Lang, of Chicago; Arthur D. Miller, of Chicago; Ed Miller, of Chicago, who died wearing a Chicago police badge; Antonio Muklevich, American legionnaire; Robert March, of Chicago, an overseas veteran, and Howard Hoffman, of Huntington, Ind., who was one of those who escaped the slaughter at a barbed wire fence where so many died, but who was caught later, taken to the Herrin cemetery and killed there.

The jury has heard and recorded volumes of testimony about the revolting events of the attack on the mine and the massacre. Several of the victims were savagely mutilated before they were killed. A taxicab driver, who is among the indicted and for whose arrest the jury was especially anxious, is to be charged with driving through the region of the slaughter feeling every victim he found on the ground and cutting the throats of any who gave signs of life. His name is Pete Hiller. Bert Grace, one of the men in jail, is the man said to have stood over a bound group of terribly wounded men in the hot sun and who refused at the point of a gun to allow anybody to give even a drink of water to the dying.

The general sentiment among men who are watching the case and who stand for law and order is that it is going be difficult indeed to mete out full justice to the guilty. The grand jury appears to be doing its level best. It is accumulating a mass of damning evidence against many prisoners and a good many of the indicted men are behind the bars with no sign yet in the troublous county of a jail delivery to free them. It is freely prophesied, however, that when the case comes to trial before a jury impaneled in the regular way, and not hand picked, as the grand jury was, in order to exclude possible partisans, the progress of the case will be difficult. The United Mine Workers of America with a large fund and an array of legal talent purposes making a powerful and intricate legal defence. There is little chance of removing the case from Williamson County because of the constitutional right of every man to be tried within the jurisdiction where the alleged crime was committed and because of his constitutional protection against being tried twice for the same offence. Thus it appears the case must be fought along only those lines now laid down. The federal government, though watching every step, probably cannot take charge of the case for lack of jurisdiction.

The fifty-nine men indicted, including Fred and William Travelstead, sons of one of Marion's respectable families; James Brown, a negro deputy sheriff of the town of Colp, and Otis Clark, president of a miners' union local, are these: Peter Miller, Charles Rogers, Leva Main, Joseph Carneghi, Nava Cannaday, Herbert Rushing, John Rushing, Clyde Lee, James Galligan, Joseph Rhodes, William Stanley, John Kelley, Hubert Walker, James Norris, Roy Pennington, Harvey Perdue, Dallas McCree, Otis Maynard, Alvin Stewart, Joe Murray, Campbell Lively, Wesley McPharon, Frank Adams, Alvin Lolless, Floyd Stokes, George Anderson, Fred McGough, Philip Fontanetta, Tom Weeks, Lee Howard, Louis Corbett, Bert Grace, Gerald Bernard, Peter Hiller, Noble Bell, Lew Corlan, Charles Hancock, Ernie Craig, V. R. Wilson, Henry Skeltcher, Bill Gulledge, Darby Babbington, Sam Catone, Jesse Childers, Orrie Kirby, Earl Baxter, Bill Clander, Fred Cooper, Lee Herron, William Sellars, Fred Travelstead, William Travelstead, Otis Clark, James Brown, Percy Hall, —— Blockhouse, —— Hastings, Giles Holley and Tony ——.

Strike Slowly Petering Out in Utah

It is difficult to say whether the coal strike in Utah is at an end. All but twenty-five or thirty members of the National Guard have been sent home, but no one, including the state officials, is willing to be quoted as saying the strike is over. Following overtures from the strikers the operators met them and offered a new scale of $6.20 and a bonus of 50c. for an eight-hour day. The men rejected this after a two-hour debate and demanded the full rate of $7.95 a day in effect on March 31 and also back pay. In addition to this they asked that all persons quitting or discharged during the strike receive back pay on specified dates. All is quiet in Carbon County and it is believed that the men will accept the offer of the operators before these lines appear in print.



©Ewing Galloway

Buying of British Coal Has Passed the Peak

Late in June British coal began to seep through to the Atlantic ports. It came slowly at first, largely as an experiment on the part of a few Eastern railroads and utilities. As the shortage of home coals became more pronounced, however, heavier orders were placed, taxing British export facilities and calling into service a number of U. S. Shipping Board vessels. This flood of foreign coal reached its peak late in August, when in New York harbor alone 125,000 tons was received in seven days.

As September opened seaports not accustomed to handling a heavy volume of coastwise coals were congested with British cargoes, and even Boston harbor, the best equipped to receive coal by water, was plugged with the arrival of sixteen cargoes. Eight more ships, arriving forty-eight hours later, were forced to anchor and await their turn at the unloading machines. The congestion at New York, with its lower daily discharge rate, necessitated diversion of tonnage to other New England ports. All this means heavy demurrage charges for someone.

Prices mounted with the volume of business placed. When the Shipping Board first chartered a few of its vessels for this business it set a freight rate of 7s., having chartered eighty-nine vessels in all at this writing. The British rate was slightly higher at the outset and rose to 13s.@16s. because of the scarcity of bottoms and the urgency of orders. The Shipping Board rate advanced to 15s., but remained lower than the British figure at all times. British f. o. b. prices also advanced, good Admiralty coal going from 24s. late in June to a high of 32s. 6d. in August.

When late in August production in the United States started upward the effect on the British market was instantaneous. Ocean rates and coal prices began slipping, but the reductions brought little business. Shipments to this country are expected to continue throughout the year and may reach 1,500,000 tons by the end of September. But now, as in the beginning, shipments are largely on firm orders placed by railroads and utilities. A few traders bought cargoes and shipped them "free" to this side when prices were nearing the peak. When American coal quotations declined with better production harbors were congested, heavy vessel demurrage accumulated and this trading speedily became unprofitable.

British coal can still undersell ours in our own seaport markets but with domestic reductions paralleling those abroad the time consumed in filling orders introduces an element of risk that deters coal men from ordering tonnage to throw on the present sensitive spot markets of this country. It requires nearly six weeks' time to obtain British coal, about one-half of which is consumed in ocean transportation. The coal received and still on order is needed to fill the strike gap, but this is rapidly closing. United States production is better and British coal "on spec" faces an uncertain reception on this side of the Atlantic.

The illustration shows three British cargoes of coal being unloaded at New York Central R. R. piers at Weehawken, N. J., across the river from New York.

Deprecating Cause for Alarm, Woodin Urges Economy in Use of Electricity and Gas

William H. Woodin, New York State Fuel Administrator, appointed on Sept. 6 by Governor Miller, has already issued a warning against profiteering, stating that he sees no reason why coal should be any higher in price than it was last winter.

Mr. Woodin, who is the president of the American Car Manufacturing Co., entered upon his duties the day following his appointment and after conferring with the members of the Governor's Coal Commission appointed Colonel William J. Donovan, of Buffalo, legal adviser, and continued in office the existing Coal Commission members.

The Fuel Administrator has been promised the cooperation of the city administration of New York City in his work. He attended the conference of anthracite producers and representatives of the federal and state governments held in Philadelphia on Sept. 7 but before going to the conference Mr. Woodin announced that the state would be divided into nine districts with a district fuel administrator in charge of each.

Names of the nine district administrators will be announced this week and they will meet in conference with Governor Miller and State Fuel Administrator Woodin at Albany.

Permanent offices for Mr. Woodin and his staff have been opened at 165 Broadway, New York City.

It is the intention of Mr. Woodin, in order to avert any emergency that might result from a continued shortage of anthracite, to educate the public in the use of substitutes. He will ask all consumers to exercise economy in the use of electricity and gas, but made it plain that at present there was no cause for alarm.

J. W. PAUL, coal-mining engineer of the U. S. Bureau of Mines, recently examined a fire on Neville Island, Pittsburgh, Pa., in a fill composed of coke breeze, cinders and slag. This fill is 500 ft. wide, 2,000 ft. long and 20 ft. deep. At the time of Mr. Paul's examination the fire was not yet under control and had already caused a loss of more than $300,000.

Agreement Ratified, Anthracite Mining Is Resumed

MINING of anthracite was resumed on Monday, Sept. 11. At Scranton, before noon of that day the United Mine Workers and the representatives of the operators signed the contract that is to insure uninterrupted operations for the next year. The signing of the contract was but a formality following the ratification by the miners' union of the compromise agreement between John L. Lewis and the operators arrived at on Saturday, Sept. 2, at Philadelphia.

According to the decision of the Shamokin convention last January, it was necessary to submit the terms of this agreement to the vote of the men. A gathering of delegates from the locals in the hard-coal region assembled in Wilkes-Barre on Wednesday, Sept. 6, to listen to the speeches of the officials and vote on the proposed contract. The meeting was stormy; it lasted until late Saturday, giving everyone a chance to get his views into the record. But after every supporter and every opponent of John L. Lewis had had his say, the vote was overwhelmingly in favor of acceptance, as Mr. Lewis had said it would be.

The men go back to work at the same wages and with the same working conditions they had before the strike. They are under contract to stay at work until Sept. 1, 1923. They were obliged to forego the advance in wages they had demanded and they did not get the check-off, which they also had among their nineteen demands of last January. On the other hand, the operators did not get the wages of the men reduced, as they had desired, nor did they succeed in providing for arbitration of future wage contracts, a point on which they were urgent.

Delegates to the Wilkes-Barre convention from around Pittston, Olyphant and Kingston were instructed to oppose any ratification of the agreement. Many of the delegates from Shamokin and around Pottsville wore badges on which was emblazoned "Stick and Fight to the Finish." There was a general feeling that Lewis would meet strong opposition. On the opening day he was made chairman of the meeting. Thursday morning Thomas Kennedy, president of District No. 7, read the 55-page report of the scale committee.

Friday morning he offered the agreement to the convention. Philip Murray spoke at length in favor of acceptance. "We need not delude ourselves at the nineteen demands," said he. "Industrial conditions of the country did not warrant the granting of these demands. All other basic industries in the country have taken decreases. Eighty-five thousand maintenance of way men work at 23c. per hour. Ours is the only organization that kept its wages of 1920. The union that has succeeded in retaining what it has has won a great victory. In principle the victory of the anthracite mine workers is a greater one than that of the bituminous mine workers. Arbitration means that some outside party that knows nothing arbitrarily says to you what hour you shall rise in the morning, what wages you shall receive, and compels you to accept."

After speech-making through Friday and until six o'clock in the evening on Saturday the miners overwhelmingly voted for acceptance of the agreement. The opposition remained silent and registered no vote of protest.

Meanwhile steps were being taken by the national and state governments looking toward control and regulation of the price and distribution of hard coal, when it should again be made available. Secretary Hoover called the representatives of the operators together at Philadelphia on Thursday, Sept. 7, to get their views as to the best way to handle the situation. As a result of this meeting a Committee on the Distribution of Anthracite was appointed. Heading the committee is S. D. Warriner. The others are W. J. Richards, W. H. Williams, W. L. Connell, Alan C. Dodson and John F. Bermingham, all executives of producing companies. E. W. Parker, director of the Anthracite Bureau of Information; R. C. Morse, representing the State Fuel Commission, and W. B. D. Ainey, chairman of the Pennsylvania Public Utilities Commission and acting state fuel administrator, also are on the committee. A member is to be named by Secretary Hoover.

This committee has made no official announcement of any action but it is understood that the sentiment of the trade is that each producer and shipper shall allocate his tonnage equitably on the basis of the last coal year, 1921-22, although it is recognized that until the tonnages that are to be sent up the Lakes and to such distant markets as Canada and northern New England are sent on their way, such ideal distribution will be difficult to realize. The trade has made it plain that in its belief the best results will be obtained with the least interference on the part of the authorities, and it is understood that both Washington and Harrisburg will give the shippers every opportunity to make good. The operators will keep current and definite records of distribution and thereby check up on those who may endeavor to divert coal to take advantage of high prices in certain localities.

If there is to be any check on anthracite prices it will have to come from Washington after the Fuel Distributor bill has been signed by the President. As most of the hard



T. K. MAHER AND JOHN L. LEWIS SIGNING THE CLEVELAND AGREEMENT, AUG. 16

coal goes into interstate commerce the Pennsylvania Fuel Commission has advised the trade that it will countenance no prices or margins higher than those obtained last March, prior to the strike. This advice was tendered to the independent producers and the retailers. Retailers are to be restrained from giving any consumer more than sixty days' supply and shippers are not to furnish coal to any but established dealers.

Cumulative production of anthracite for the calendar year to Sept. 1, stands at 22,199,000 tons. This is 39,700,000 tons behind last year and 33,800,000 tons behind 1919. In addition to the current production a considerable tonnage of anthracite has been forwarded from storage. Total shipments of ex-storage coal from April 1 to Sept. 1, according to reports furnished by the railroads, amounted to 95,000 cars, or about 4,250,000 net tons.

PRODUCTION OF ANTHRACITE IN AUGUST, AND CUMULATIVE OUTPUT FOR FIRST EIGHT MONTHS OF LAST EIGHT YEARS

Year	August Production (Net Tons)	Cumulative Production to Aug. 31 (Net Tons)
1915	7,161,000	56,215,000
1916	7,190,000	57,693,000
1917 a	9,048,000	66,186,000
1918 a	9,254,000	68,484,000
1919	8,886,000	55,904,000
1920	8,185,000	60,875,000
1921	7,459,000	63,317,000
1922	161,000	22,199,000

(a) Years of very large washery production

THE WEST VIRGINIA PUBLIC SERVICE COMMISSION has issued a priority order similar in form to that outstanding with the Interstate Commerce Commission. The order applies to the lines of any coal-loading carrier within the state. Classes of priorities are specified, class 1 being special purposes specifically designated by the state fuel commissioner or his agent; class 2 is for fuel for railroads and other common carriers, public utilities, hospitals, United States, state, county or municipal governments, and for their public institutions.

Scientific Study, Not Emotional Denunciation, Says Hoover, Will Solve Nation's Coal Problem

The favorable progress of legislation for the creation of a national coal commission fully empowered to get to the bottom of the troubles in this industry is the first step in one of the most vital problems we have, according to Herbert Hoover, Secretary of Commerce, in an address before the Salesmen's Association of American Chemical Industry, Tuesday, Sept. 12, 1922, in New York. That he has been earnestly recommending such a commission for the last three years, he declared, was because he does not believe great solutions are to be found out of emotional denunciation, but out of sober, scientific examination. Portions of his address follow:

When the public can be made the victim of infinite loss and suffering by such disagreements as we have witnessed; when the whole nation can, once every two years or less, be pushed to the edge of the precipice of want and commercial collapse; when our public utilities, hospitals, schools, and kitchens are dependent upon short rations of non-union coal; when the federal government is forced to interfere with business and transportation to secure even this movement to essential points; when we are brought to consideration of price fixing against extortion in peace time; when hundreds of thousands of workers not only in the industry but outside of it are thrown into skimping and starving; when the nation is made to suffer the shame of Herrin and rampant crime that has followed in train of strikes—then some examination of our industrial sanity is called for.

Two Problems Requiring Constructive Solutions

There are two distinct lines of problems for which constructive solutions are needed: employer-employee relationship and economic reorganization of the industry.

I believe such a commission would find that collective bargaining, conciliation and arbitration upon their present basis of organization have in sequence broken down in this industry. In this connection if we examine the inside workings of this recent strike we will find situations new in industrial relations. Under freedom from the restraint of trade laws the workers' organizations have grown in strength, solidarity and devotion; they have shown able leadership, whereas the organization of employers for the purpose of collective bargaining has been to a large degree destroyed by the action of these very laws. Without entering into the history or rights or wrongs of this phase, the bare fact exists: That the recent agreement in the bituminous industry was determined by only 15 per cent of the employers, and this minority's decision controlled the whole.

The federal laws on conciliation have failed to obtain any results for years. The conception of arbitration is a settlement based on mutual agreement to abide by the decision of a third party, but this is now refused "on principle," for in this industry the workers consider that arbitration always results in compromise and that this is compromise with their bread and butter.

Workers have a right to organize to protect and improve wages and conditions of labor. They have a right to collective bargaining. They have a right to strike. They have a right to refuse to join such organizations. They have a right to work without intimidation and assault. Employers have a right to refuse to recognize such organizations. They have a right to lockout. They have a right to keep open shop. No one seriously denies any of these rights, but a lot of people are overlooking a superior right. That is the right of the public to a continuous supply of its vital necessities and services upon terms fair to the employer and employee. When these various rights infringe upon the public right, then the dominant right is public right.

Aside from employee relationships, most of the economic demoralization lies in the bituminous, as distinguished from the anthracite, industry, and my discussion hereafter refers to bituminous alone. This industry, indeed, functions very badly. Some state glibly that it will work itself out if left alone. But it must be borne in mind that it has not been left alone in the past, and the present situation is in large degree due to legislative interference. The control of combinations among operators, without such restraint among employees, the rules of artificial car distribution, the state legislation of various sorts, and other acts, have a great responsibility for the present condition. I am not here questioning the necessity of these measures, but their influence in the situation must not be overlooked, and they must be either supplemented or amended by wise provisions, if we are to have coal peace.

The perpetual labor difficulties are but one of the inevitable byproducts of this poor organization. Labor is struggling on one side to set up remuneration based on such days' pay, and such piece-work rates, as will give a standard of living from 60 per cent of time employed. Labor is thus honeycombed with the worst of stimulants to unrest—insecurity of employment. At the same time, men who have the opportunity to work full time in regularly operating mines earn returns far above the average income of our most prosperous farmers and other workers. There can be no solution either to the operators or to the workers as long as this condition continues.

The largest contributor to overexpansion of the industry is now the almost regular biennial quarrel, with its undue prior demand for coal and its subsequent shortage with temporary high profits. Beyond this the non-union mines in the South are gradually causing the industry to migrate from the North to the South, with consequent overequipment in the North.

Intermittent operation also arises in the chronic annual shortage of railway cars because a sufficient car supply for the short-peak period is economically impossible to the railways. A bad system of distribution of cars to mines by the railways contributes also.

Should Earnestly Consider Co-operative Schemes

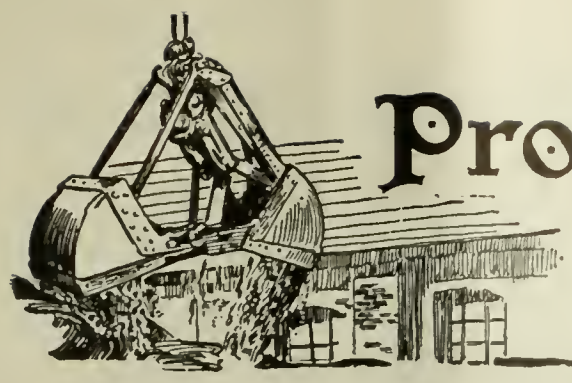
A contributing remedy that will need the most earnest consideration is the possibility of permitting the co-operative system of marketing developed by the farmers to be applied by such mines as wish to adopt it, under circumstances that would assure competitive conditions. Such an arrangement would decrease distribution costs, would give more regular flow to orders, would get better car distribution, would decrease transportation, would enable the laying down of coal in storage at points of consumption, and would consequently give more regular operation with reduced working costs.

It has also been proposed, although I have doubt as to practicability, that there should be a penalty in higher wages for short-time employment. Others propose a basic wage with a participation in the realized price of coal.

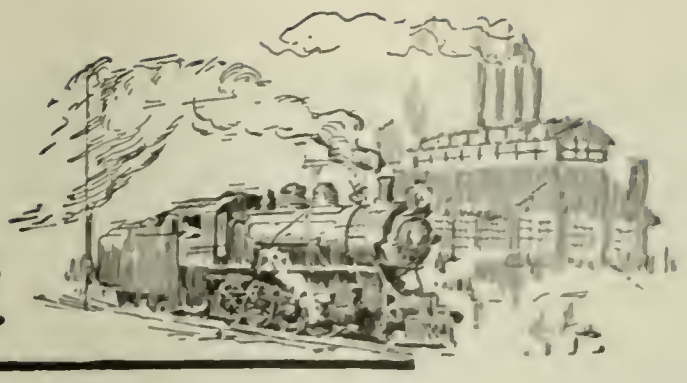
I recognize that stabilization of the industry, or anything that lends stability to the industry, is opposed by a small minority of speculative operators who use the periodically disturbed production to reap a recurrent harvest. It would be opposed on the other side by some of the more narrow-minded labor leaders who contend that their object in all industry is to reduce the number of hours of actual labor to some minor fraction of the whole year, or whose ambition is to drive the nation to socialism in desperation for coal, or who deny the public right to any voice. However, I believe that the constructive men on both sides are in full agreement that we must have a broader and better solution than results from the truces of the past few years.

These periodic wars in the industry are, therefore, in part symptoms of a disease. But, before we treat this disease we must have a more accurate diagnosis. We must have adequate, accurate information from which to weigh the different causes. We must be able to apply to all the test of fact. From such an understanding we should be able to return this industry to sanity. The proposed commission has the greatest opportunity for constructive work.

The public demands results; it is sick and weary of periodic warfare and futile attempts at solution.



Production and the Market



Weekly Review

UNION mined coal is on the market in quantity. Heavier receipts and offerings have softened spot prices in the East. Markets supplied by non-union fields have registered but little decrease in prices and in some cases have shown a slight upturn. So heavily have the facilities of the roads originating non-union coal been taxed in the last five months that the movement of cars and consequent production has been considerably affected.

Coal Age Index of spot prices of bituminous coal rallied slightly, standing at 427 on Monday, Sept. 11, 7 points above last week. The average price was $5.17, as compared with $5.08 in the preceding week.

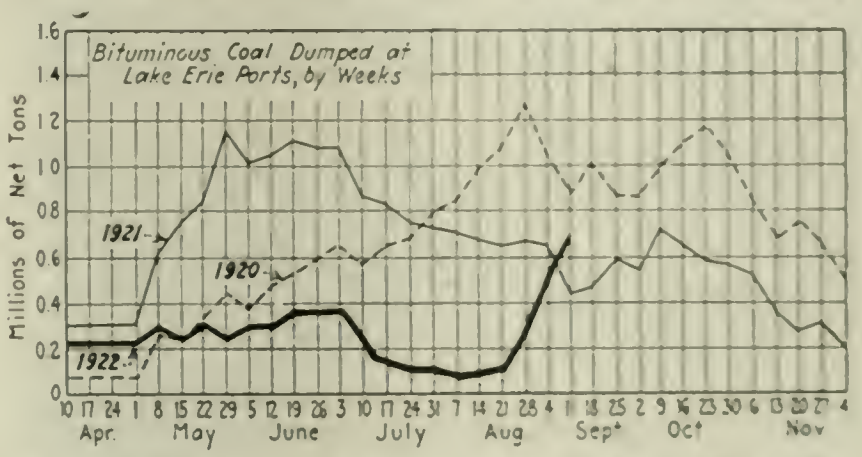
Consumers are floundering around in the market, some trying to cover on contract but many being tempted to delay buying a little longer in the hope that prices may slip down another notch or two. It is the old story of curtailed demand on a falling market with only the inevitable end in view. Delayed demand following the prolonged strike will shortly push prices up as fast as they have in recent weeks declined.

Supply of Surplus Cars Dwindling

The present rate of coal loadings is fast exhausting the supply of surplus cars. Surplus coal cars numbered 111,521 on Aug. 15, prior to general resumption of mining. On Aug. 23, a week later, they were down to 96,405 cars. Resumption of hard-coal mining is causing an additional drain on car supply.

Domestic sizes are already in strong demand and Ohio, West Virginia and some other Middle Western domestic coals advanced sharply last week. Lake buyers, on the other hand, while clamoring for tonnage, disappear at the slightest price advance. Steam coal is heavy at New England, where receipts via water from Hampton Roads and Great Britain have made active canvassing again necessary to dispose of tonnage. North Atlantic centers are in better supply and prices are easier, as is the case in that section of the country east of Pittsburgh and Cleveland. Illinois and Indiana fields are hard hit by car shortage but comparatively light production is so far meeting with light demand.

Welcoming the news of the resumption of anchracite mining the consumer is hopeful that he may not have to resort to the use of much substitute fuel. Dealers,



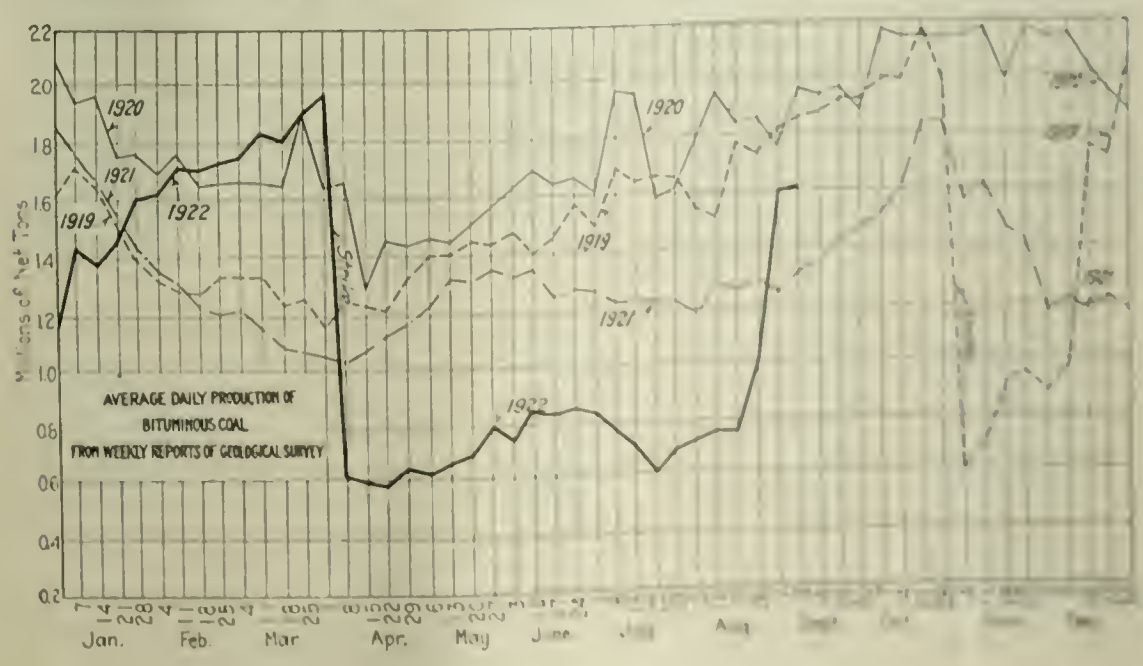
however, are advising the purchase of such fuel to last through October, when it is hoped that small lots of hard coal will again be available.

The Connellsville labor situation is not clearing as fast as was expected. Beehive coke prices are lower but the supply is not heavy.

Bituminous

"Instead of the 9,400,000 tons suggested by the first report, final returns on soft-coal production show only 9,142,000 tons in the week ended Sept. 2," says the Geological Survey. "The record of the week was awaited with interest as an indication of the supply to be expected after general resumption of mining under the Cleveland agreement. Because of the Labor Day holiday, the output for last week can hardly exceed 8,700,000 tons.

"The trend of output day by day is shown by the following statement of cars of bituminous coal loaded. On Labor Day 10,021 cars were loaded by the non-union mines, confirming the experience of other years that the day counts for a



Estimates of Production

(Net Tons)

BITUMINOUS

Week ended	1921	1922
Aug. 19		
Aug. 26 [a]		
Sept. 2 [a]		
Daily average		
Calendar year		
Daily av. cal. yr.		

ANTHRACITE

Aug. 19		
Aug. 26		
Sept. 2 [a]		

COKE

Aug. 26		
Sept. 2 [a]		
Calendar year		

(a) Subject to revision. (b) Revised figure last issued.

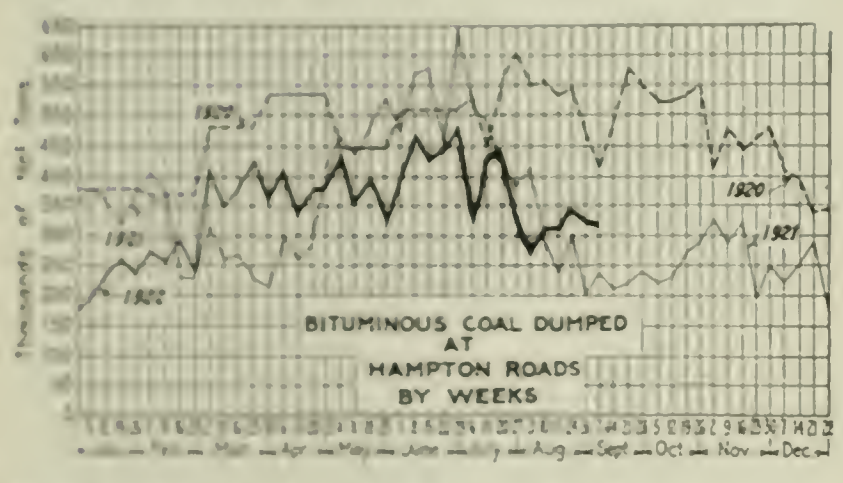
third of an ordinary working day. The double holiday on Sunday and Monday increased the number of empty cars available for placement on Tuesday, and on that day 33,085 cars were loaded, the largest number on any day since last March. On Wednesday, however, loadings dropped to 30,652 cars and on Thursday to 28,239 cars."

DAILY LOADINGS DURING THE STRIKE

	1st Week	18th Week	19th Week	20th Week	21st Week	22nd Week	23rd Week
Monday	11,643	13,102	26,229	15,781	18,681	18,662	10,021
Tuesday	11,819	11,446	13,238	13,052	17,486	28,197	33,085
Wednesday	11,417	12,447	13,558	12,515	18,124	29,641	30,652
Thursday	11,899	12,307	14,222	14,121	15,568	24,687	
Friday	12,296	13,444	14,535	15,718	22,882	27,040	
Saturday	8,855	12,481	11,881	13,524	23,078	25,517	

The all-rail movement to New England was 1,232 cars during the week ended Sept. 2, as compared with 908 cars in the preceding week. Central Pennsylvania grades are offering freely in that market but are slow sellers because of the heavy receipts of water-borne coal from Great Britain and Hampton Roads.

Dumpings at the Roads for all accounts were 315,628 net tons, a slight decline when compared with previous week's figure of 329,695 tons. Receipts at the piers are slowly gaining, despite the heavy Western movement of coal from



West Virginia fields. Prices at the Roads are softer, as coastwise markets are now obtaining ample supplies.

The Federal Fuel Distributor's orders directing coal to the Lakes is reflected in the largest tonnage of the year during the week ended Sept. 11. According to the Ore & Coal Exchange, 623,508 net tons were dumped—594,772 tons cargo and 28,736 tons vessel fuel—as compared with 463,242 tons in the preceding week. The total movement for the season is now 6,300,803 tons; in the corresponding period last year 17,193,280 tons was dumped.

Movement of soft coal up the Lakes will not reach a maximum until the Northwest really wants the coal. At present a buyers' strike is forcing dock operators to stay out of the market.

In the appended table weekly shipments of bituminous coal are brought up to date from the week ended July 15, as published in *Coal Age* July 27, 1922.

ANTHRACITE

It is estimated that full production of anthracite cannot be approached this week or even next, at the very earliest. During the week ended Sept. 2 the output was confined to 38,000 net tons of steam coals dredged from the rivers. This river coal has fallen from grace with the prospect of an early supply of fresh-mined steam sizes. The heavier bituminous coal production also has reduced its sale.

COKE

Production of beehive coke was 142,000 net tons during the week ended Sept. 2, as compared with 117,000 tons in the preceding week.

Shortage of coal cut deeply into the production of byproduct coke during August. The total output was 1,794,000 net tons, a decrease when compared with July of 692,000 tons, or 28 per cent. The average daily production in August was 57,858 tons as against 80,182 in July. The ovens operated at 48.9 per cent, or less than half of capacity. Of the 71 plants, 57 were active and 14 idle.

MONTHLY OUTPUT OF BYPRODUCT AND BEEHIVE COKE (a)

	(Net Tons) Byproduct Coke	Beehive Coke	Total
1917 Monthly average	1,870,000	2,764,000	4,634,000
1918 Monthly average	2,166,000	2,540,000	4,706,000
1919 Monthly average	2,095,000	1,638,000	3,733,000
1920 Monthly average	2,565,000	1,748,000	4,313,000
1921 Monthly average	1,660,000	463,000	2,123,000
May, 1922	2,537,000	432,000	2,969,000
June, 1922	2,580,000	458,000	3,038,000
July, 1922	2,486,000	450,000	2,936,000
Aug., 1922	1,794,000	539,000	2,333,000

a) Excludes screenings and breeze.

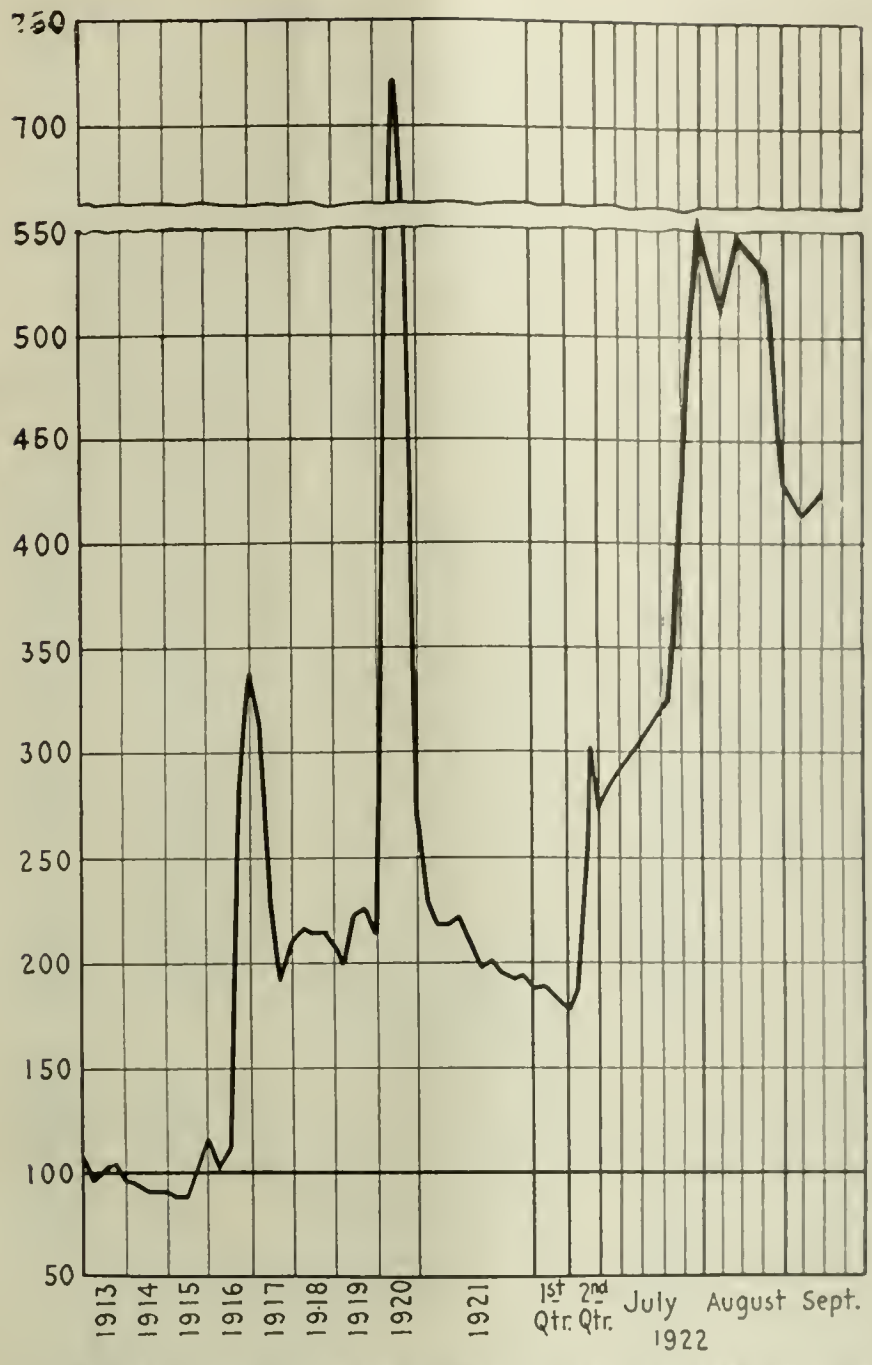
To produce the coke manufactured in August required 3,427,000 tons of coal, of which 2,577,000 tons was used in byproduct ovens and 850,000 tons in beehive ovens. The cut in consumption in byproduct plants was nearly 1,000,000 tons as compared with July.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Aug. 14 1922	Aug. 28 1922	Sept. 5 1922	Sept. 11 1922†
[illegible]	Columbus	$6 15	$6 25	$6 10	**$6 00@$6.75**
[illegible]	Columbus	5 75	5 75	5 50	**5 00@ 6 50**
[illegible]	Columbus	5 65	5 60	5 35	**5 00@ 6 25**
[illegible]	Chicago	5 85	6 00	6 40	*4 75@ 7.50*
[illegible]	Chicago	5 75	5 75	6 25	*4 50@ 7 50*
[illegible]	Cincinnati	5 60	5 75	5 60	**6 00@ 8 00**
[illegible]	Cincinnati	5 50	5 25	4 75	**5 00@ 6 00**
[illegible]	Cincinnati	5 40	5 15	4 40	**5 00@ 6 00**
[illegible]	Boston	10 15	9 00	9 00	*8 25@ 8.50*
Cumberland mine run	Boston	8 [illegible]	5 85	5 00	*4 50@* 5 50
Cambria mine run	Boston	9 00	6 25	6 00	*4 50@ 6 50*
[illegible]	Boston	8 40	6 00	5 25	*4 50@ 5 75*
Pool 9 (Upper Low Vol.)	New York		6 35	5 75	*5 00@ 5 50*
Pool 9 (Upper Low Vol.)	Philadelphia	8 25	7 25	5 85	*5 50@ 5 75*
Pool 9 (Upper Low Vol.)	Baltimore	7 50	6 25	6 25	*6 00@ 6 25*
Pool 10 (Cent. Low Vol.)	New York	8 15	5 85	5 35	*4 00@ 5 00*
Pool 10 (Cent. Low Vol.)	Philadelphia	8 [illegible]	7 00	5 60	*5 25@ 5 40*
Pool 10 (Cent. Low Vol.)	Baltimore	7 50	5 85	5 85	*5 50@ 6 00*
Pool 11 (Low Vol.)	New York	7 65	5 15	5 10	*4 25@ 4 50*
Pool 11 (Low Vol.)	Philadelphia	7 85	6 50	5 10	*4 75@ 5 00*
Pool 11 (Low Vol.)	Baltimore	7 10	5 50	5 35	*4 75@ 5 00*
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	7 60		5 15	5 00@ 5 35
Pool 54-64 (Gas and St.)	Philadelphia	7 75	6 00	4 75	*4 [illegible]@ 4 75*
Pool 54-64 (Gas and St.)	Baltimore	7 50	5 60	5 25	*4 [illegible]@ 4 75*
Pittsburgh mine run (R.)	Pittsburgh			4 50	*4 50@ 4 75*
Kanawha lump	Columbus	5 [illegible]	6 [illegible]	5 85	**6 00@ 6 75**
Kanawha mine run	Columbus	5 [illegible]	5 60	5 60	**5 75@ 6 25**
Kanawha screenings	Columbus	5 40	5 35	5 35	**5 50@ 6 00**
W. Va. Splint lump	Cincinnati	5 60	5 35	5 35	**6 00@ 8 00**
W. Va. Gas lump	Cincinnati	5 60	5 35	5 35	**6 00@ 8 00**
W. Va. mine run	Cincinnati	5 [illegible]	5 [illegible]	5 35	**5 25@ 6 00**
W. Va. screenings	Cincinnati	4 [illegible]	4 85	4 85	**5 25@ 5 50**
Hocking lump	Columbus	6 15	6 00	6 25	6 00@ 6 50
Hocking mine run	Columbus	5 75	5 85	5 25	**5 25@ 6 00**
Hocking screenings	Columbus	5 35	5 60	5 25	**5 00@ 5 75**
Pitts. No. 8 lump	Cleveland	7 25	7 75	5 50	**5 50@ 6 00**
Pitts. No. 8 mine run	Cleveland	7 25	5 25	5 25	*5 [illegible]@ 5 75*
Pitts. No. 8 screenings	Cleveland	7 25	5 25	5 25	*4 [illegible]@ 5 25*

Midwest	Market Quoted	Aug. 14 1922	Aug. 28 1922	Sept. 5 1922	Sept. 11 1922†
Franklin, Ill. lump	Chicago		$5.05	$5 05	**$5 25@$5 50**
Franklin, Ill. mine run	Chicago		4.65	4 65	**4.50@ 5.00**
Franklin, Ill. screenings	Chicago		4.25	4 25	**4.25@ 4 50**
Central, Ill. lump	Chicago		5 10	4.95	4 90@ 5 00
Central, Ill. mine run	Chicago		4 65	4 50	4 25@ 4 75
Central, Ill. screenings	Chicago		4 45	4 30	4 15@ 4 50
Ind. 4th Vein lump	Chicago		5.25	5.25	5.00@ 5.50
Ind. 4th Vein mine run	Chicago		4.85	4.85	4 65@ 5.00
Ind. 4th Vein screenings	Chicago		4.75	4.75	*4.50@ 4.75*
Ind. 5th Vein lump	Chicago		5.10	5 10	4.90@ 5 25
Ind. 5th Vein mine run	Chicago		4 65	4 65	4 50@ 4 75
Ind. 5th Vein screenings	Chicago		4 40	4.40	4 25@ 4.50
Standard lump	St. Louis		3.90	4.65	4.25@ 5.00
Standard mine run	St. Louis		3.40	3.90	*2.25@ 3.50*
Standard screenings	St. Louis		2 90	3.75	*3.00@ 3.75*
West Ky. lump	Louisville	$6.35	5 00	4 25	**4 50@ 5 00**
West Ky. mine run	Louisville	6 25	5.00	4.25	4 00@ 4.50
West Ky. screenings	Louisville	6.10	5.00	4.25	*3.75@ 4 25*
West Ky. lump	Chicago	7.15	4.25	4.25	3.50@ 5 00
West Ky. mine run	Chicago	7.10	4 25	4.25	3.50@ 5 00
South and Southwest					
Big Seam lump	Birmingham	4 75	4 75	4.75	*3 45@ 4.50*
Big Seam mine run	Birmingham	3.85	4.50	4 00	*2.60@ 4.00*
Big Seam (washed)	Birmingham	4 00	4.50	4 00	*3.10@ 4.50*
S. E. Ky. lump	Chicago	5 85	4.75	4 25	3.50@ 5.00
S. E. Ky. mine run	Chicago	5 75	4.75	4.25	3.50@ 5.00
S. E. Ky. lump	Louisville	5 85	5.25	5 00	**6.00@ 6.50**
S. E. Ky. mine run	Louisville	5 75	5.10	5.90	**5.25@ 6.00**
S. E. Ky. screenings	Louisville	5 60	4 75	4.90	**5 00@ 5.50**
S. E. Ky. lump	Cincinnati	5 60	5 35	5 50	**6 00@ 8.00**
S. E. Ky. mine run	Cincinnati	5 50	5.25	5.25	**5 00@ 6 00**
S. E. Ky. screenings	Cincinnati	5 35	4.85	4.85	**5.00@ 5 75**
Kansas lump	Kansas City	6 00	6.00	6.00	6.00
Kansas mine run	Kansas City	6.00	5.00	5.00	5 00
Kansas screenings	Kansas City	6.00	2 85	2.60	**2.50@ 3 00**

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.
NOTE—Smokeless prices now include New River and Pocahontas.



Coal Age Indeex 427, Week of Sept. 11, 1922. Average spot price for same period $5.17. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the total output of the United States, weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. (Pittsburgh District prices not included in figures for last week.)

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr 1, 1922 Inclusive	Apr. 3 to Aug 26, 1922 Inclusive	Week Ended Aug 26
U. S. Total	45 6	55 7	....	. .
Non-Union				
Alabama	63 5	64 6	78 9	86 4
Somerset County	55 5	74 9	46 6	54 9
Panhandle, W. Va.	55 3	51 3	46 0	67 7
Westmoreland	54 9	58 8	84 1	88 0
Virginia	54 8	59 9	72 7	54 6
Harlan	53 3	54 8	38 5	10 4
Hazard	51 7	58 4	46 7	27 2
Pocahontas	49 8	60 0	68 0	61 9
Tug River	48.1	63 7	71 3	52 5
Logan	47.6	61.1	57 6	26 5
Cumberland-Piedmont	46 6	50 6	19 0	31 5
Winding Gulf	45 7	64 3	60 3	36 3
Kenova-Thacker	38 2	54 3	70 5	65 8
N. E. Kentucky	32 9	47 7	46 3	31 1
New River‡	24.3	37 9	30 9	34 5
Union				
Oklahoma	63 9	59 6	14 8	21 0
Iowa	57 4	78 4	1 1	24 1
Ohio, Eastern	52 6	46 6	(a)	(a)
Missouri	50 7	66 8	3 8	20 0
Illinois	44 8	54 5	(a)	(a)
Kansas	42 0	54 9	16 8	24 0
Indiana	41 4	53 8	(a)	(a)
Pittsburgh †	41 2	39 8	0 0	0 0
Central Pennsylvania	39 1	50 2	13 8	48 4
Fairmont	35 3	44 0	7 0	51 4
Western Kentucky	32 5	37 7	60 9	58 7
Pittsburgh *	30.4	31 9	0 0	0 0
Kanawha	26.0	13 0	6 9	18 3
Ohio, southern	22 9	24 3	(a)	(a)

* Rail and river mines combined
† Rail mines
‡ Union in 1921, non-union in 1922
(a) Note—Operations began during week Survey does not report percentage of operation.

Car Loadings and Surplusages

Cars loaded:	All Cars	Coal Cars
Week ended Aug. 26	890,838	110,039
Previous week	856,219	80,959
Same week a year ago	526,881	129,442
Surplus cars:		
Aug. 23, 1922	120,961	96,485
Aug. 15, 1922	140,253	111,521
Same date a year ago	270,024	136,981

ESTIMATED MONTHLY CONSUMPTION OF COAL FOR MANUFACTURE OF COKE

(Net Tons)

	Consumed in Byproduct Ovens	Consumed in Beehive Ovens	Total Coal Consumed
1917 Monthly average	2,625,000	4,354,000	6,979,000
1918 Monthly average	3,072,000	4,014,000	7,086,000
1919 Monthly average	2,988,000	2,478,000	5,466,000
1920 Monthly average	3,684,000	2,665,000	6,349,000
1921 Monthly average	2,385,000 a	731,000 a	3,116,000
May, 1922	3,645,000 a	681,000 a	4,326,000
June, 1922	3,707,000 a	722,000 a	4,429,000
July, 1922	3,571,000 a	710,000 a	4,281,000
Aug., 1922	2,577,000 a	850,000 a	3,427,000

(a) Assuming a yield in merchantable coke of 69 6 per cent of the coal charged in by-product ovens, and 63 4 per cent in beehive ovens.

Railroads Now Most Important Feature In National Coal Situation

With all the advantages of a large surplus of cars, the railroads did not transport coal during the period that the surplus was available at a rate sufficient to tranquillize the market. If only slightly in excess of 9,000,000 tons was transported during the week ended Sept. 2, for instance, it is regarded as a good indication that the railroads will not be able to come anywhere near that figure again while the shopmen's strike continues. On the other hand, it is apparent that enough coal can be transported to meet the necessities for immediate consumption, which will mean that careful attention must be given to distribution until the railroads can handle twelve to thirteen million tons a week.

The Attorney General's injunction has been the source of constant cloakroom discussion on Capitol Hill since the day of its issuance. As Congress is composed so largely of lawyers, the subject is one in which all members are taking a keen personal interest. Little has been said about it on the floor of either house, largely on the ground that discussion of the subject in Congress prior to action on the request for the injunction might be interpreted as an untoward attempt to influence the judiciary.

While it is apparent that the majority of the members in each house, regardless of party, believe the Attorney General's action is entirely justifiable, there are some prominent figures in Congress not particularly friendly to unionism who regard the injunction as smacking of the fifteenth century. To attempt to restrain American citizens from expressing sympathy for the strikers or from holding peaceable meetings goes too far, they think. Such drastic restraints as are proposed in the injunction would be in a better setting in Russia, they contend. They call attention to the fact that the situation is quite different from that of 1894, when President Cleveland made use of the injunction weapon. At that time there had been a general resort to violence and lawlessness. In the present strike there is every reason to believe, they say, that 95 per cent of the strikers are entirely innocent of sabotage.

On the other hand it is pointed out that the government has been more than patient since July 1. It has been patient when every day's prolongation of the strike, with its attendant lawlessness, interruption of the mails and interstate commerce, was costing the majority of the people of the United States a stupendous sum, to say nothing of the inconveniences and the menace to the public health. To temporize with the situation longer would be to admit that a minority element can dominate the government. The radical proposals to call a general strike and to impeach the Attorney General and Judge Wilkerson have done much to bring congressional and public support to the Attorney General.

P. W.

Foreign Market And Export News

British Prices Slip with Waning American Demand; Germany Seeks Coal

British coals are feeling the lessening of the tension in the United States. Orders from North America are dwindling, being chiefly from Canadian sources. Prices are slipping downward again. It is estimated that by the end of September, 1,500,000 tons will have been shipped to fill the strike gap and that the movement, in smaller volume, will continue throughout 1922. Germany is also inquiring for coal, but her financial situation is deterring dealings.

Production during the week ended Aug. 26 was 5,148,000 gross tons, according to a cable to *Coal Age*. This is 10,000 tons less than the preceding week's output.

Owing to lessened demand for tonnage, freights from the Tyne to the United States have been reduced and ship-owners are accepting 9s. a ton.

Hampton Roads Pier Situation

	—Week Ended— Aug. 31	Sept. 7
N. & W. Piers, Lamberts Point		
Cars on hand	1,462	624
Tons on hand	82,943	82,335
Tons dumped	137,733	143,785
Tonnage waiting	28,200	119,950
Virginian Ry. Piers, Sewalls Point		
Cars on hand	620	1,964
Tons on hand	34,710	61,650
Tons dumped	79,819	78,665
Tonnage waiting	48,199	59,011
C. & O. Piers, Newport News		
Cars on hand	156	472
Tons on hand	26,400	23,000
Tons dumped	56,920	67,361
Tonnage waiting	19,400	7,420

Coal Paragraphs from Foreign Lands

GERMANY—Production in the Ruhr district during the week ended Aug. 26 was 1,813,000 metric tons, according to a cable to *Coal Age*, as compared with 1,813,000 tons in the preceding week.

ITALY—The price of Cardiff steam coal is unchanged at 42s. 3d., according to a cable to *Coal Age*.

French Reduce Heavy Mine Stocks

The situation of the coal mines of the Nord and Pas-de-Calais remains comparatively favorable. Stocks are being reduced, although still running very high. Almost nothing came out of the offers which were made by French coal mines to American producers.

In July, France and Luxemburg received from Germany on reparation account the following: France, 363,473 tons of coal, of which 162,997 tons carried by sea; Luxemburg, 4,969 tons. France received 403,256 tons of coke; Luxemburg, 131,471 tons.

The adjusted price of German reparation coke delivered to French blast-furnaces by the Société des Cokes de Hauts-Fourneaux has been maintained for September at its previous limit of 97 fr. at the Franco-German frontier. On the other hand, from Aug. 1 to Oct. 31, French mines of the Nord and Pas-de-Calais have agreed to sell to the Société des Cokes de Hauts-Fourneaux, for pooling and distributing purposes, metallurgical coke at 95 fr. and coking slack at 67 fr., at mines.

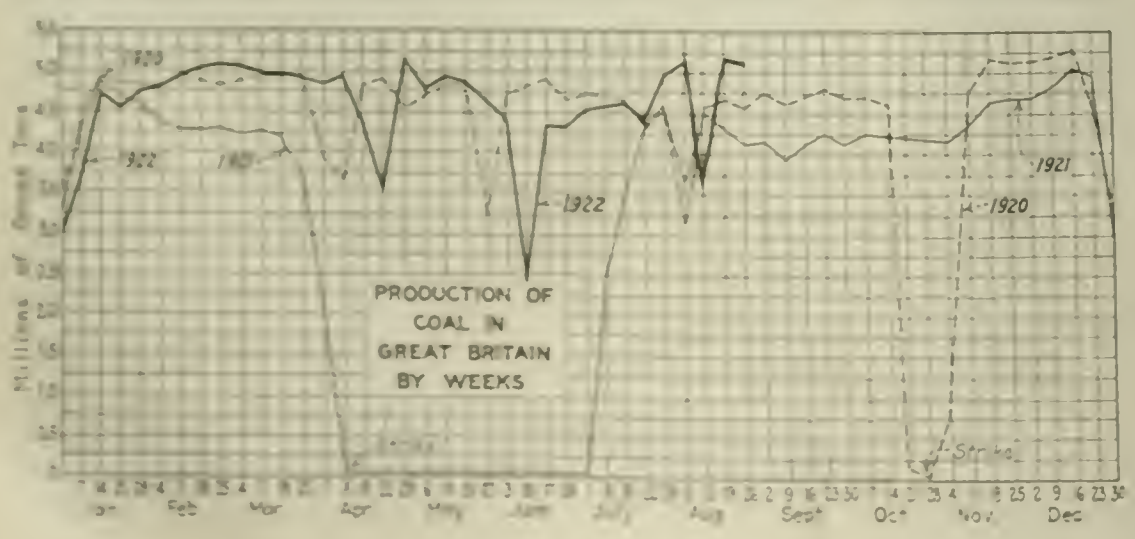
FRENCH IMPORTS IN JUNE AND YEAR TO DATE

	June, 1922 (Metric Tons)	Jan.-June (Metric Tons)
Coal		
Sarre	356,600	1,731,133
Great Britain	865,144	5,966,440
Belgium	227,950	1,247,868
United States	5,755	19,135
Germany	320,496	1,972,472
Netherlands	52,389	394,821
Other countries	304	3,576
Total	1,828,938	11,335,444
Coke		
Great Britain	5,181	36,101
Belgium	52,942	264,693
Germany	344,591	2,045,761
Other countries	25,119	81,950
Total	427,833	2,428,505
Briquets		
Great Britain	17,267	68,786
Belgium	66,623	423,201
Germany	20,889	265,134
Other countries	505	1,972
	105,284	759,093
FRENCH EXPORTS IN JUNE		
Coal	130,671	621,136
Coke	20,752	211,542
Briquets	2,038	49,299

Prices Drop at Hampton Roads

No change was apparent in the situation last week except a slight reduction in prices. The outlook has not improved much from any angle, dealers expecting another price increase soon. Ships were getting bunkers fairly regularly. Movement of coal to port was about 50 per cent of normal, with railroad equipment improving.

The spot market was being subjected to the natural frenzied activity, because of the scarcity of coal in spite of the downward market. All piers showed an activity similar to that of the previous week. Receipts are slowly gaining.



U. S. July Exports and Imports

(GROSS TONS)

	July 1921	July 1922
Exports, bituminous coal		
By rail to		
Canada	1,308,973	290,008
Mexico	14,499	6,415
Total	1,323,472	296,423
By vessel to		
West Indies	14,270	8,079
Panama	18,149	7,025
Cuba	33,282	22,500
Total	65,701	37,604
France	110,648	
Italy	239,187	7,476
Netherlands	83,221	
Other Europe	32,246	
Total Europe	465,302	7,476
Argentine	97,512	7,576
Brazil	27,525	12,544
Chile	1,523	
Uruguay	24,333	
Total So. America	150,893	20,120
Egypt	36,904	
Other countries	607,627	4,664
Total bituminous exports	2,649,989	366,287
Total anthracite exports	388,641	16,698
Total coke exports	19,129	27,686
Imports, bituminous coal		
Imported from:		
United Kingdom		6,066
Canada	79,542	166,141
Japan	6,150	9,260
Australia	2,059	6,972
Other countries	8,449	1,501
Total bituminous imports	96,200	189,940
Total anthracite imports	357	4,263
Total coke imports	729	6,760

Pier and Bunker Prices, Gross Tons

PIERS

	Sept. 2	Sept. 9†
Pool 10, Philadelphia	$9.50@10.00	*$9.25@$9.75*
Pool 11, Philadelphia	8.75@9.00	*8.50@8.75*
Pool 10, New York		9.00@9.25
Pool 11, New York	10.00@11.00	*8.50@8.75*
Pool 1, Hamp. Roads	8.00@9.50	*8.50@8.75*
Pools 5-6-7 Hamp Rds.	8.00@9.50	*8.50@8.75*
Pool 2, Hamp. Rds.	8.00@9.50	*8.50@8.75*

BUNKERS

Pool 10, Philadelphia	$9.75@10.25	*$9.50@10.00*
Pool 11, Philadelphia	9.00@9.50	*8.75@9.25*
Pool 10, New York		9.25@9.60
Pool 11, New York	10.30@11.30	*8.75@9.25*
Pool 1, Hamp. Rds.	8.00@9.50	*8.50@8.75*
Pool 2, Hamp. Rds.	8.00@9.50	*8.50@8.75*
Welsh, Gibraltar	40s. 6d. f.o.b.	40s. 6d. f.o.b.
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	43s. f.o.b.	43s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	42s. t.i.b.
Welsh, Algiers	38s. f.o.b.	38s. f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b.	65s. f.o.b.
Welsh, Madeira	43s. f.a.s.	43s. f.a.s.
Welsh, Teneriffe	41s. f.a.s.	41s. f.a.s.
Welsh, Malta	44s. 6d. f.o.b.	44s. 6d. f.o.b.
Welsh, Las Palmas	41s. f.a.s.	41s. f.a.s.
Welsh, Naples	42s. f.o.b.	42s. f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore	52s. 6d. t.i.b.	52s. 6d. t.i.b.
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Welsh, St. Michaels	50s. t.i.b.	50s. t.i.b.
Welsh, Alexandria	42s. f.o.b.	43s. f.o.b.
Welsh, Port Said	49s. f.o.b.	49s. f.o.b.
Welsh, Buenos Aires	50s. f.o.b.	50s. f.o.b.
Durham, Antwerp	30s. 6d. t.i.b.	30s. 6d. t.i.b.
Durham, Hamburg	26s. f.o.b.	26s. f.o.b.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	Sept. 2	Sept. 9†
Admiralty, large	30s.@31s.	*29s.*
Steam, smalls	22s.@22s.6d.	*19s.*
Newcastle:		
Best steams	25s.@26s.	*24s.6d.@25s*
Best gas	24s.	24s.
Best bunkers	23s.6d.@24s.	*21s. 6d.@22s.*

†Advances over previous week shown in **heavy type**; declines in *italics*.

North Atlantic

Will Consumer Seek Cover Or Gamble on Lower Prices?

Buying Is Spasmodic, Due to Wavering in Policy—Complaints Heard of Car Shortage, Especially on B. & O. —Few Orders for British Coal.

Many complaints of car shortage are heard. It is reported that conditions are especially bad on the B. & O. The effect of this lost time is not yet reflected in the larger markets, where heavier receipts have softened spot prices. Buying is spasmodic. Consumers appear to be floundering between a desire to get under cover and the temptation to delay purchases in the hope that prices will drop further.

Very few orders for British coals are being placed. Cargoes are arriving daily but the receipts are now mainly on old orders for railroads and public utilities. It is likely that deliveries against these orders will continue throughout the balance of the year.

PHILADELPHIA

Production grows, and better shipments are coming in, although not anywhere near normal yet. The real difficulty is car supply.

Service on the Pennsylvania is good, with a car supply up to 75 per cent and movement of loaded cars quite prompt. Much the same condition applies to shipments coming off the N. Y. C. and the Western Maryland. There does not seem any likelihood, however, of an improved car supply when it is considered that a great number of cars in the bituminous coal trade are fast being withdrawn for anthracite loadings. It is on the B. & O. where the real trouble is.

There is very little active solicitation by houses for orders, as every shipper already has far more orders on the books than he will be able to ship for several weeks.

Prices continue to fluctuate unevenly, with just a slight downward tendency, and while some houses report firmness or even a slight upturn in quotations, it is not believed that another forward movement has as yet developed.

Each day now sees the arrival of one or more cargoes of British coal, but it is not likely that any new business of consequence is being closed.

CENTRAL PENNSYLVANIA

Production is steadily increasing. The forces in most of the mines are being recruited to something near normal. Production is now running around 3,000 cars daily, something like 500 cars short of what is considered normal.

There are still some local strikes resulting from one cause or another, while the non-union operators do not, as a rule, have a full complement of men. Production for August was 33,129 cars, as compared with 14,079 in July.

Some operators, whose miners drifted away during the period of the strike, have not been able to get them all back again, so that it will be some time befor the normal output is reached.

BALTIMORE

An increasing volume of shipments have brought a decline in prices for steam and gas coals at this point. Demand, however, has prevented anything like a rush drop and there is now every indication that the present level is likely to be retained, at least for some weeks.

While there is practically no coal of Pools 1 or 71 now offering, and Pool 9 is also scarce in supply, good coals such as run to Pool 10 can be had at $5.50@$6. There is now considerable Pool 11 on the market, offering at $4.75@$5. As the market supply increases there is a let-up in the rush for any kind of coal offering. Gas coals are not changing hands as freely as steam varieties.

The above situation applies, despite the fact that the State survey conducted under the auspices of the Maryland Fuel Distribution Committee showed that a serious shortage of coal exists in nearly every section. It is probable, therefore, that the Maryland committee will be kept in service by Governor Ritchie for some time and that a representative will be named in each of the twenty-three counties to keep the committee informed so that it can act to secure coal in emergencies.

NEW YORK

There is no lack of coal at the local ports, 1,289 cars being reported on Sept. 8, although most of it is Pool 11 or coal of that quality. In addition there were small free tonnages of both British and Southern coals which were offered at higher quotations than coals regularly offered here.

Buying was spasmodic. There were many inquiries, some of them for contracts for the "balance of the coal year." As a rule the small operators practically ignored the latter, preferring to take chances in the open market. The operators with large tonnages, however, were reported to have negotiated several contracts, some of which it was said were at figures ranging $4@$4.75.

The matter of car supply is already entering into the situation. Most complaints so far heard refer to shipments along the B. & O. and Pennsylvania. Conditions on the New York Central and the Western Maryland are said to be much better.

British coal is still being purchased by American firms but in much smaller lots. During the six days ended Sept. 9, twenty vessels carrying 125,899 tons arrived in New York harbor. With production of domestic coals increasing it was reported there were some cancellations of British shipments. Shipping Board officials do not believe any of their charters will be canceled unless by agreement. Toward the end of the week a couple of cargoes of British anthracite were offered to local buyers at $11.50, this harbor.

Buyers are of the opinion that quotations will gradually become lower and for that reason are holding off.

UPPER POTOMAC

Upper Potomac mines continue to increase production, which is now not far short of 40,000 tons a week, with some of the larger companies contributing heavily to the aggregate output as more men return to work. There are still a good many miners on strike however, insisting upon a recognition of the union. Transportation facilities are ample. In the Georges Creek region idleness still prevails, although there is a report in circulation that ten companies have signed an agreement with the union.

FAIRMONT

Trouble has been experienced by mines in securing enough cars to keep running. Most of the mine owners in northern West Virginia have signed the union agreement, but in several sections mines are still being operated on an open-shop basis, as for instance on the Charleston Division of the B. & O.

West

KANSAS CITY

All of the mines in the Southwest are in operation and some of them are already putting out record tonnage. From now on it looks like a question transportation.

Some steam contracts have been closed at $3 for 3-in. slack and purchasing agents are offering sales agents contracts at $2.50, but the opinion of the best-posted sales managers is that the price for steam coal will be higher and they are inclined to play the market.

One of the operating companies which has yards in Kansas City and other points is out with a new retail price list that is causing some concern as this list cuts the price of some grades $2 and $3. Prices are well maintained at the mines and are as follows: Kansas lump and nut, $6; mine run, $5; slack, $2.50@$3.

SALT LAKE CITY

The announcement of an increase of $1 a ton, retail, has caused a storm to break throughout Utah. Individuals and business organizations are lifting up their voices and are trying to find ways to curb the upturn of prices. During the days when the increase was merely prophesied, a Salt Lake City newspaper and an operator got into a dispute over the justice of the prevailing price of coal, ending in a racket in which the coal man withdrew his advertising contract, whereupon the newspaper told the story in large space and announced it "could not be bought."

Car shortage is already serious in this region, although the I.C.C. has promised relief. Demand for all sorts of coal is increasing.

Anthracite

Resumption at Mines Hailed, But Sales Are Not Brisk

Consumers Seem Confident Substitute Will Be Available, When Necessary —British Coal Pressed Into Breach —Price Announcement by Companies Awaited.

The resumption of mining is welcome news to the householder. Dealers are advising their customers to procure enough substitute fuel to last through October at least, as they realize the distribution problem that confronts them. The consumer, however, feels that there will be little difficulty in obtaining a substitute at the last moment, if necessary, and sales are not brisk. Some British fuel is being taken in for this purpose.

Price is still an open question, no announcement having been made by the companies. A few independent quotations are heard.

NEW YORK

With unfilled orders sufficient to keep them busy for several months retail dealers are anxious to have the mines resume. Since the announcement that an agreement had been reached and that only approval by the miners' convention was needed to send workers back into the mines there has not been so much heard about substituting bituminous coal for anthracite. In many instances the customers have been advised to "hold off" as sufficient anthracite would be available to keep them at least warm.

Prices have received considerable attention the past week but so far no announcement has come from the producers' offices. It is not expected, however, that the companies will make any considerable change in the price list of last spring, but it is possible that with the heavy demand for hard coals the independent operators will be able to get premiums.

Some small lots of washery chestnut and pea were offered here during the week but retail dealers were not buying at the prices quoted, claiming they could not sell the coal to their regular customers at reasonable prices.

A few retail dealers in the outskirts of Greater New York have small tonnages of pea and chestnut on hand which they continue to deliver.

BALTIMORE

Some consuming interests are urging upon the governor the necessity of having his fuel commission name a representative to go to the fields and check up on the Maryland allotment. Governor Ritchie has not indicated whether he considers such a service necessary and it seems doubtful that such a step will be taken, especially as the committee would have no powers to enforce shipment.

Consumers are being advised that they should lay in supplies of bituminous coal, at least for the months of October and November. A number of dealers are now selling English coal which continues to arrive. Some of the dealers continue giving their customers demonstrations of the good burning qualities of this Welsh coal. The price now runs $13.50@$14.50, delivered in cellars.

PHILADELPHIA

With close to two weeks taken out of the month there is going to be very much of a scramble for the limited tonnage that can be produced during the balance of September. The consumer demand grows more insistent each day.

There is still a meager quantity of pea obtainable at $11 a ton, delivered, but the yards have no stocks now of this size.

As the early opening of the mines is assured, the matter of price is one of much interest. Of course the consumer has lost sight of this factor in a measure, being overshadowed by his desire to get coal, but the retail man is anxious to know what coal is going to cost him and what he will have to charge. One of the independent companies is reported as having already announced its prices, effective Sept. 1, as follows: Egg, stove and nut $9.25; pea, $7.50; buckwheat, $5, and rice $4.

There is some indication that the larger companies are intending to ship considerable coal to distant points, particularly the West. As it will take the mines some time to get up capacity production, they are apprehensive that they will have a long wait before receiving fuel in any generous quantity here.

River barley is fast losing its market, as the better receipts of soft coal are displacing it. Prices are $1.75@$2.50, the latter figure demanded for fuel almost entirely free of pebbles, and with light sales made.

BOSTON

Dealers realize there is but a few short weeks to the time when fuel will be in urgent demand, and as yet, except in the direction of bituminous coal, they are helpless to give any real relief. Most anxiously are they looking forward to the first shipments of prepared sizes. Meanwhile, there are but extremely few stray cargoes of pea that come forward.

Pea is selling for $15 per net ton delivered in Boston at retail. One of the newspapers here inquires why the retail dealer does not give the consumer the benefit of the July 1 reduction of 10 per cent in railroad tolls. And the volunteer fuel committees on the same day insist that no more than one ton shall be delivered to a consumer.

BUFFALO

The public looks for coal in some quantity soon, though the agreement to resume mining is not fully ratified. The amount of coal held over is quite large here. The prospect of gas is good, both on account of the increased amount of byproduct, and the natural supply which is expected to be good.

Shippers and distributors are trying to keep consumers reassured by calling attention to the fact that we have had strikes and shortages before and yet there was coal enough. As to what the price will be nobody is able to speak with authority, although one shipping agent ventures the opinion that the reduction in freights, amounting to about 36c. a ton, will be absorbed by the companies. He does not look to any material change in prices.

ANTHRACITE FIELDS

In spite of considerable opposition, John L. Lewis last week secured the ratification of the contract negotiated by the scale committee. It is expected that production will reach a high figure by the end of this week. The men will all be in as soon as the mines, which are somewhat out of repair, have been placed in shape for operation.

The companies are estimated to have rush orders for at least 20,000,000 tons. Little or no coal will be mined during the early part of this week, and no more than 1,500,000 tons the week following.

The resumption had an immediate effect on the market for river barley, which had already been showed by the heavier use of bituminous coal.

South

BIRMINGHAM

Although inquiry is somewhat more restricted in scope than it has been, spot demand is still good and in excess of the supply. Priority consumers are getting the first call and the requirements of non-essential industries are not so well taken care of.

Market conditions are becoming more stable with the receding pressure from outside territory and prices seem to be settling around the schedule fixed by the State Fuel Administrator, effective Sept. 1. The allowed mine prices are as follows:

	Mine Run	Washed	Lump or Nut
Carbon Hill	$3.00	$3.50	$4.45
Cahaba	3.60	4.10	5.20
Black Creek	3.60	4.10	5.20
Pratt	3.00	3.50	4.45
Corona	3.00	3.50	4.45
Big Seam	2.60	3.10	3.45
Montevallo	4.00	....	6.00

Domestic coal under contract f.o.b. mines for September ranges $2.75 for Big Seam to $4 for Cahaba.

Railroad service is very inadequate and much time being lost account of car shortage. Slow movement is keeping a large number of cars under load an excessive period. Production for the week of Aug. 26 was approximately 380,000 net tons.

VIRGINIA

Production is gaining slightly, the increase being most marked in that section of the field which during the period ended Aug. 26 was the most affected. Transportation conditions have been somewhat improved. Production losses are to be attributed entirely to a car shortage.

Chicago and Midwest

Car Shortage Handicaps All Midwestern Fields

Illinois and Indiana Drop below 30 Per Cent Production Because Roads Can't Handle Output—Quotations on Domestic Sizes Rise.

Illinois and Indiana fields started off the past week with a fair car supply, following Sunday and Labor Day, but by the end of the week the lack of power had put the production of those states down below 30 per cent and Kentucky was in the same fix. Demand generally continued light, however, so that the only coal to feel any buoyant price tendency was southern Illinois lump, which climbed about 50c.

There was nothing going on to cause any upset beyond a little flurry in Chicago against the I.C.C. supplemental order giving domestic shipments priority over steam. In the Kentucky fields more attention is being given to Lake trade, since much Western business has been lost to other fields.

ST. LOUIS

An unusual quietness for this period prevails in that domestic trade is slow and steam is not as active as it should be normally. Domestic buyers seem to think that something will happen that will reduce the price though there is a shortage of Carterville that cannot be made up.

Generally speaking, things are easy and quiet. The extremely warm weather has prevented heavy deliveries of domestic and the domestic business in the country is reported to be in a somewhat similar condition. Country steam is quiet, with practically no storage going on. The same condition holds in St. Louis. The past week the dealers raised the price of Carterville from $8.50 to $9, sidewalk delivery. No anthracite, smokeless or Arkansas coals are coming in and the supply of coke is limited.

CHICAGO

The decided handicap or car shortage in all Illinois and Indiana coal fields has so reduced production that the light demand on this market has been met with a comparatively light supply. The expected pick-up in both domestic and steam has not materialized with any speed although domestic call may have been responsible in part for the hike in quotations on southern Illinois prepared sizes from $5 to $5.25@$5.50 along toward the end of the week. This was about the only change in the circular on any coal coming into this market. The general tendency is slightly upward, however, and coal men are predicting the tendency will be more marked next week when the hot spell has passed.

For several days there has been a dragging influence making itself felt here. A good many odd lots of steam coal have been shipped in on consignment and unloaded at prices that verged close to the red. Occasionally these deals were made $3.50@$3.75 for screenings when the market wavered around $4.25. The fact that domestic sizes are to have priority in shipments hereafter may end this sort of thing though big buyers are still hoping for a marked drop in all steam sizes.

Practically no coal from states east or south of Indiana is reaching here nowadays. Kentucky is as hard hit as Illinois and Indiana by the transportation difficulty and all Eastern coals are absorbed elsewhere or cannot penetrate the various railroad congestions.

INDIANAPOLIS

The Indiana Coal Committee left the price of coal to the operators' consciences and the price ranges $4@$4.50 at the mines with the accent on the latter price. The termination of the strike has not relieved the fuel situation in the state. Few retail dealers are doing any business. Quotations from the dealers show prices to be about $2 a ton higher than at the same time last year. A number of dealers have been unable to secure coal.

No substantial orders are being placed and operators say when winter comes there will be a mad scramble. At the present time the delivery end of the coal situation is the big problem. The mines in Indiana can produce the coal, but the railroads are falling down miserably in making deliveries. During the past week there have been no changes in prices of coal from outside the state.

LOUISVILLE

It is the general belief of the local coal trade that other than some big tonnage movement to the Lakes, there will not be much priority regulation of any kind after a few more days. Some operators are having a little trouble, it is reported, in finding buyers at the market price. Demand for prepared sizes is steadily increasing, but operators would rather load mine run.

With the present price range all the way from $3.75 for western Kentucky screenings, to $6.50 for best eastern Kentucky lump, there does not appear to be much prospect that Washington will have very much to say for the time being about prices, although mine run is selling all the way from $4 to $5.75 at the mines, not including brokerage. Some reports have been received of $7.50-coal in West Virginia and Kentucky, but $6 is about as high as is being bid for anything here with $6.50 asked, some lump selling at that.

Until eastern Kentucky moves considerable Lake tonnage—mostly mine run—there is not much prospect of any large production of prepared sizes in the districts that are handling this business. As a whole the general situation is much better. No real shortage of coal is being heard of, no plants are closing down, and movement is generally better, with the market steadier all along the line.

WESTERN KENTUCKY

The present small car supply in western Kentucky—said to be 33 to 40 per cent on L. & N. lines, and about 65 to 75 per cent on the lines of the Illinois Central—is preventing any overproduction which would tend to weaken prices. Priority orders are still in effect. This is holding down the amount of coal moving on open shipments. Operators are finding some trouble in moving their output unless they have priority orders.

There is better demand for prepared sizes, but operators are not willing to make much lump coal because they feel that cars are too scarce, and they would much prefer shipping mine run at a lower price, than to hold cars overnight on tipple switches partly loaded.

It is rumored that about 100,000 tons of coal from western Kentucky is in prospect for movement to the Great Lakes. The supply moving from other fields to the Lakes is small.

While western Kentucky mine run has not been plentiful at any price under $4.25, there has been some available. Jobbers have been trying to find lump at $4.75, but supplies are scarce. Screenings are quoted as low as $3.75 a ton, and prospects are for lower steam prices.

Some of the operators now need business, and are calling jobbers every evening in order to sell the day's production, as buyers are not nearly as plentiful in the field as they were, since Chicago dropped out as the dominating influence in the market.

SOUTHERN ILLINOIS

The situation is disappointing to operators and miners alike on account of the car shortage. The average working time is only a little better than three days a week in the Carterville field on account of no cars. The railroad tonnage is light and the domestic demand seems heavier than usual. Steam sizes are not active. There is nothing unusual going on in the southern end of the state except that the miners are watching closely the investigation of the Herrin massacre at Marion.

Somewhat similar conditions prevail in the Duquoin field, though some mines that have not opened up as yet are getting ready to do so. Prices in these districts range $4.90@$5.25 on domestic sizes and $[illegible]@$5.65 on screenings and mine run. Mt. Olive conditions are quiet, with a good tonnage moving to the Chicago and Northwestern markets.

In the Standard field a peculiar condition exists, where some coal is sold as low as $3.25 for domestic 2-in. lump, while others are asking as high as $4.50 for the same grade of coal. Standard mine run sold to one of the railroads last week, about 100 cars open market, at $2.25 and it is understood that a lower price will be made on contract. It is a peculiar market, with no way of determining just what the value of coal is.

Eastern Inland

Demand Slackens as Prices Fall and Receipts Mount

Scrambling Buyers of Recent Weeks Now Rely on Stocks—Car Shortage Increasing—Empties Return Slowly—Movement to Lower Lake Ports Gaining.

Larger receipts have softened spot prices. Consumers who recently scrambled for tonnage at any price are now using this supply and are not buying. It is the old story of curtailed demand on a falling market. Car shortage losses are growing rapidly and there is no doubt that production has about absorbed all the serviceable cars that were idle when the union mines resumed work. A slower return of empties is now noticeable.

Lake buyers are anxious to obtain coal but fail to place orders when the faintest sign of price advance appears. The movement to the lower ports has been aided through priorities, and the 1,000,000-ton per week goal is nearing.

COLUMBUS

The Ohio coal trade is in a peculiar condition. While domestic demand is keen there is not as much strength to the steam market as might be expected under the circumstances. Public utilities and all institutions are pretty well supplied and general steam users are holding off for lower quotations.

Retailers are selling a fair amount to householders, but as is the case with steam users, many of the domestic consumers are waiting for lower prices. Retailers are selling Hocking and Pomeroy lump around $9.50@$10, while West Virginia grades are somewhat higher. Only a limited amount of smokeless and other grades from West Virginia is coming into the market.

Lake shippers are anxious for tonnage but prices are too high and they are loath to close contracts. Offerings at $5@$5.50 have not attracted shippers to any great extent and the tendency is to hold off to see what happens. Operators with their own dock connections are shipping coal and the various Lake docks are handling a fair tonnage.

DETROIT

While extremely hot weather is dispelling from the minds of domestic consumers any thought of winter fuel requirements, the condition of unsatisfactory supply is developing a situation that cannot fail to make trouble for many later in the year.

There is very little steam inquiry. While the amount of free coal is not great, it is possible to find a few cars when demand develops. Most of the coal now reaching Detroit, is the product of union mines in Ohio and prices range $6@$6.25 for slack or mine run.

With practically no anthracite in retail yards, the outlook for household consumers in Detroit is far from encouraging. Many of the homes are equipped with heating plants unsuited to using bituminous coal. The supply of coke is scarce and retail prices have been advanced from $12@$12.50 to $13@$14.50, or approximately three times the pre-war cost.

CLEVELAND

Sharply increased production is being reflected in larger supplies of fuel in this section and consequently lower prices and a much less active market. Coal is now available in ample quantities at $5.25@$5.75, the average for the past few days being about $5.50. Buyers who were scrambling to get fuel a few weeks ago at any price are now following a policy of using up their stocks before going into the market again.

While the present price looks good compared with that prevailing recently, it is the old story of curtailed demand upon a falling market. Consumers have not forgotten the $3 level prevailing before the strike. Operators, however, point out that railroad equipment is bad on some lines and distribution may become more and more hampered as the season advances and the strain upon the roads grows heavier.

The Lake movement is being successfully expedited through priorities. Shipments now approach the 1,000,000-ton weekly goal. Officials of the Ore & Coal Exchange, however, do not believe that it will be possible to move more than 10,000,000 tons between Sept. 1 and the close of the season. This will give the Northwest about 15,000,000 tons in all.

EASTERN OHIO

Notwithstanding a car supply of only 35 to 40 per cent on the B. & O. and W. & L. E. production during the week ended Sept. 2 was increased 21,000 tons over the preceding week. Total output was 288,000 tons as against a potential capacity of 620,000 tons, or 46 per cent of normal. Only 6,006,000 tons have been produced out of a potential capacity of 21,120,000 tons for the year.

While there is a ready market for all coal offered for sale at this time, inquiries are not numerous and no anxiety appears on the part of steam users to take care of anything more than immediate requirements. Spot prices have softened somewhat during the week, quotations ranging 25c.@40c. lower than those obtainable a week ago.

Receipts at Cleveland during the week ended Sept. 2 registered a decrease of 50 cars under the quantity received during the preceding week. Total arrivals amounted to 764 cars, 651 for industries and 113 for retail yards. The decrease at industrial centers is accounted for by the failure of non-union coals from West Virginia and eastern Kentucky to get through the blockade at Ohio River gateways and also procrastination on the part of buyers, who anticipate that as production is speeded up, prices will be lower.

PITTSBURGH

Although the Pittsburgh Coal Co. signed the wage scale a day after its resignation from the Pittsburgh Coal Producers' Association, the remaining members of the association having then signed, it is understood that the resignation has not been withdrawn.

Resumption of mining has been fairly rapid. There has been no scarcity of cars, but the loadings thus far are no certain criterion as to the future, because many of the cars being loaded are cars that have long been idle. The real test of transportation capacity will be furnished in the attempt to bring cars back for their second and subsequent loadings. Already reports are accumulating of large numbers of loaded cars lying near mines.

The first regular business in Pittsburgh district coal was in Youghiogheny gas, nearly a fortnight ago, the price being $6.50. Now there is an open market in steam and byproduct also, and the trend in prices has been downward. Pittsburgh steam mine run is quotable at $4.50@$4.75, and fair grades of gas mine run, $4.75@$5. Connellsville steam is held at $4.50 but is not meeting a ready sale. Connellsville byproduct is at about $5@$5.25 but there is not much movement as offerings are light.

BUFFALO

The market is not brisk, for the consumer now looks on the supply as sure to be adequate with a possibility of lower prices. Cars are already running down, however, and a shortage always means stiff prices.

At the same time consumers are pretty well supplied and they will not feel the need of much more right away. They are enjoying a reduction of $2 or more from the strike prices, though the suggested bottom price of $3.50 did not appear.

The prospective return to anthracite mining tends to further ease off the stress, but if it cuts into the car supply, as it likely will, the soft coal supply will be sure to run down. Prices are steadying down some, with a fair quotation, mine price, of $6 for Youghiogheny gas slack, $5.50 for Pittsburgh ¾-in., $5.25 for mine run and $5 for slack, with Allegheny Valley mine run at $5@$5.25.

Vessels are paying $8.50 for ¾-in. loaded on board. There is a small spurt of soft coal from Ohio ports this way, but it will be light till cars are more plentiful. August receipts were only 35,900 tons. For the season the amount is 869,310 tons.

NORTHERN PANHANDLE

With union mines again producing and open-shop mines also running at the usual rate, production is again being increased, but has not reached normal proportions as the railroads are not supplying all the empties needed. Much of the output is being secured by the railroads and a large proportion is going to the Lakes.

Northwest

Lake Vessels Once More Begin to Deliver Coal

But Demand Keeps Docks Empty—Prices Are Stiffening—Doubtful Quality Is Blamed on Pooling Plan at Lower Lake Ports.

While the flow of coal by Lake has shown signs of strengthening considerably the demand for coal is so keen that the docks are emptied as fast as vessels dump. The country trade is hungry for fuel and is grudgingly buying it at the prevailing high price rather than take a chance of getting caught short later on. There is little chance of anybody loading up too heavily this year.

Altogether the Northwest feels that its loud wail of recent weeks has not won much compassion from the rest of the country but that, now that coal is slowly coming in, there surely will be enough unless the car shortage down in the mining fields shuts off the supply. A good deal of dirt in cargo coal draws condemnation for the Lake pool.

MINNEAPOLIS

While fuel commissioners are working tooth and nail to get an adequate supply of coal on the docks for the coming winter, they are finding the reception accorded them and their wants rather indifferent. Producers are not much inclined to go out of their way at all to help out the Northwest. Since prices at the mines are higher than the Northwest wants to pay, purchases for this region are not as heavy as they might be. Even the effort to get all-rail coal from Illinois and Indiana is not lively and car shortage interferes with that source of supply also. As the situation stands now coal is on its way up with quotations especially high for immediate delivery.

There is serious consideration of rationing fuel and of reducing consumption by cutting off unnecessary street and window lighting and other places where economy might be practiced to avert a fuel shortage.

MILWAUKEE

The coal stress has been eased to some extent by the arrival of a number of cargoes of soft coal. All sizes of Pocahontas and the popular grades of steam coal are now obtainable in reasonable quantities, "while they last," at the prices fixed on the first of the month.

However, this temporary relief does not allay the anxiety regarding future supply, and it is freely admitted that the fuel problem will be the worst that Milwaukee has ever confronted, unless the railroad situation improves soon. No so-called priority coal has been received at Milwaukee as yet.

The coal cargoes which have been delivered of late were bought at the mines at premium prices. Eight cargoes have been received since last week's report. One cargo of 6,500 tons was credited to the month of August, increasing the total for that month to 78,852 tons. September receipts thus far aggregate 38,500 tons, making the total for the season to date 852,912 tons, against 1,892,865 tons during the same period last year. Last season's receipts of anthracite to date aggregated 666,630 tons.

Following is a revised price schedule of soft coal for steaming purposes:

	Wholesale	Retail
Pitts., Hock., & Yough., screened	$10.25	$11.75
Pile run	9.75	.....
Screenings	9.75	.....
W. Va., screened	10.25	11.75
Pile run	9.75	.....
Screenings	9.75	.....
Poca., screened	12.00	13.50
Mine Run	9.75	11.25
Screenings	9.75	.....
Smithing	10.75	12.25
Ill. & Ind., screened	10.25	11.75
Pile run	9.75	.....
Screenings	9.75	.....

Coke now sells at $16 for the large sizes, and $13 for small sizes.

DULUTH

Receipts for August at Duluth—Superior harbor were far below the average, according to announcement made by official weighing bureaus here, aggregating but 95,802 tons, of which 9,000 tons were hard and 85,802 soft. August receipts last year aggregated 492,012 tons—25,512 soft and 466,500 hard.

Despite the fact that the Northwest has been in desperate condition for coal, reports show that 5,000 tons were shipped from this port to Lake Michigan ports in the past months. This brings the total of down-shipments for the year to 224,500 tons.

Since the first of the month nine ships have arrived in port and eight more are scheduled to arrive soon. Shipments from the docks for August were 20,373 cars. This seems to indicate that the dealers throughout the territory served are willing to get their coal in immediately and that there will be no tie-up on the docks to hinder arrivals.

An increase in price has taken place. Hocking lump is quoted at $12, run of pile at $11.50, and screenings at $9.50.

Elkhorn, which is scheduled to arrive this week will be $1 higher than this, dock men say. One five-car lot of Illinois coal has been received, at $5.50 at the mine.

New England

Save for Heavier Receipts By Water, Market Is Quite

Quotations Erratic on Fuel Bound Inland—Buying Scattered, Consumers Relying on Accumulations—Outlook for Shippers Not Roseate with Promise for Next 60 Days.

Except for largely increased receipts by water, the market here continues extremely quiet. Quotations on cars for Inland delivery are more or less erratic, prices ranging $10@$11.50 per gross ton. There is only scattered buying, however, and consumers for the most part are resting easy on coal they accumulated weeks or months ago, as the case may have been.

From present appearances the various shippers are likely to get little support from this territory the next sixty days or so, and while some factors are whistling to keep up their courage we see little chance of any comprehensive market for any of the steam grades.

A depressing factor is the very large tonnage of British coal that is continually arriving. During August receipts from this source alone were 265,000 tons, and according to figures at the Boston Customs House 547,511 tons have been entered from the British Isles and from Cape Breton since June 1. It is understood that in addition to twenty-two steamers now in the harbor awaiting berth there are upward of twenty-five due within the next few days. Most of this coal was sold before loaded and is being taken in by railroads, utilities, and certain other large concerns who purchased it some weeks ago. A proportion of it, however, was sold to large retail dealers and other factors who are now trying hard to unload. This coal has been quoted recently at from $9.00 alongside down to $7.50 and less, and when demurrage charges are considered there must be some very heavy shrinkages on the part of some who undertook the shipment.

Hampton Roads spot prices have eased off to $8.25@$8.50, these being 25c.@50c. over the Hoover "fair basis." While in some instances, due to an accumulation of boats when priorities were in effect, there have been delays in loading, recent reports show a considerable surplus of coal over bottoms waiting, as compared with a small deficit a week ago. Spot demand is very quiet.

Several Pennsylvania shippers are making the effort to place screened coal to be used as substitute for anthracite. Quotations have been made all the way from $6.75 up to $8.75, but retail dealers feel the public is not yet at a point where it will pay for these coals a price higher than anthracite was selling for in the spring. High rail rates to Eastern points make the highest priced screened coal seem prohibitive.

Cincinnati Gateway

Strike of Coal Buyers Makes Its Appearance

Lake and Domestic Purchasers Missing From Market When Hoover Prices Fail to Hold—Heavier Output Handled Without Undue Congestion.

A coal buyers' strike, sporadic but of definite proportions has made its appearance in the Cincinnati market. Some weeks ago, Lake buyers, in the hope that the government price would hold, attempted to get values down to the Hoover level, less the commission. Now that the Hoover prices have gone by the boards they are playing another game. As soon as prices take an upturn the Lake buyers are strangely missing from the market. Coal that was offered at $5.50 was bought while $5.75 asked in other quarters was turned down.

Heavier production has so far been handled by the carriers without any additional congestion. Cars are becoming scarcer, however, and during the past week these losses have been mounting. Prices are stronger, high-volatiles leading the smokeless coals.

HIGH-VOLATILE FIELDS

Kanawha

Strike trouble prevents the railroads from furnishing enough cars to keep the mines going more than two or three days a week and the increased number of mines in operation tends to reduce the number of cars available. In the strike zone—that is where there has been no union agreement—there are more mines at work. Much of the product has been moving at the Hoover price plus 5 per cent but some coal has been sold within the last few days at $5.50.

Logan and Thacker

Logan mines during the week ended Sept. 2 appeared to be harder hit by a shortage of cars than the plants in any other high-volatile field, the supply at times dropping as low as 100 cars a day. Limited operation made it almost impossible to take care of contract customers and to comply with priority instructions for Lake movement.

Kenova-Thacker mines are beginning to recover after a fashion from the effects of a car shortage which materially curtailed production. Of the tonnage moved Westward a fairly large volume was for Lake points.

Northeastern Kentucky

Owing to large production elsewhere there is not so strong a pressure for fuel in northeast Kentucky as there was a short time ago. Consequently prices are on a somewhat lower level, the range being $4.50 @ 5.50. There is a better demand for gas coal than for other kinds of fuel.

LOW-VOLATILE FIELDS

New River and the Gulf

Although transportation conditions are undergoing improvement in the New River field, mines are still limited to about half of capacity. Car shortage is chiefly responsible for limited production, most of the miners being at work notwithstanding the fact that the mines are operated on an open-shop basis.

Gulf mines have been able to speed up production to some extent owing to an improvement in transportation facilities furnished by the Virginian and the C & O. but car service is still far short of normal. It is now possible to move more coal to Tide.

Pocahontas and Tug River

Pocahontas mines are once again finding it possible not only to speed up production but to hang up some new records, at least at intervals, Monday, Aug. 26 being a red-letter day, when 80,000 tons were loaded. The most pronounced movement was to Western points, to which little Pocahontas fuel has been moving recently, owing to embargos. Although spot prices have undergone a marked decrease the average is about $4.50, the figure at which the bulk of the coal has been moving in recent months.

In common with the Pocahontas field, Tug River has found it possible to increase production in view of improved transportation facilities. The Western gateway was not so congested so that it was possible to move more coal to Western markets and particularly to steel and byproduct plants. With production much increased a labor shortage is beginning to develop again. Even with the larger output there is comparatively little coal available for the open market.

CINCINNATI

Lump coal has gone soaring, $8 being asked in some quarters without the bat of an eye, this because most of the output is now on a straight mine run basis. The result is that the takers of domestic coal are buying only as their absolute needs require, hoping for the turn of the market to lower levels. Still other concerns are taking another course. Instead of going after coal of high grade and efficiency they are taking off-grades that can always be picked up from 50c.@75c. a ton below the market, hoping that in this way they will be able to get action toward a lower level.

One fact is outstanding and that is that the smokeless operators and sales agents, while they moved prices upward with the removal of the Hoover restrictions, they are holding these way below that of the high-volatiles, comparatively.

The movement of two days a week from the Pocahontas fields has been working a hardship that could be avoided if there were a set time for this instead of the coal being taken under the tipples on the days that the railroad people decide.

The retail price adjustment made last week still holds. Even though there has been a general advance $11 is still top for Pocahontas lump, with $8.75 for mine run; $9 is top for bituminous lump, with $6.75@$7.50 for the slack.

Coke

UNIONTOWN

The Connellsville coke region will remain the greatest non-union field in the country but only a portion of the miners who went on strike April 1 will remain to accept open-shop conditions. A great labor turn-over is taking place in this district. Miners who became thoroughly imbued with union principles are leaving this field for those working under the Cleveland agreement and their places are being taken by miners from other fields.

Increased production by imported workers has further been followed up by operators by a general increase in the number of evictions. Since the strike became effective a total of 3,500 miners have been evicted and it is declared to be the policy of operators to claim possession of every company house before cold weather arrives.

The coal market for the time being seems to have been stabilized at $4.50 @$5. There are an abundance of orders but consumers are disposed to balk at higher prices.

CONNELLSVILLE

Statements that a car shortage has definitely developed are premature, but the condition is much the same as if a shortage were actually visible, since the limit of possibility in furnishing cars has evidently been reached. It is plain that no material increase in shipments can occur with transportation conditions as they are practically certain to be in the next few weeks. In other words, the strike is not really the dominant factor in the situation.

The strike continues with remarkable perseverance. Since the posting of the high wage scale, some men have drifted back to work, but the drift has been no greater than formerly. The operators have various reasons for not signing, but apart from these reasons the ending of the strike on account of transportation conditions, would not materially increase the shipments.

Furnace coke has softened a trifle in the week, being now quotable at $11 @$11.50, but the total offerings would probably be insufficient to run a single blast furnace, so that the market is fictitious as regards transactions between operators and blast furnaces. The coke offered goes to miscellaneous consumers, in small lots. Foundry coke is off about 50c., at $12.50@$13.

The *Courier* reports production during the week ended Sept. 2 at 73,810 tons by the furnace ovens, and 16,490 tons by the merchant ovens, a total of 90,300 tons, an increase of 4,200 tons.

BUFFALO

The situation in the Connellsville district does not appear to be clearing up as fast as it is elsewhere, so that the coke ovens are not starting up as they otherwise would. Demand is not active yet and it may not be if the local byproduct ovens start going regularly soon.

News Items From Field and Trade

ILLINOIS

Coal mines in seven states closed for one day on Aug. 29, out of respect for the memory of **Francis S. Peabody** who was buried at Hinsdale, near Chicago, after five o'clock services that evening. The mines closed were those owned or operated by the Peabody Coal Co., of which Mr. Peabody was chairman of the board. Mr. Peabody died suddenly of heart disease on the Sunday preceding. Pallbearers at the funeral were George F. Goetz, Frederick W. Upham, C. D. Caldwell, C. J. Gray, Henry Hooper, Jr., M. F. Peltier, Garrard B. Winston and George W Reed.

A contract by which the **Southern Gem Coal Corporation**, of Chicago, will lease for twenty-five years from the **Willis Coal and Mining Co.**, of St. Louis, 7,000 surface acres of two-vein coal property in Perry and Randolph Counties, for which negotiations began six months ago, was completed with the end of the coal strike in Illinois. The Chicago concern agreed to mine a minimum of 19,000,000 tons in the period of the lease. The property includes two mines, and the lessor contracted to open a new 5,000-ton shaft.

Charging Illinois operators with unnecessarily increasing prices of coal to the public, Freeman Thompson, a union official at Springfield, is filing a petition for a court injunction to prevent operators from charging more for coal than they did last winter. Miners' wages are the same, Thompson argues, therefore the cost of coal to the public should be the same.

The following September itinerary of the **Illinois Miners' Examining Board** has been announced by State Director Robert M. Medill, of the Department of Mines and Minerals: Collinsville, Sept. 5; Harrisburg, Sept. 6; Herrin, Sept. 7; West Frankfort, Sept. 8; Du Quoin, Sept. 9; Staunton, Sept. 11; Hillsboro, Sept. 12; Springfield, Sept. 13; Decatur, Sept. 14; Danville, Sept. 15; Canton, Sept. 16; Peoria, Sept. 17, and La Salle, Sept. 19.

A. J. Halle, of Minneapolis, Minn., has been named district manager of the **Peabody Coal Co.** for central Illinois, with headquarters in Springfield. He succeeds **W. B. Jesse.**

E. P. Stiehl, New Baden, Clarence and Sherman Stiehl, Belleville, have purchased the interests of Frank Patterson in the **Patterson & Harding Coal Co.**, operating a mine on the Mascoutah road a few miles out of Belleville. Enos G. Harding retains his interest in the mine.

The Ellisville Coal Mining Co. has been incorporated with capital of $30,000 by William Donaldson, A. B. Donaldson and W. R. Hawkins.

Harry Weeks, sales manager for the newly formed Howe-Coulter Coal Co., which has operations in Indiana and offices in Chicago, is returning to business after a summer's vacation.

The Springside Coal Co. of Pana has been incorporated with capital of $25,000 by Lyle H. Dayhoff, John J. Sherlock, Silas A Shafer and L. Y. Shafer.

INDIANA

An organization meeting of the **Seventh Vein Coal Co.** was held in Terre Haute recently at which plans for the operation of a mine owned by the Shirkie Interests and located in Sullivan County were made. The mine is the only one that the newly-formed company contemplates taking over now. The mine has not been operated for about a year and a half The new company has a capital stock of $75,000 and the organizers are Clement J Richards, E. J. Crawford, S. D. Royce and R. A. Parmody.

One case set for trial in the September term of the circuit court at Brazil is the State against Dave Jones, one of the officials of the Eleventh District, U. M. W., and others, in which some 90 coal miners are defendants charged with riot. The cases grew out of a riot during the recent strike when miners sought to close the strip mines and wagon mines. Sixty of the defendants were arrested and gave bond and the others escaped from the scene of activity.

Two of the oldest corporations dealing in coal, both wholesale and retail, and building materials in Indianapolis, the **Indianapolis Mortar & Fuel Co.**, and **A. B. Meyer & Co.**, have been consolidated into one company, the **Allied Coal & Material Co.** Articles of incorporation have been filed with $1,000,000 capital stock The consolidation creates probably the largest company of its kind in Indiana.

MASSACHUSETTS

The New England Coal Co., of Waltham, formerly conducted by Pryor Fulton, has been incorporated to engage in the general coal business. The capital stock is $50,000 and the incorporators include Pryor Fulton and Robert W. Hill.

MINNESOTA

The Inland Coal & Dock Co. has completed a 2,000x500-ft. extension to its dock at Duluth-Superior harbor. This will greatly increase the company's storage space and will help prevent future overcrowding of the docks.

MISSOURI

Efforts that were made to extend an old well on a farm near Harrisonville into a shaft on a lease that **Dr. C. C. Van Hall**, of St. Joseph, has secured proved a failure because mine damp stopped the workers. A permanent shaft is now to be sunk about 1,000 or 1,200 ft. from the site of the well. Dr. Van Hall also has secured a lease on a tract of land owned by John C. Beatty, near Harrisonville, and will develop it, the coal to be secured from this tract by means of stripping.

The Lou Nash Coal & Mining Co., capitalized in Illinois for $60,000, has been incorporated to do business in Missouri, with headquarters in St. Louis. The incorporators are R. B. Clark, H. S. Kramer and R. V. Clark.

NEW YORK

Anthony Grasso, formerly with Witney & Kemmerer, has taken the Buffalo agency, just formed, of the Valley Coal Co., of DuBois, Pa., with office in the new Lafayette Bldg.

OHIO

A widely circulated report that **J. A. Hicks** manager of the **Colter Canoling Co.**, Amelia, was paying $26 a ton for coal was denied by Mr. Hicks. No less than a half dozen reputable coal men offered him all he wanted around $5. Even though a stenographic report was made of one conversation the newspaper that gave rise to the story refused to print the truth.

The coal buyers for the big steel corporations of Youngstown and Pittsburgh who have had headquarters in Cincinnati for the past three months have moved out. **R. B. Stump**, who was here for the Lackawanna Steel Co., was among the last to leave.

Recent visitors to the Cincinnati market were **Holly Stover**, of Chicago, who stopped over while en route from his mines in West Virginia; **T. E. Mahon** of the Mahan-Jellico Coal Co., of Williamsburg, Ky., **S. R. Jennings** of the Hazard Blue Grass Coal Co., Johnston City, Tenn., **Abner Lunsford** of the Banner Fork Coal Co. Hazard, Ky. and **I. Vass**, sales agent for the W. R. Deagens Coal Co., with headquarters at Huntington

The Maher Collieries Co. is reported to have purchased a large number of portable houses at Nitro, W. Va. which were erected by the government when it had a munitions plant there during the war These houses will be erected for the men employed in the company's mines at Glenalum, Maynard and Stewartsville. They contain four rooms each and can be made ready for occupancy near the mines at an approximate cost of about $1,000 to $1,200 each.

David H. Gay, of the Big Run Coal Co. of Winchester, Ky., was in Cincinnati recently for a few days. He claims to be the prize hard-luck operator of eastern Kentucky. When business was at its best a local strike shut his company off for over two months.

PENNSYLVANIA

The Freeport seam operators signed the Cleveland agreement on Aug. 28 and resumed operation the day following. Among the companies affected is the **Inland Collieries Co.**, at Indianola. Although the company men worked hard to maintain the mine in fair condition during the strike little could be done by way of clean-ups of fallen rock in this mine where the roof is of a nature to break down readily as in all mines working the Freeport seam. Working against such odds, a full quota of miners was sent into the mine and three days later 1,200 tons were hoisted in addition to large quantities of rock. This mine was closed down for a period of ten and one-half months.

The Peabody Coal Co., Chicago, has taken over the production end of the **Northwestern Mining Co.**, which includes the plants in the Toby Valley in the DuBois section and the Tioga fields.

The Carnegie Steel Co has awarded the Koppers Company a contract covering a big extension to the present by-product coke plant at Clairton, already the largest of its kind in the world. This extension will consist of 366 by-product coke ovens, a benzol motor fuel recovery plant and by-product plant. This will bring the number of ovens at Clairton up to a total of 1,134, with a carbonizing capacity of 21,000 tons of coal per day.

Bituminous coal companies recently incorporated at Harrisburg were **H-K Colliery Co.**, Clearfield, capital $25,000; treasurer, James P O'Laughlin, Clearfield. Purpose, mining, quarrying and selling coal Incorporators Harry Haldeman, Clearfield, Edward T. Kelley, Clearfield, and Della Beahan, Clearfield. **Rogers Mining Co.**, Jefferson, $20,000; E. R Spengler, Pittsburgh. Purpose, mining and quarrying bituminous coal. Incorporators: N P Rogers, Jefferson; T. M. Jones Pittsburgh and E. R Spengler.

Again reports come from Pittsburgh of the coal merger, this time with more detail than before. The following companies are involved according to one report: John A. Bell interests, with 2,000,000 tons; Carnegie Coal, 1,350,000 tons Verner Coal & Coke, 345,000 tons; Burgettstown Coal, 255,000; Henderson Coal [illegible]; Chartiers Creek Coal, 270,000; McClane Mining, 175,000; Meadowlands Coal [illegible]; Pittsburgh & Eastern Coal, 2[illegible]; Pittsburgh & Erie Coal Company, [illegible] and western Pennsylvania's mines of Youghiogheny & Ohio Coal, 1,[illegible] tons. A number of smaller operators are identified with the new project and will add approximately 1,200,000 tons

Mahaffey Coal Mining Co. Patton, $10,000 capital, has been incorporated F H Maurer Patton is treasurer The purpose of the company is to mine and ship coal and the incorporators are L. W Maurer and Alex. Keys Mahaffey

UTAH

Professor Schneider of the University of Utah School of Mines and four students are searching for coal in the East Mountains near Mount Pleasant The professor is employed by a number of men who believe coal in paying quantities may be found there.

VIRGINIA

The N. & W Ry has commenced the electrification of its coal pier No. 2 doubling the dumping capacity and increasing the total capacity of the three piers to approximately 1[illegible] tons per month. These piers followed the construction of the C & O. Ry. of piers on both a new coal pier at Newport News. A meeting of the board of directors of coal road is to be held late in September, when it is expected the plans for the supplemental pier will be put into shape. Plans of the Virginian Railway to erect another 12,000-ton pier at Sewall's Point are going forward, and officials say they will likely be on the market within the next two months.

WEST VIRGINIA

The Brady Coal Corporation will hereafter be known as the **Brady-Warner Coal Corporation**, the first named company having been reorganized with the Warner interests identified with **W. H. Warner & Co.** now interested in the large reserves and being represented on the board of directors. In connection with the reorganization a bond issue of $1,000,000 has been floated with Hay & Co. of New York and Cleveland for the purpose of acquiring additional property and making extensive improvements to the property. Approximately 14,000 acres of coal land in Clay County are to be acquired and developed. In the future the total output of the properties will be handled by W. H. Warner & Co. through the main office at Cleveland and Monongah branch offices. On the board of directors of the reorganized corporation are elected D. Brady, A. P. Brady, S. D. Brady, Jr., and J. Z. Brady, all of Fairmont; W. H. Warner, Whitney Warner and W. L. Warner, all of Cleveland; Z. T. Fulbright, of Parkersburg; David C. Reay of Morgantown. New officers are: S. D. Brady, president; Whitney Warner, Cleveland, vice-president; S. D. Brady, Jr., secretary; A. P. Brady, treasurer.

The Snake Island Coal Co., Raleigh, has been incorporated with $50,000 capital by J. H. Miles and associates, who have purchased coal land for mining development.

Loadings among the districts served by the C. & O. for the month of August were not more than 75 per cent of normal and in the Logan region there was a production of not more than 50 per cent owing to the scarcity of cars and general transportation disabilities. The whole region was so congested with cars throughout the month that it was difficult to find a place for the empties, side-tracks being full of loads awaiting movement. The belief is expressed by E. L. Hock, general superintendent of the C. & O. that there will be a marked improvement in conditions before long.

Mineral County coal lands are to be developed by the **Brennan Coal Co.**, the headquarters of which will be at Hubbard. The scale on which this company will operate is indicated by the fact that it is capitalized at $1,000,000. Associated with P. J. Brennan, an experienced mining man, are W. E. Ambrose, P. J. Reis, M. A. Brennan and William Fiscus.

The Weirton Steel Co. announces the letting of a contract to the **Koppers Constructing Co.** for the erection of a complete coke and by-product plant at the mills in Weirton. The plant will be of the latest design, consisting of a battery of about forty ovens. The contract calls for completion in eight months and will give employment to several hundred workmen.

Approximately $100,000 was paid by W. D. Reed of Fairmont, and W. T. Hughes, of Morgantown, for a tract of 173 acres of undeveloped coal land in the Sewickley measure, in Monongalia County, the sale being made by the **Francois Coal Co.**, in which Clarksburg people are interested. The purchasers represented the **Fort Grant Coal Co.** The tract sold is on Indian Creek near Lowesville.

The Farley Coal Co., Burch, has been organized, capital $3,000,000. Incorporators are W. A. Wilson, Alex Bishop, A. C. Pinson, Williamson, and H. H. Morris, C. M. Rochrig, Huntington, and three others.

Howard and Edward Cross of Cumberland, Maryland, and their associates have formed the **Wabash Big Vein Coal Co.**, for the purpose of producing coal in the Mineral County field, Emoryville to be the seat of operations of this company, which has a capital stock of $50,000. Others interested in the new company are: James E. Cross, of Keyser, and John J. and T. Frank Sheehan, of Baltimore, Md.

Authority has been granted to the **Marmet-Oliver Coal Co.** to increase its capital stock from $50,000 to $250,000. O. J. Cox of Charleston, is the president of the company.

BRITISH COLUMBIA

J. M. Savage, manager of the Canadian Collieries (D) Ltd., is authority for the statement that there will be no shortage of coal in British Columbia this winter. He says that the only effect of the strikes has been to promote activity in the coal fields of Vancouver Island and other parts of the province. The strike, however, has had one result in the Northwest which is being felt by coal operators. Fuel oil is being used to a larger extent than in the past.

George S. Rice, of the United States Bureau of Mines, is visiting British Columbia and has been in conference with the **Hon. William Sloan**, minister of mines, with reference to various matters affecting the operation of coal mines on Vancouver Island.

ONTARIO

E. J. Ryan, who a short time ago retired from the vice-presidency of the F. A. Fish Coal Co., Toronto and Pittsburg, has joined the sales staff of R. J. Johnston & Co., wholesales coal dealers, Toronto.

Andrew A. Miller, president of the Western Dominion Collieries, Ltd., was in Toronto recently on his way to Saskatchewan after visiting the Pennsylvania coal fields. He stated that this year Saskatchewan production would be boosted by 1,000,000 tons which will release a large amount of coal for eastern Canada.

Hon. Harry Mills, Minister of Mines, has just returned to Toronto after visiting the government peat bogs at Alfred. He states that the entire output of the bogs has been snapped up by coal dealers as a substitute for coal.

Recent Patents

Track-Cleaning Machine for Mines. John G. Bradley, Topeka, Kans., and Wm. F. Bair, Hennessy, Okla. 1,407,227. Feb. 14, 1922. Filed June 18, 1920. Serial No. 389,588.

Coal-Mining Apparatus. Nils D. Levin, Columbus, Ohio, assignor to The Jeffrey Mfg. Co., Columbus, Ohio. 1,407,480. Feb. 21, 1922. Filed April 27, 1918. Serial No. 231,182. Renewed May 10, 1921. Serial No. 468,946.

Electric Mining Apparatus. Harvey C. Barker, Claremont, N. H., assignor to Sullivan Machinery Co. 1,407,119. Feb. 21, 1922. Filed June 14, 1921. Serial No. 477,846.

Mining Apparatus. Charles W. Wyman, Claremont, N. H., assignor to Sullivan Machinery Co. 1,407,120. Feb. 21, 1922. Filed June 14, 1921. Serial No. 478,511.

Traffic News

Notice for a reopening of the coal rate case in Ohio, as denied by the Ohio Utilities Commission May 22, was received by the **Southern Ohio Coal Exchange** and others. The notice came from the I. C. C. and purported to set the hearing Sept. 21 at Columbus. At the time of the overruling of the hearing by the Ohio commission it was ordered that all other rates should go back to Aug. 15, 1921, and instead of advancing the 10 per cent increase all would at that time, they would be raised 26 per cent. The railroads sought to disturb the differential over which many rate cases have been fought. The nature of the reopening on the case was not announced.

Announcement has been made of partial placing of contracts by the L. & N. for 50 new locomotives—40 to be built by the American Locomotive Co. and 10 by the Baldwin Locomotive Co. This is the largest power order ever placed by the road which has been heading most of its engines in the Louisville shops. The Girard Trust Co., Philadelphia, has arranged to acquire $8,000,000 of the B. & O. for new equipment, which will include 21 Mikado type locomotives; 1,000 70-ton steel "gons"; 1,000 70-ton steel hoppers and other equipment. The road has fifteen years in which to pay off the mortgage loan.

The Louisville & Nashville R.R., late in August offered a standing reward of $5,000 for every person convicted of willfully tampering with equipment, the reward covering damage to bridges, roadbed, tunnels, equipment, etc. It is alleged that many coal and other cars are on sidings due to air and steam lines being cut, and due to grit being placed in the bearing journals and the like. A reward of $1,000 is offered for information concerning cutting of any hose lines.

Association Activities

Northern West Virginia Coal Operators' Association

The car shortage in northern West Virginia had reached such proportions early in September and was interfering so materially with the loading of coal at that time that a meeting of the transportation committee of the Association was held at Clarksburg to devise ways and means to meet the shortage and find a remedy. It has been suggested that the Pennsylvania, the Pittsburgh & Lake Erie and the Western Maryland be asked to send their empties into the Fairmont region over the B. & O. and that the coal after being loaded be turned over to the roads furnishing the empties. A sub-committee was appointed to hold a conference in Baltimore with Vice-President C. W. Galloway of the B. & O.

Obituary

O. A. Blackburn, aged sixty, president of the Pittsburgh Coal Producers' Association and one of the best known bituminous coal operators in the country, died recently at his Pittsburgh home after a short illness.

Word has been received in Toronto of the death in Chicago of **Charles Wells**, manager of the Chicago Charcoal Co., and formerly manager of the Charcoal Supply Co. of Hamilton, Ont. Deceased, who was 46 years of age was widely known in the Ontario coal trade. The remains were brought to his home in King, Ont., for burial.

Coming Meetings

Kentucky Mining Institute will hold its annual meeting Nov. 3 and 4 at Seeback Hotel, Louisville, Ky. Secretary, Elizabeth C. Rogers, Lexington, Ky.

The National Industrial Traffic League will hold its annual meeting Nov. 15 and 16 at the Hotel Commodore, New York City. Secretary, J. H. Beek, Chicago, Ill.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

Alabama Mining Institute will hold its next meeting Oct. 3 at Birmingham, Ala. Secretary, J. L. Davidson, Birmingham, Ala.

Coal and Industrial Exposition under the auspices of the Huntington Chamber of Commerce will be held Sept. 18-23 in the Chamber of Commerce Bldg., Huntington, W. Va.

The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers will hold its annual meeting in connection with the Coal and Industrial Exposition at the City Hall, Huntington, W. Va., Sept. 19-22. Secretary, H. Smith, 212 Robson Pritchard Bldg., Huntington, W. Va.

National Exposition of Chemical Industries is holding its eighth national exposition at the Grand Central Palace, New York City, Sept. 11-16. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Mining Congress. Twenty-fifth annual convention and exposition of mines and mine equipment will be held at Public Hall, Cleveland, Ohio, Oct. 9-14. Executive offices, the Hollenden Hotel; E. C. Porter, convention manager.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Institute of Mining and Metallurgical Engineers will hold its fall meeting during the week of Sept. 25 at San Francisco, Cal. It is proposed to arrange for a party to leave New York on Sept. 10, stopping at different cities en route. Secretary, F. F. Sharpless, Engineering Societies Building, New York City.

American Gas Association will hold its annual meeting Oct. 23-28 at Atlantic City, N. J. Secretary-Manager Oscar H. Fogg, 130 East 15th Street, New York City.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, *Editor*

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Congress and Price Control

AN ACT of Congress extending the powers of the Interstate Commerce Commission to permit the granting of priorities in transportation to prevent the purchase or sale of coal "at prices unjustly or unreasonably high" is now or soon will be the law of the land. In so far as it pertains directly to price control this is the extent of the coal-control bill urged by the administration and as framed "on the hill." The Federal Fuel Distributor, an officer created by the act, is empowered to ascertain, among other things, the prices normally charged for coal and the prices correctly charged and whether current prices, "considering the costs of production and distribution, are just and reasonable."

Nothing is said in the act about fixing maximum prices. The inference is that arbitrary limits for prices will not be set by the government. Every time the government has set maximum prices it has been obliged to defend them and the defense has been costly and difficult. It would be more than ordinarily difficult now, for the final disposition of the cases instituted by the government against "profiteers" under the Lever Act have heartened those who would take the top of the market. To define when a seller of coal takes more than a reasonable price and becomes a profiteer is more of a task than to define "socialism." Those, for instance, who took issue with the navy over the price at which its coal was commandeered were able to regain substantial amounts through the courts.

No price can be set for the product of a particular field that is within reason as respects the majority that is not below the cost of a small portion of the production. Should the Federal Fuel Distributor and the Interstate Commerce Commission attempt to say what price should be charged for all the coal from any field, these high-cost producers would, it appears, have a clear case in court to prevent the application of the price. A consideration of the official statements of those who appeared before the House committee when the bill was pending leads one to expect rather that Washington will endeavor to avoid some of the pitfalls previous attempts at price fixing have disclosed and will steer a course designed to put the offending "profiteer" entirely on the defensive. It is obvious that individual instances of "unjustly high and unreasonable" prices may be uncovered if the expected spurt in the market develops, instances with respect to which it may be possible to establish that the price level is opposed to the public interest. The penalty, denial of cars in which to ship further coal, is sufficiently severe to dampen the superlative price ambitions of others when once the offense is defined and the penalty successfully applied.

Seemingly it would be difficult to maintain the position that charging a price, however high, that was mutually satisfactory to both buyer and seller is in violation of the general welfare clause of the Constitution or interferes with interstate commerce, the legal back logs of the legislation. Such disruption to distribution as undoubtedly would follow unfettered selling at "mutually satisfactory" prices could be corrected by the exercise of priorities in cars. If field prices are not fixed under this legislation, we may then expect a multitude of car priorities. From the standpoint of the producer, the transporter and the consumer, priorities are infernal nuisances. They are possible of terrific abuse. They interfere with the movement and therefore with the production of coal. The Fuel Administration hung itself high and dry through the initiation of this practice in the early months of its régime and abandoned the method at the first opportunity.

There is a string in this coal-control bill that is new. He who buys coal at "unjustly high and unreasonable prices" is as subject to the penalty of embargo as is the seller to the denial of cars. We may yet be treated to the spectacle of an industrial plant or railroad closed down by order of the government as penalty for tempting the coal operator with too much money for his coal.

In between the producer and consumer there may be the wholesaler or jobber who does not physically handle the coal or the car in which is is loaded and is transported. He cannot be denied cars, for he does not ask for them and he cannot be embargoed if his name is not on the consignment. Heretofore in a strong buyers' market with fixed limits on price the tendency has been to short-circuit the middleman. He may be found useful this time in facilitating the "bootlegging" of coal.

The legislative remedy is unique. It doubtless goes as far in controlling price and distribution as the government considered it has the power to proceed. Its effectiveness will not really be tried until the market is much more active than at present, when the Federal Fuel Distributor and the Interstate Commerce Commission will require for their arduous task all the sympathy and support they can muster.

The "Conspiracy" of March, 1922

"OPERATORS and miners conspired to cause this strike in order to boost prices." How often is this loose charge heard in the byways—and even in high places! There is no use denying that today it is given general credence. Many a good man and true is convinced in his own mind that there was a conspiracy against him in March, 1922, and that the battles of Cleveland and Pittsburgh and the skirmishes of Chicago, Terre Haute, Kansas City and other points were fought purely for moral effect upon the American people. It is difficult for such average citizens to listen today to coal quotations from their dealers without becoming more definitely convinced than ever. They cannot see, for instance, the logic of the operators'

argument that the heavy cost of mine idleness should be borne by coal not being mined, apparently forgetting that mine maintenance, property depreciation and interest on indebtedness take no notice of strikes and that, since coal is all the operator has to sell, it must bear the entire cost of its production.

Did operators "conspire" to strike prices upward? Turn back to March, 1922, the last month of pre-strike operation. Industry and the demand for coal were at low ebb. Summer was coming on with its accompanying slack market for fuel. Non-union operations throughout the country had a producing capacity of 5,000,000 tons a week. Stocks in the hands of consumers were at unprecedentedly high levels. The wildest industrial optimist could not honestly prophesy that the country would need more than a minimum weekly volume of coal until fall. There was no sound reason to expect that transportation would be hamstrung and the flow of non-union coal choked. Railroad strikes had loomed before—and collapsed. If ever a time was unpropitious for union labor to quit work, if ever the omens were ill for a long or successful strike of miners, that time was the end of March, 1922. How could a strike at such a time be counted on to boost the price of coal enough to compensate for the inevitably heavy expense of labor strife and non-operation?

This is not to deny that operators generally welcomed the strike of March 31. The non-union producers were well satisfied to be in undisturbed possession of the market. The union operators welcomed it mainly because they hoped that out of the conflict would emerge a new set of wages and working conditions that would deflate the cost of coal not only to themselves but to every coal consumer as well. They were seeking opportunity to meet the non-union field competition with lower cost coal. It is true also that operators in certain sections welcomed it as an opportunity to regain once more from the union the control of their own business. It is equally true that many an operator who had been selling coal below cost said frankly that he didn't care if his men did strike, for he couldn't go on doing business "in the red" forever. But the circumstances and events of the day were not those of conspiracy to boost prices.

Then came the summer. Railroad strikes with their accompanying car and power shortages, the exhaustion of industrial and railroad fuel supplies and other developments over which the operators had no control combined to increase the price of coal. After the resumption of mining the market subsided somewhat but whereas the average spot price of all coals near the end of March was $2.05, today it is just above $5. This is proof enough for the man who charges conspiracy. He looks no further. The circumstantial evidence appears damning. But a fair consideration of the facts of March, 1922, should clear the operators in spite of flagrant offenses by some among them. Coal is high but a "conspiracy" of operators to put it there by strike is yet to be proved. In view of their inability to stick together on any program or project, the charge is one of those of the "interesting if true" variety.

A THIRD STRIKE would put us out.—*Wall Street Journal.*

AS NEARLY AS WE can figure it, a living wage is pay sufficient to enable you to strike a couple of months each year for a living wage.—*New York Tribune.*

Haulage Accidents

FROM dangers resulting from the weakness of the mine roof we can never hope to be entirely free. There always will be a degree of risk in excavations of this kind. It is true something nearly approaching absolute safety might be found in measures such as forepoling, cribbing and square setting, but the cost of mining then would be prohibitive. Such plans even in building subways are not found to be universally successful in the entire prevention of accidental death.

In mechanical details such as hauling, however, it would appear possible to make accidents less frequent. Why do we have so many derailments? Surely a little testing would reveal a loose wheel in some less significant way than is afforded by the wrecking of a trip. On well-conducted railroads how rarely do trains leave the track and how seldom do cars pile up in the ditches! Something surely might be done to reduce such accidents in mines and also to make coupling accidents less frequent.

These protective measures are engineering problems, but unfortunately our mechanical and electrical engineers are not often consulted in their solution. Our mine managers, who try to answer them, are mostly better skilled in coal mining proper than in transportation problems, and our mine inspectors usually are men who have not studied engineering and whose upbringing has been in manually operated mines with mule haulage.

The mechanization of the mines involves problems in safety that only mechanical engineers can solve. We must look, at least partly, to such men to perform our inspection work. We may have to employ two kinds of inspectors if we are going to follow out in our methods of inspection the lines of development of our mines and the present practice of the coal companies. At well-ordered plants there is either a power and mechanical engineer or one engineer for mechanical and another for electrical problems. No attempt is made to leave these difficult subjects to men without such professional training.

In all inspection little attention is paid to the rolling stock or any other kind of machinery. The mine inspectors are supposed to supervise such matters, but they are not trained for that purpose, so they find their way rapidly to the working faces, of which their previous experience makes them the more competent judges.

The great advances in safety have mostly been made by engineers, and it has been found that being safe pays, not alone in freedom from accident and compensation charges but usually in economy also. Two instances may be given: When careless handling of lead caused many deaths in the lead industry, the engineers devised ways of keeping the lead out of the air and the devices used made the cost of handling so much cheaper that the change could be measured not only in lives but in profits also. When bandsaws were bursting and killing men in sawmills, frequent sharpening was recommended by engineers as a means of reducing the strain on the saw.

The result was a reduction in lives lost, fewer men injured, fewer broken saws and a greater output per man and per unit of power. A dull saw is an uneconomical unit at best. In a similar way due attention to the safety of mechanical haulage probably would save both lives and dollars.

Manner of Operating Electrical Apparatus in the Automatic Substation at Van Lear, Ky.*

Station Is Set in Operation and Shut Down by Action of Time Clock—Detailed Description of Its Self-Acting Regulatory Devices—After a Month of Tuning It Needs No Further Regular Attention

IT IS safe to say that in the mining industry central power, either bought, pooled or made by the coal company itself, has come to stay. The automatic underground substation for 250-volt direct-current operation will year by year supersede the old heavy feeder system, and the 600-volt system with its heavy maintenance cost will go with the feeders. This evolution will be hastened by the greater risk to life of such high voltages and by the legislation which such risks are likely to put on the statute books.

A station of the type suggested is that furnished by the Westinghouse Electric & Manufacturing Co. and installed by the Consolidation Coal Co. in its Millers Creek Division, Van Lear, Ky.

This station was put in operation Jan. 12, 1922. It has now been in operation a little over seven months, and with the exception of the first month of operation, during which time the station was given daily attention by a man who was acquainted with the workings of the switchboard, this attention being required to adjust the different relays for load conditions, only weekly and sometimes semi-weekly inspection of this equipment has been made. The mine foreman, who was a mine electrician for many years, has a key to this station, looks it over once or twice a day and at any time when he happens to pass the door.

The Consolidation Coal Co. has five mines in this division, numbered 151, 152, 153, 154 and 155. The automatic substation is located inside of Mine No. 154, a distance of about 4,400 ft. from the pit mouth. The drift mouth of Mine No. 153 is located on the opposite side of the valley about 1,000 ft. from that of Mine No. 154. A substation, equipped with two 150-kw. motor-generator sets, is located about midway between the two openings. For a number of years both of these mines were supplied with 250-volt direct-current power from this one substation, but the working places in Mine No. 154 advanced so far away from this substation that it soon became necessary to consider some means of bettering the power at this mine.

The problem was solved by installing a 150-kw. motor-generator set inside the mine about 4,400 ft. from the drift mouth and about 5,000 ft. from the outside station. Both stations were then operated in parallel. In order to take care of any emergency that might arise the inside substation was given the entire time of an attendant. Conditions made it impossible to give him any other duties such, for instance, as looking after a pump, so his whole salary had to be charged against this substation. This was a heavy item and made the direct-current power at this station rather costly.

After the station had been in operation for about three years an outside substation located at the entrance to Mine No. 155 became overloaded, so it was necessary to get more power. This substation had only one 150-kw. motor-generator set, which was a duplicate of the one installed in the underground station in Mine No. 154; so it was decided to move the 150-kw. motor-generator set from the underground station in Mine No. 154 into the substation at Mine No. 155, making the capacity of this substation 300 kw.

This move having been decided on, it was necessary to plan for a unit for the underground station in Mine No. 154, and having in mind the high operating cost of the manual substation at this point, it was decided

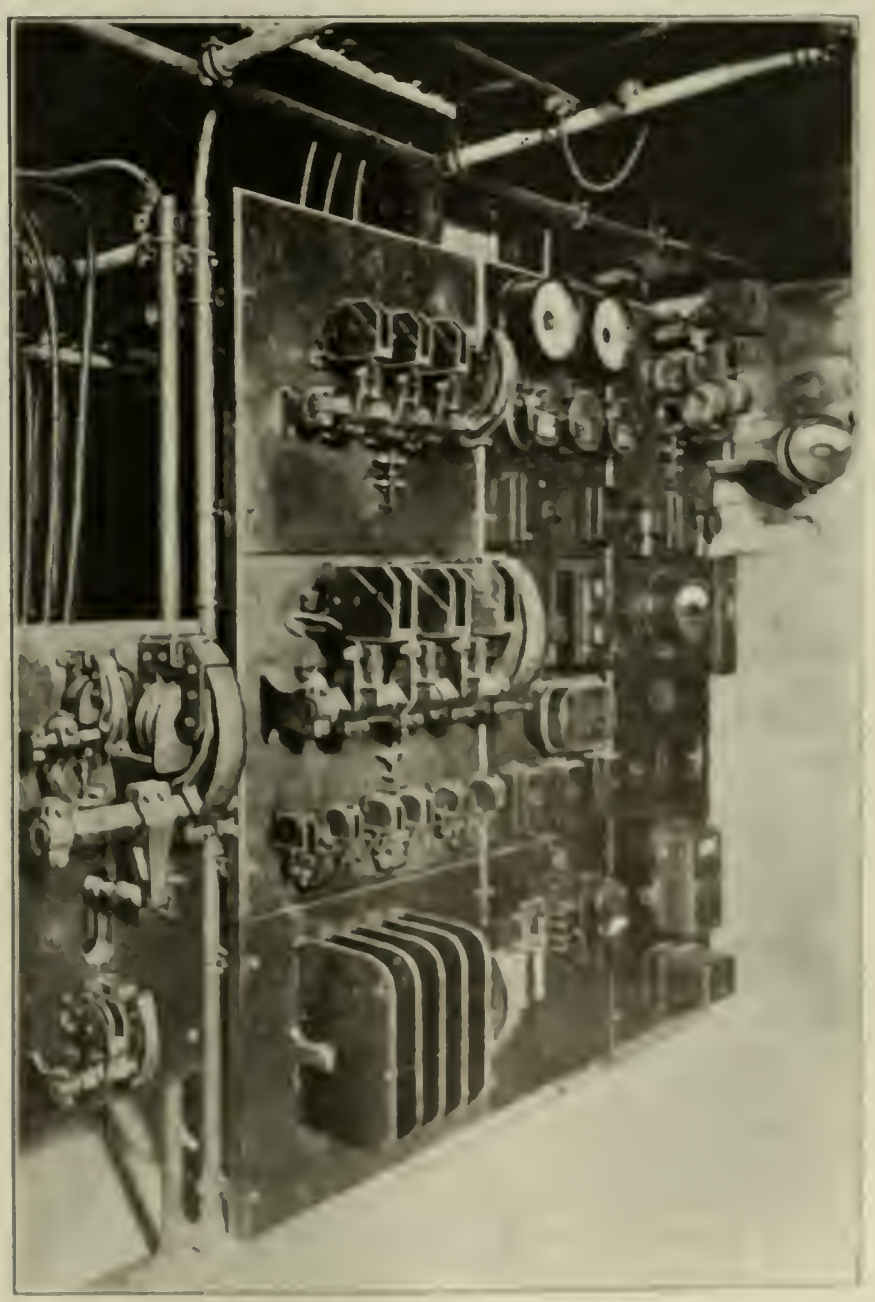


FIG. 1—COMPLETE SWITCHBOARD FOR AUTOMATIC CONTROL OF SYNCHRONOUS CONVERTER STATION

This is the switchboard installed at the Van Lear (Ky.) plant of the Consolidation Coal Co. On the left panel are the operating levers, the front contactor (shown on Fig. 2) the field rheostat and the disk protector; on the second two panels are the starting and tab relays, the main contactor (shown on Fig. 3) main switch and a watthour meter; on the third panel are the disk switch, two relays, a watthour meter, power factor relay, etc. The incoming panel is on the left.

*Second part of report of committee on underground transmission and distribution presented at the session of the West Virginia-Kentucky Association of Mining, Mechanical and Electrical Engineers, Sept. 20, at its session in Huntington, W. Va. The committee consists of C. J. Fuetter (chairman), M. H. Powell and H. E. Carlton. The first part, entitled "Economical Methods of Transmitting Power Underground," appeared in last week's issue of *Coal Age*.



FIG. 1—VIEW OF AUTOMATIC SUBSTATION

Showing the 150-kw. 275-volt converter with control. This installation is located in a room underground 2,000 ft. from the mine mouth.

to install one that was automatic, so a 150-kw. synchronous converter with three 55-kva. transformers and a full automatic switchboard were purchased. The equipment complete was received in about seven weeks after placing the order and, as already stated, was put under load Jan. 12, 1922.

This automatic substation is run in parallel with the outside manually operated substation, the distance between the two substations being about 5,000 ft. The room in which the automatic substation is located is about 20 ft. square with a cement floor. The walls and ceilings are of natural rock, which received a heavy coating of cement applied with a cement gun. The current is brought down to the station through a 122-ft. borehole by a three-conductor No. 2 stranded cable. Each conductor is covered with $\frac{1}{4}$-in. varnished cambric insulation, and the three conductors are then covered with the same insulating material. This is coated again with a lead-sheet covering $\frac{1}{8}$ in. thick, a wire armor jute and asphalt finish being laid over all. This makes the outside diameter a little over 2 in. This cable furnishes the transformers with 4,000-volt three-phase current.

The operation of the automatic substation is regulated by an eight-day time clock so set that the station will start at 6:15 a.m. and shut down every day at 4 p.m. At any time after the station closes down its operation on the following day can be prevented by pulling the main operating switch 19. As it is not necessary to operate the station on Sunday, a certain pumper has been detailed to pull this switch. In order to arrange for the starting of the station on Monday morning, the pumper puts back the switch at any time after 4 p.m. on Sunday. He also winds up the clock on Sunday evening.

The following is a description of the scheme of operation of this station:

This station is designed to start either by the pressing of a push button or by the operation of a time clock. When either of these devices makes contact, the station starts, comes up to speed, straightens its polarity if necessary, applies full voltage from the transformers, and connects itself to the direct-current load. Although this converter is a commutating-pole unit, the brushes are not raised during the starting period.

The various relays and contactors are so connected and interlocked that they will perform the same operations as the attendant does in a hand-operated substation. Of course, everything must be right electrically before the next step is started. After the unit is on the line delivering energy to the load, protective relays will anticipate every electrical condition and secure it against external or internal damage.

In a manually operated substation the operator goes through the following routine in putting the converting unit on the line: (1) He closes the line oil circuit breaker, thus energizing the power transformers; (2) he closes the starting switch, putting low voltage on to the converter rings, the unit coming up to synchronous speed; (3) he watches the direct-current voltmeter as the slip approaches zero and makes the armature slip a pole by reversing the shunt field circuit in case the voltage is "upside down"; (4) he transfers from the starting to the running switch when the direct-current voltmeter reads in the right direction and (5) he closes the carbon circuit breaker and knife switch in the direct-current outgoing line.

By referring to the schematic diagram, Fig. 4, or to the wiring diagram, Fig. 5, it will be seen that the automatic control equipment goes through the same routine as fast as the electrical conditions permit.

As the push button of the time switch makes contact the circuit of the master relay *3-A* is completed, and the relay closes. This circuit is from one side of the operating transformer *A*, through contact *7-A* on the polarized motor relay, through resistance *R1*, through the operating coil of *3-A*, through the overspeed device, and through the push button of the time-switch contact to the other side of the operating transformer *B*.

Machine Follows Manual-Control Methods

The master relay *3-A* has but a single contact which is in series with relay *3*. Hence the latter relay closes as soon as the master relay *3-A* makes its contact. This action locks in the master relay *3-A* by paralleling the contact *7-A* by a contact on relay *3*. That relay, through another contact, energizes the *A1* bus. Thus circuits are set up so that the starting operation may begin. As stated before, this sequence follows the same lines as with the manual control already described:

(1) The line oil circuit breaker closes. This operating unit consists of the three operating coils *20*, *21* and *22*. This mechanism is shown in Fig. 3. It consists of the main closing magnet, *20;* the latching magnet, *21*, and an auxiliary contactor, *22*. This contactor closes as soon as the *A1* bus is energized. As contactor *22* makes contact, the main-coil circuit of *20* is completed, and the breaker is closed. The latching magnet *21* is energized as the breaker goes in. The breaker is mechanically held in this position as long as *21* is energized. An interlock on the latching contactor opens the coil circuit of contactor *22*, which, as that contactor opens, de-energizes the main closing coil, *20*. Thus the breaker closes, latches in mechanically and cuts off its own main closing circuit.

(2) The starting switch, *6*, closes. This is accomplished through the closing of relay *4*. The circuit of this relay is interlocked with both relay *19* and the running switch, *11*. Thus starting voltage is applied to the converter rings, and the converter starts and comes up to speed. During this starting period the commutator end of the converter has an alternating voltage of the frequency of the slip across its terminals.

(3) As the slip approaches zero, or the unit pulls into synchronism, a direct-current voltage is established

on the commutator. The polarized motor-driven relay *7* is connected across the direct-current end as long as the starting switch is closed. This relay has a permanent magnet field, so that its direction of rotation depends on the direction of current through the armature circuit. In case the unit "pulls in upside down," the current through the armature will be in such a direction as to rotate toward and make contact *7-D*. The closing of this contact affects that of a multi-contact relay, *9*. This action energizes the four-pole double-throw contactor, *10*, which reverses the shunt-field connection on the converter.

The shunt field is divided into halves, the two parts being in parallel when the field reversing switch *10* is energized. The converter armature is then forced backward until the midpole position is reached. At this point the direct-current voltage is zero and the multi-contact *10* drops out. The field-reversing contactor is de-energized, and the normal field connection is restored. The converter armature continues through the midpole position and again synchronizes with the correct field-pole rotation.

The right direct-current voltage is now on the commutator and relay *7* runs in the opposite direction to make contact *7-B*. This action completes the circuit of transfer relay *19*, which, upon closing, opens relay circuit *4* and completes its own holding connection. Thus it is seen that the polarized relay *7* operates to effect the transfer from the starting to the running switches only when the direct-current voltage of the converter as it pulls in step is found to be in the right direction.

(4) Through the opening of the contact of relay *19* in the operating coil circuit of relay *4* that relay is opened, which in turn opens the starting switch *6*. An interlock on the starting switch makes contact as that switch opens and completes the circuit of field-control relay *5*. This relay closes the running switch *11* and short-circuits a resistance in series with the shunt field of the converter. Full direct-current voltage is then available on the converter terminals.

(5) The converter unit is now ready to be connected to the direct-current line. Field relay *38* is a series relay which picks up as full voltage is applied to the alternating-current rings when running switch *11* closes. The circuit of the service-restoring contactor *12* is now complete. This circuit may be traced from the positive terminal of the machine through a 5-ohm grid resistance, through the operating coil of circuit breaker *12*, and then through the contacts of the overload relay *12T*, a single-pole single-throw knife switch, master relay *3*, field current relay *38* and an interlock on the running switch *11* to the negative side of the machine. An interlock on the direct-current breaker *12* bridges the contact of relay *3*, which connects the *A* and *A1* buses.

The converter will now deliver energy to the load until it is shut down by the push button or time switch, or some protective device. The total time re-

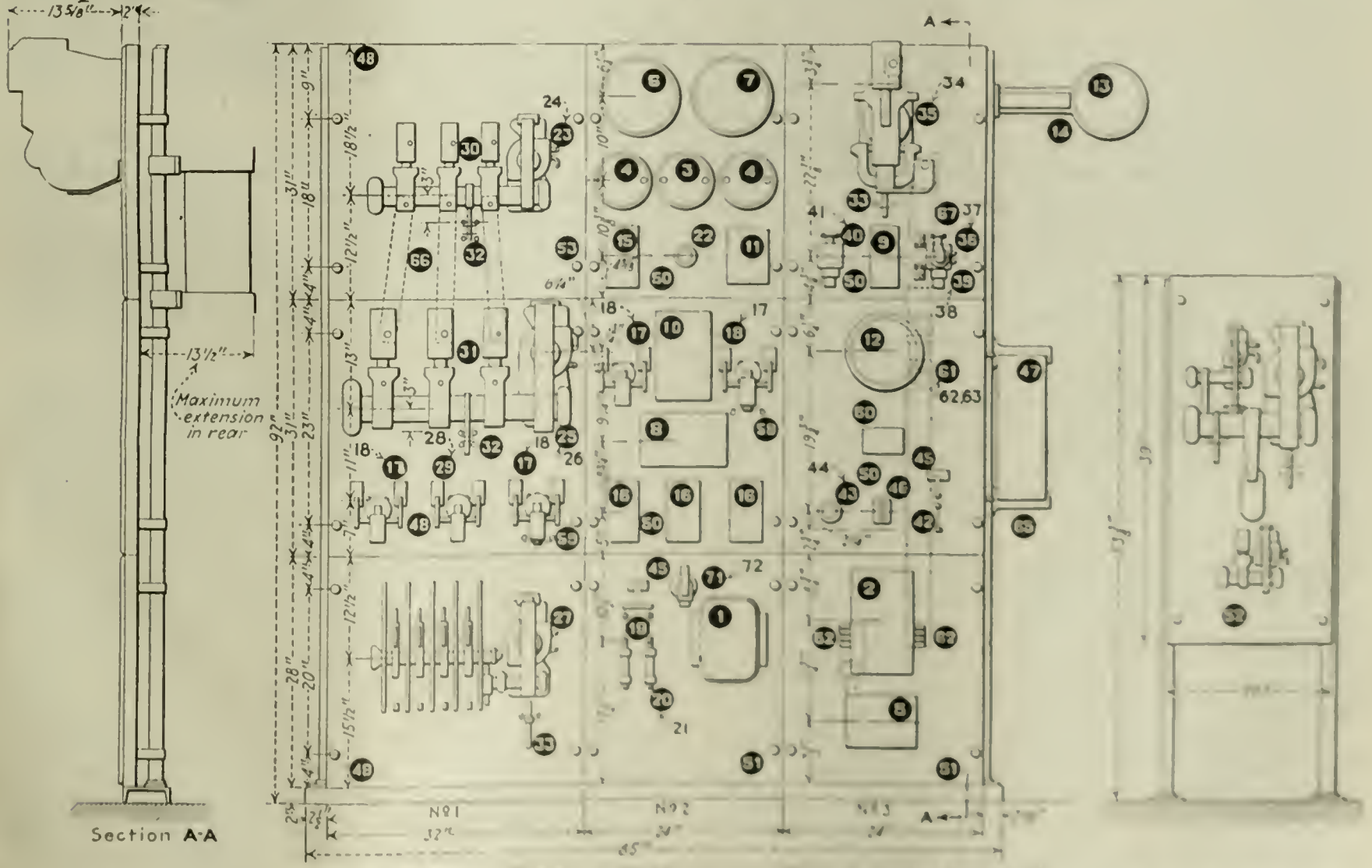


FIG. 3—FRONT VIEW OF SWITCHBOARD WITH PARTS LETTERED

1 and 2, watt-hour meters; 3 and 4 relay; 5, reverse-current relay; 6, ammeter; 7, power-factor meter; 8, polarized motor relay; 9, special relay; 10, balance-phase relay; 11, multicontact relay; 12, direct-current ammeter; 13, direct-current voltmeter; 14, swinging bracket; 15, lockout relay; 16, thermal relay; 17, contactor; 18, coil for same; 19, knife switch; 20, fuse; 21, fuse clips; 22, ammeter switch; 23, contactor; 24, coil for same; 25, 500-amp. contactor; 26, coil for same; 27, field contactor; 28, contactor; 29, coil for same; 30 and 31, operating levers; 32, disk interlock M to H; 33, disk interlock R; 34, 1,250-amp. contactor; 35, coil for same; 36, relay with latch; 37, series coil for same; 38, shoes for pressure coil; 39, shunt coil for same; 40, relay without latch; 41, shunt coil for same; 42, 600-amp. 250-volt knife switch; 43, voltmeter switch; 44, key for same; 45, coil holder; 46, Perkins potentiometer; 47, Ambert and Base switch; 48 to 63, slate panels; 64, bracket panel; 65, connecting plate; 66, pipe and flange; 67, angle connecting bracket; 68, frame connecting bracket; 69, pole connect-terminals No. 1; 70, pole contact-terminals No. 2; 71, pole contact-terminals No. 3; 72, main pole; 73, [illegible]; 74, [illegible]; 75, [illegible]; 76, [illegible]; 77, [illegible]; 78, [illegible]; 79, [illegible]; 80, [illegible]; 81, [illegible]; 82, [illegible]; 83, [illegible]; 84, [illegible]; 85, [illegible]; 86, [illegible]; 87, [illegible]; 88, [illegible]; 89, [illegible]; 90, [illegible]; 91, [illegible]; 92, [illegible];

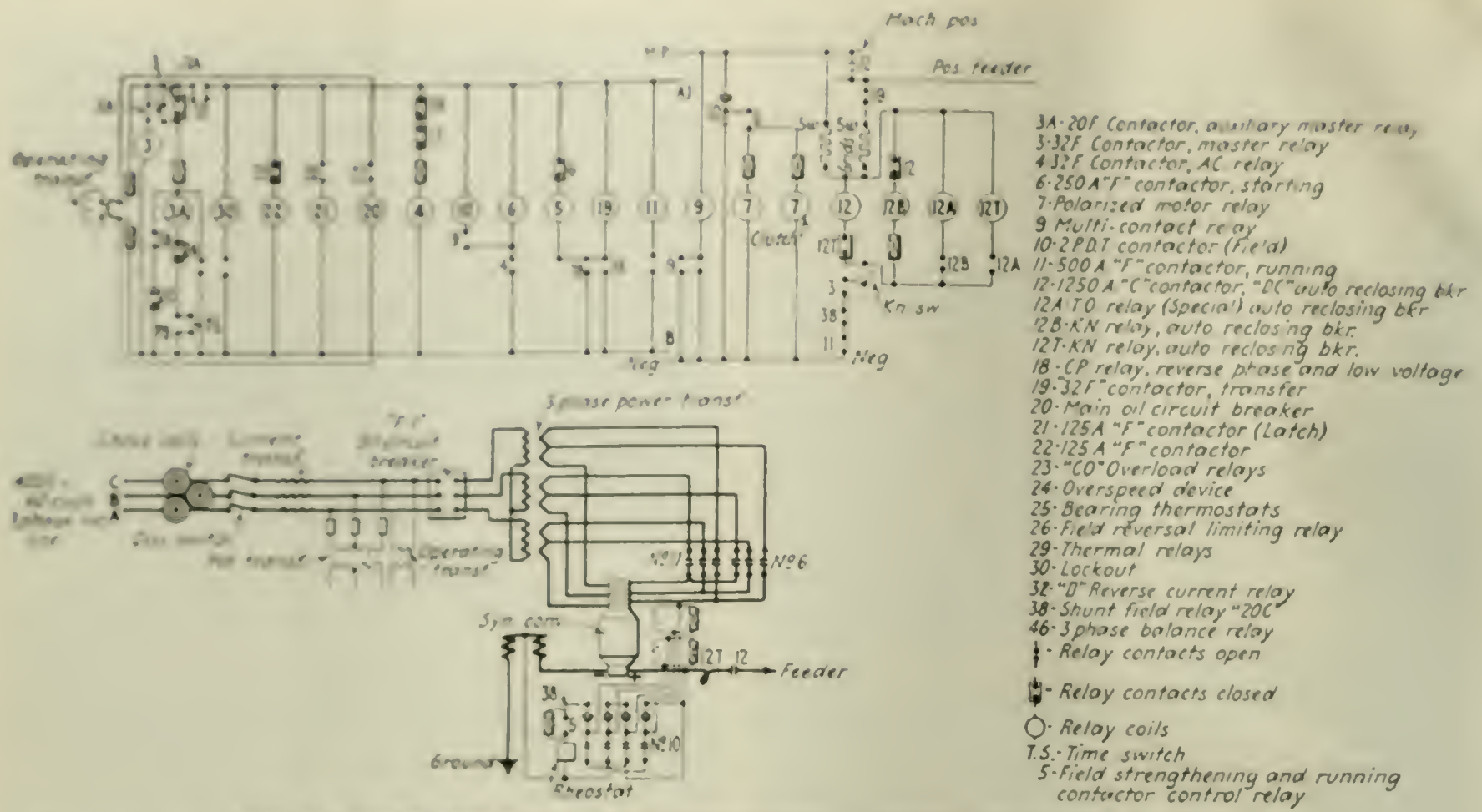


FIG. 4—SCHEMATIC DIAGRAM OF SWITCHBOARD ILLUSTRATING CONNECTIONS

This gives a clearer idea of the connections than can be afforded by the elevation of either the front or the back of the switchboard.

quired for the foregoing operation of starting the unit and connecting it to the line is approximately 12 seconds.

In case the load on the motor-generator set rises to such a value that it would be advisable to open the direct-current breaker, the overload relay *12T* will pick up and open the operating coil circuit of breaker *12*. This disconnects the load from the machine. The resistance of the circuit being fed must rise to a point where the breaker may reclose and stay closed. The breaker *12*, in opening, completes the circuit of a timing relay, *12B*, which makes a contact in the circuit of the restoring relay *12A* after a predetermined time.

The restoring relay *12A* is calibrated to close its contact only when the resistance of the feeder section has risen to a value that will limit the output of the machine to a safe capacity. When this value is reached relay *12A* energizes the reset coil of breaker *12*. The breaker, therefore, opens on overload, stays open a definite time before the resistance-measuring circuit is set up and then recloses only when the reason for the overload has disappeared.

The usual procedure in shutting down a manually controlled substation is as follows: (1) Trip the direct-current circuit breaker and open the knife switch. (2) Open alternating-current oil circuit breaker of the incoming line. (3) Open the running switch.

As in starting up, the shutting-down action is practically duplicated by the switching equipment. When, as is most usual at this station, the motor-generator set is shut down by the time switch, the contact in series with relay *3A* is opened at a predetermined time. This relay in dropping out opens relay *3*.

(1) Although relay *3* opens its contact between the *A* and *A1* buses, the connection is retained by an interlock on direct-current contactor *12*. However, as relay *3* opens, one of its contacts opens the circuit of contactor *12*, causing it to drop open. Thus the direct-current end of the converting unit is disconnected.

(2) The action of disconnecting the direct-current load, just described, opens the bridging contactor *12* between the *A* and *A1* buses and de-energizes the *A1* bus. The holding contactor *21* on the oil circuit breaker mechanism is therefore opened, and this, in turn, opens the coil circuit breaker.

(3) The running contactor *11*, with its control relays *5* and *19*, also drops open as the *A1* bus is disconnected from the transformer. It will be observed that relay *5* in opening inserts a resistance in series with the shunt field of the converter, thus causing the voltage to fall rapidly. This makes it possible to get back on the line in three or four seconds in case of a momentary outage.

The protective features also should be described: (1) Lockout relay *30* is used to permanently lock the station out of service until a maintenance man has visited the station, located and remedied the trouble and reset the lockout relay by hand. This relay is operated when something has happened inside the station which makes further operation of the equipment hazardous.

(2) Overload relays of standard induction-motor type are set to operate on short-circuit in the converter, on transformers or in case of flash-over on the direct-current end. When a flash-over occurs the unit is not put in service again until an insulation test has been made to make sure that the armature has not been permanently damaged. The service restoring breaker, as previously described, takes care of legitimate direct current overload. However, one other condition remains to be provided for; this is continued small overloads which would never open the direct-current circuit breaker but would overheat the machine windings if allowed to continue long enough. Thermal relays *29* furnish this protection and simply shut down the unit until it has cooled sufficiently that it may be allowed to start again without injury.

(3) In case a phase opens while the unit is running and the load is of sufficient magnitude to overheat the

converter, the unit is locked out of service by phase balance relay *46*. This action may be made selective so that the relay will lock the station out in case of phase failure on the low side of the power transformers and will simply shut the station down in case of phase failure anywhere on the incoming high-tension line. A polyphase low-voltage relay, *18*, will then hold the substation out of service until three-phase voltage is again available. Thus this relay prevents the station from starting with single-phase high-tension line current.

(4) A contact-making thermostat is located on each of the main converter bearings. These thermostats are mounted on the pedestals, and the operating tubes are inserted in holes where they touch the outer surface of the babbitt. The heat drop through the babbitt is small, and the unit is locked out of service before any damage is done to the bearing surface. As a rule after a little scraping the overheated bearing may be returned immediately to service.

(5) If the overspeed reaches 15 per cent the standard contact-opening overspeed device permanently opens the coil circuit of the master relay *3A*. This device must be reset by hand, and for this reason its operation locks out the apparatus.

(6) Eighty per cent of normal high-tension voltage must be available for starting the station or it will not start. This applies to the converter as well as the various alternating-current relays and contactors. The polyphase low-voltage relay *18* is calibrated so that it closes its contacts at all voltages below 80 per cent of normal and by short-circuiting the coil of master relay *3A* prevents the unit from starting.

(7) In the same way the polyphase low-voltage relay *18* shuts the station down in case the high-tension voltage drops below 80 per cent of normal. In case of momentary "high-line" outage, the station would shut down and come back immediately upon restoration of normal voltage. To make sure that there can be no false electrical indications during a rapid restart, a short-circuit is put on the coil of *3A* by contacts on the oil circuit breaker *20* and the shunt field series relay *38*. This prevents restarting until the voltage of the converter falls to a point where relay *38* will open. All this requires but two seconds, for resistance is inserted in the shunt field circuit when shutting down. This same connection shuts the station down in case the circuit breaker opens for some unusual reason while the unit is operating. While this condition is unlikely with this type of circuit breaker, it is important that such a protection be provided.

(8) A standard reverse-current relay is used to shut down the unit should the current reverse.

(9) If the circuit in the shunt field of the converter be opened the unit will fall "out of step" on small direct-current load. It is important that the direct-current load be disconnected at this time. A contact of shuntfield circuit *38* is, therefore, placed in series with main direct-current breaker *12*, which removes all load from the converter as relay *38* opens.

The switchboard of this unit is equipped with the

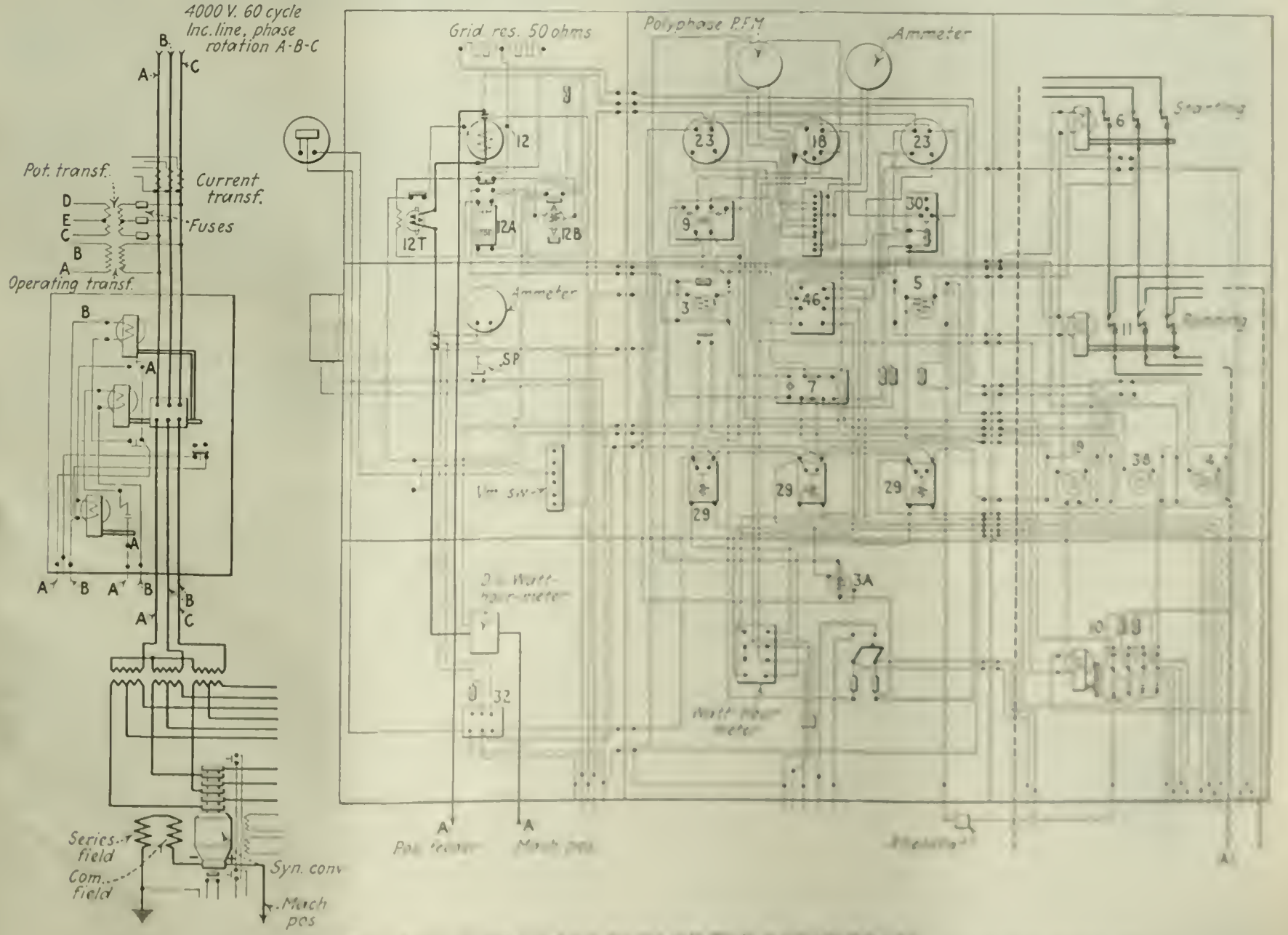


FIG. —WIRING AT THE BACK OF THE SWITCHBOARD

Letters and figures do not have similar significance to those at Fig. 2 but agree with those in the text and in Fig. 4.

following instruments: One direct-current voltmeter, one direct-current ammeter, one power-factor meter, one alternating-current watt-hour meter and one direct-current watt-hour meter.

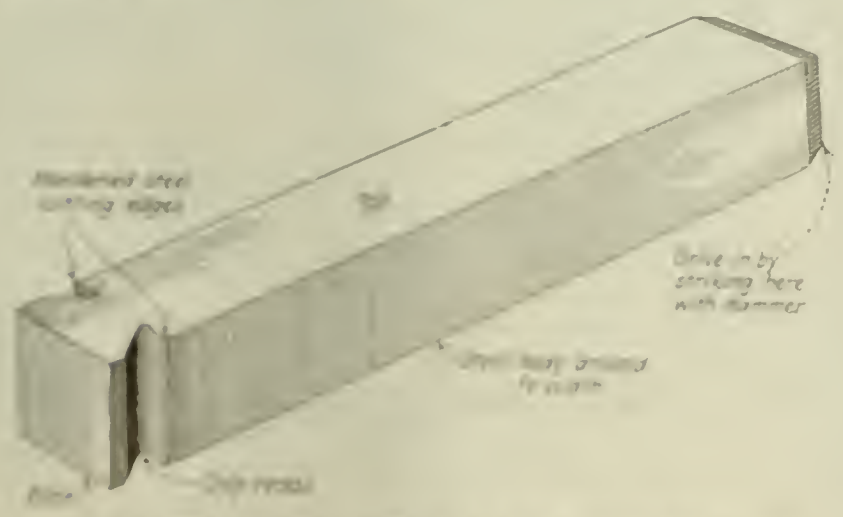
At the time the above automatic substation shown in Figs. 1 and 2 was installed another automatic substation was erected by the Consolidation Coal Co. at its Frostburg mine, in the State of Maryland. This station consists of two 150-kw. 275-volt direct-current synchronous converters. The Van Lear and Frostburg automatic stations have given such excellent results that another automatic substation has been installed by the above company in its Elkhorn division, at Jenkins, Ky. This station is practically a duplicate of the Frostburg two-unit installation.

Self-Fitting Key Enlarges Its Own Seat

KEYS of various descriptions are well known to those familiar with machinery. They are employed as a rule to hold firmly together a shaft and some machine part or member (such as a wheel) encircling it. In applying this fastening it is customary to cut a keyway, either by milling or by chipping and filing, in both shaft and wheel and to fit the key to place. This latter operation usually has been a hand job, the key being filed or scraped to size or the keyways similarly treated. In many instances it has been a long, laborious process, the effectiveness of which has not always been all that could be desired.

A new device known as the Keytite self-fitting key is shown in the accompanying illustration. This is a key made of tough chisel-steel stock ground to a size slightly larger than the nominal keyway width. A cutting edge and chip recess are provided near the forward end, in front of which is placed a pilot slightly smaller than the nominal keyway dimensions.

In installing one of these keys the pilot is first entered in the keyway, in which it should make an easy sliding fit. The key is then driven home with a hammer or sledge, depending upon its size, the cutting edges meanwhile shaving the sides of the keyseat to a tight fit with the key. In the larger sizes cutting edges are sometimes provided on both sides, and in some instances on the top also. Gib keys and other modifications may be furnished, all embodying the self-fitting principle as above described. This new key is being placed on the market by Smith & Serrell, of Newark, N.J.



A KEY THAT FITS KEYWAY FOR ITS ENTIRE LENGTH

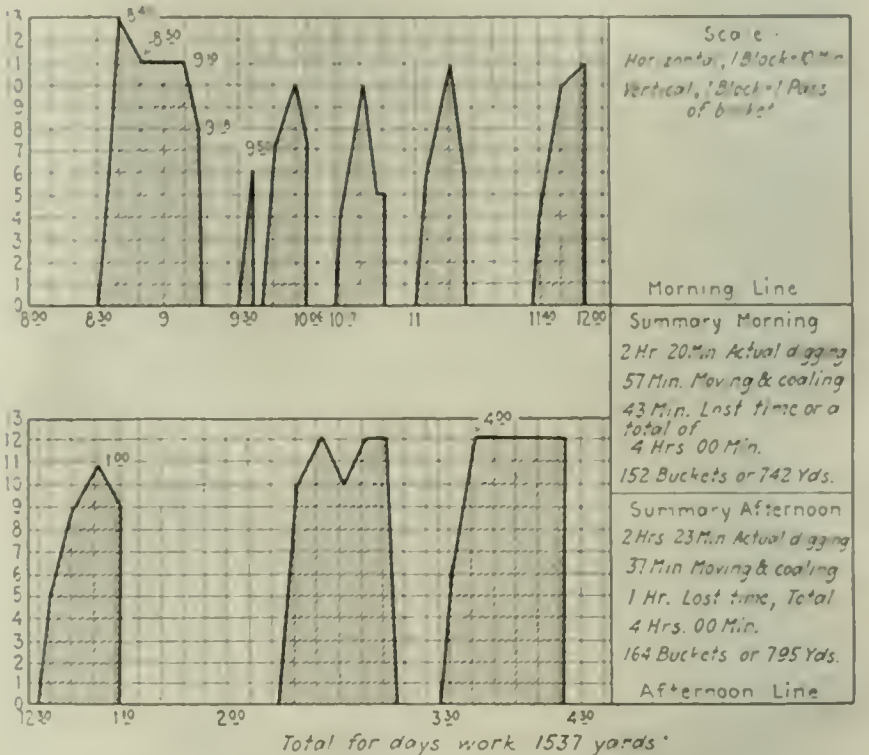
The front or point of the key is of such size that it will enter the keyway readily. Guided by this the cutting edge, which is set for a slightly larger passageway, removes a chip in one or both sides, forcing it into the recess provided between the pilot end of the key and the key proper.

Graphic Time Study of the Efficiency of A Shovel Removing Overburden

GRAPHIC records possess an advantage over those of tabular form chiefly in that they show their results almost at a glance. When prepared to show the performance of a coal-stripping shovel they exhibit plainly whether the machine is doing what may be logically expected of it and whether it is attaining its maximum efficiency. A record of this kind is shown in the accompanying illustration.

To make such a record the observer, watch in hand, notes the number of shovel dips made during any given time interval. He is in a position to decide whether any decrease in the speed of operation arises from unusually difficult digging or is the fault of the machine crew; whether delays encountered at any given time are warranted and how and by what means better efficiency can be attained.

This system is especially useful when a stripping operation is first started. At such time the shovel operator is not accustomed to the operation or, as it is



GRAPHIC CHART OF STRIPPING-SHOVEL OPERATION

The numbers of buckets filled in 10 minutes are plotted as ordinates and the time as abscissas. Thus from 8:30 to 8:40 a.m. thirteen buckets were loaded and from 8:40 to 8:50 a.m. eleven buckets. The time during which the shovel is idle is quite clearly apparent.

said, "has not got his bearings yet." A little coaching will then help appreciably in effecting better operation and bigger output. It may also be employed advantageously whenever the superintendent notes any falling off in the yardage moved.

It will be noted that the total amount of overburden moved during the day on which the record here shown was made was 1,537 cu.yd. This is far below a normal day's output. If observations are carried over a number of successive days and the records made are placed side by side a comparison of the results will be easy.

This method of recording shovel operations graphically has been adopted by the Stine Coal Mining Co. in its Shoveltown operations, near Osceola Mills, Pa. The record shown in the accompanying illustration was made at the firm's strip pit. As previously stated, the results obtained are far below normal and the record is here presented to illustrate the principle involved and not to show a phenomenal movement of overburden.

How Mechanical and Electrical Engineers Can Increase Their Usefulness in the Operation of Mines*

Rapid Evolution of Electrical Engineer—Economies Possible Where Unit Cost of Every Operation Is Known—Cost Sheets Help Management to Determine Relative Upkeep of Machines and Efficiency of Repairmen

By W. C. Shunk
Big Stone Gap, Va.

ONLY a little more than two decades have elapsed since electricity was first introduced in a crude way for power purposes at collieries. A short time prior thereto the electrical engineer was completely foreign to the personnel of any coal-mining organization. Since then, however, and more especially during the past ten years, he has became an important and essential figure at the mines.

During the early days of the electric mine locomotive and the coal-cutting machine, electricians in charge of the comparatively few electrified collieries were looked upon as being finished and qualified engineers as soon as they had become familiar with the mechanical routine of dismantling and reassembling direct-current motors of the simple series and shunt-wound types. No one expected that they would understand the principles of field and armature winding. All that was required of them was that they always use the utmost care in marking corresponding leads of the connections they opened so as to assure their proper reconnection. The average mine electrician was satisfied to follow such methods not merely for the sake of convenience but because he lacked knowledge of the paths by which current flowed through the windings and was unfamiliar with the characteristics of the mysterious electric motor and so could follow no other plan without injury to the equipment.

Electrical Engineer Does His Own Devising

Meantime a great evolution has taken place. No longer merely an electrician he is now an electrical engineer. Not only has the design of equipment been improved but the average electrical engineer has himself developed so that he now can more successfully cope with the characteristics and peculiarities of the complicated types of motors and other apparatus used today than he could formerly with the simpler equipment of earlier years.

The electrical engineers now employed in the field are better equipped from the standpoint of general knowledge because they keep in closer touch with manufacturers' designing engineers than they have ever done before. Indeed, these men in the field can not only operate the machinery entrusted to their care but are to be credited also with originating many new and highly practical suggestions as to the way in which the design of equipment could be improved.

Many able engineers are now engaged in the power departments of the coal industry, and not a few of the collieries already have in their employment or are developing men of contriving genius who have the ability to devise methods of making their electrical equipment operate more and more efficiently.

The wonderful progress made during the past ten years in coal production has been rendered possible to no small extent by the more or less complete electrification of the old as well as of the more recently developed collieries. This has created a demand for the electrical wizard and his protégé, the practical repairman.

Men in Charge Come from Three Sources

The vast expansion in the use of electrical energy along with the proportionate growth of the coal industry has demanded the attention and services of some of the most eminent engineers and technical men of our country. Many of the men emerging from our colleges and universities also have been absorbed directly by the operating end of the electrical and mechanical professions. In addition to these, a surprisingly large number of electrically inclined young men, particularly those of the so-called "self-made" type, have passed through the school of practical experience, having begun in an elementary way and having risen to positions where they can perform services of real worth to their respective companies.

Nothwithstanding the dependable and efficient equipment and apparatus introduced during the recent past, which requires only a little attention and repair, there is still a marked demand for competent electrical and mechanical engineers in the coal-mining industry. This arises from an increase in mine electrification, the displacement of other means of transmitting power, the installation of new plants and the substitution of equipment of modern design for that now old and obsolete.

Difficulties Both Mechanical and Electrical

Men now connected with mining operations are confronted with many perplexing problems of which their predecessors of a half decade ago never dreamed. They range in importance from the simple application of the incandescent lamp to the complex undertaking of erecting and maintaining a modern central-power station. Between these extremes at the average colliery lie problems of many degrees of complexity, for all types of equipment have their peculiar difficulties.

As most electrical problems to be met are in a degree mechanical, and vice versa, it is becoming the prevalent custom of mine managements to select some one man to supervise the whole power department, seeking to find some one person adept in both mechanical and electrical engineering. Exceptions to this rule can be found only in the plants of the largest mining companies and then only when the nature of operation lends itself to the major use of mechanical equipment. Generally speaking, therefore, men who would be successful should

*Article entitled "How Mechanical and Electrical Men Can Increase Their Usefulness and, Therefore, Become More Important Figures in the Organization," presented at the meeting of the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers, Huntington, W. Va.

be skilled in both the professions and should study and gain experience in both branches of the industry.

It might be well here to call to the especial attention of electricians who shoulder the responsibility of supervising the installation and maintenance of mining machinery that a lack of knowledge and interest in machinery of the reciprocating type is becoming rather prevalent. Since the advent of the central power station and the consequent abandonment of the small isolated power plant and its reciprocating steam engine the electrical engineer at mines has concentrated his efforts upon equipment of the rotary type, the mechanical characteristics of which lend themselves to extremely simple alignment. A machine of the rotary or some other equally simple type that may be substituted for the reciprocating air compressor, upon which the majority of collieries must still depend for rock and other hard drilling, as well as for many other uses, must yet be developed.

On account of their flexible application portable machines of this kind are more or less adapted to all kinds of hard drilling below ground. Recently the general tendency of compressor design has been toward smaller units moving at higher speeds. In order to insure efficient and certain operation these machines require somewhat more intelligent attention than the mechanical parts of the electric motor. Consequently they, along with pneumatic drills and tools, should not be overlooked as part of the mine equipment to be carefully studied.

Must Furnish Power But Do It with Economy

There are many ways in which the personnel of the power department can and should religiously co-operate with the mine-operating department. Of course, this co-operation should be reciprocal, but here only the duty of the electrical engineer in this matter will be referred to. Favorable earning capacity depends, of course, on costs; so, naturally, the economic aim of all reputable industry is to yield the greatest production, in a safe and sane manner, at the least possible expense per unit of production, whatever that unit may be. In coal mining that unit is the ton of coal, and accordingly the significant object is the cost per ton.

As machinery is now one of the most important factors in connection with the industry, naturally it should be one of the foremost items in cost consideration. There are many avenues in the power department through which a share of the cost per ton may leak inconspicuously. These avenues treated individually may seem unimportant and in some cases almost negligible. When viewed in the aggregate, however, because of the many machine applications involved, the loss often is found to express itself in surprisingly large figures. These so-called "leaks" really are too numerous for mention here, so their character will be only outlined and reference made merely to some of their more important phases.

One of the important ways in which the power department can co-operate with the operating officials is by preparing authentic data regarding the costs of power consumed in the various mining operations and transmitting this information to all branches of the organization concerned. Those responsible for production cost from the management down generally are eager to know all the items in detail entering into the total expense.

Unfortunately, however, at most collieries the power department has prepared itself only to submit the total cost per ton for electrical energy consumed and the number of kilowatt-hours used per ton of coal produced. This information the mine clerk can readily prepare by a simple calculation when the three quantities involved are known. In most cases the mine-operating personnel is wholly dependent on those in the power department for the more intimate power-cost information. Lacking this co-operation from the power engineer the management in many instances trails along in the dark, uninformed as to the power cost per ton for each item of the highly diversified consumption at mines.

Finding Cost of Each Individual Operation

Much benefit would be derived from a knowledge of the exact cost and the kilowatt-hours per ton consumed in ventilation, haulage, machine cutting, tipple operation and other classified items peculiar to the general average operating conditions. It would be constructive, as well as interesting, also for those in the operating department to know the power cost of operating each machine in the mines over a given period of time—in an hour or a shift, for instance.

If an employee is engaged to perform a certain class of work, his wage is rated at so much per hour, day or month, the exact rate being supposedly commensurate with his occupation, training and ability. The foreman, superintendent and their superiors know how much the services of that employee are costing per day. Why not know, approximately at least, how much it costs per day to operate any particular piece of equipment?

It is needless to say that this would be interesting indeed to everyone, even to the foreman and to the men who are operating the equipment. Such information would give the foreman an opportunity to compare the power costs of one with any other operation and enlighten the machine runner as to the real value of the energy he is consuming. It would, of course, involve much detail to follow out such a practice at close and regular intervals, but it is certainly worth while to obtain such information for distribution from time to time as convenience permits.

Those in charge of the upkeep of equipment can be of much assistance to the organization in general by lending their efforts toward obtaining reliable facts and figures regarding maintenance cost. Maintenance is a phase of operation where large sums of money may be expended without attaining the desired results. This economy depends somewhat, however, upon the knowledge and experience of the repairman and his capacity for making good, workmanlike repairs, as well as on the degree of care taken of the machine by the attendant or runner during operation. Proper supervision along these lines is as important as efficient operation, and the costs when obtained will give an indication of the places where closer supervision is needed.

Considering the variable conditions under which similar machines work, one may readily ascertain by checking up maintenance cost whether equipment is being properly operated or is working under normal or abnormal conditions, also whether it is being properly repaired. Furthermore, by it may be determined whether one machine is or is not better adapted than another for any particular service.

Some inference indeed may be drawn from close observation, but a real and convincing conclusion can-

not be obtained without a careful analysis of the cost figures. The operating force is as dependent as the power department on the facts and information obtained regarding this matter. Consequently intelligent cooperation from those familiar with power technique is of much importance to the mine manager.

In yet another and an effective way can the mechanical and electrical engineers convince other branches of the organization at their mines of the real importance of the work they are able to do. In every industry the ability to train men to the highest point of efficiency is one of the most desirable of accomplishments. This desired end may be obtained by establishing conferences at which men who have to handle electrical equipment may receive training and instruction and gain inspiration and help from the experience and ideas of other men. All this can be accomplished by group meetings and conferences.

In nearly all organizations periodical executive conferences, superintendents' and foremen's meetings are now held for a similar purpose. Their value is beyond question. Why do not the power departments at our mines hold like meetings? Perhaps they already do so in some organizations, but in all probability not as frequently as is desirable.

Another invaluable trait in a power engineer is the development of foresight. He should carefully inspect his apparatus so as to forestall interruptions of service and injury to equipment. It is well known that continuous operation is reflected directly in cost. Expensive delays have occurred, and many more will be encountered, until at last foresight and inspection have been much more highly developed than they now are. Those who anticipate trouble and are prepared for it in advance—or who, better still, prevent its coming—never fail of recognition by others. They are recognized as exceptional men.

The suggestion is therefore advanced that occasional careful surveys and analyses be made of all equipment, and that decisions be made beforehand, as far as possible, as to the procedure to be followed when a breakdown occurs, assuming that such an event is inevitable and cannot be averted. Each machine should be considered separately. To keep the wheels turning with the least delay to operation oftentimes requires real genius, and this qualification cannot be overlooked. Careful planning and forethought will correct many seemingly "impossible situations."

The importance of systematized, emphasized and relentlessly practiced inspection is nowhere more evident than in relation to the uninterrupted service of electrical and mechanical equipment. The intricate mechanism and complexity of such devices need only be considered to substantiate this statement to the full. Never was the old adage "a stitch in time" applied more appropriately than to the upkeep of machinery and its appurtenances.

The continuous operation of machines cannot be relied upon without proper anticipation, inspection and repair, for without these the process of deterioration will soon progress to the point of unpreventable stoppage. Substantial reduction in upkeep expense can be effected by adhering to the rule requiring frequent detailed inspections followed by necessary minor repairs, thereby forestalling subsequent costly replacements and probable delays.

Nothing is more desirable in the make-up of a real supervising engineer, electrician or mechanic than an ability to observe and to carry out rigid inspections. His capability along these lines should be carefully weighed and regarded as more important than many other desirable traits.

Along with the few suggestions here presented it should not be out of place to mention the importance of keeping in touch with other branches of the coal industry. Is there any fundamental reason why the progressive mechanical or electrical engineer should not share along with the mining engineer the honor of rising to executive positions in the organization? Surely there is not, providing he takes advantage of opportunities to inform himself as far as possible of the workings of the other branches of the organization and shows a keen interest therein while not losing sight of his own particular job. The successful executive is careful not to overlook men possessed of these qualities, and it would be unwise in any electrical engineer not to acquaint himself with all kinds of data and experience likely to fit him for such preferment.

Making Comminuted Smokeless Powder Available for Blasting Purposes

AT the close of the late war the government had on hand vast quantities of various military explosives —far in excess of the current needs of both army and navy. As such explosives differ somewhat from those ordinarily used in industry and deteriorate to some slight extent with age, it was deemed advisable to seek means whereby they might be adapted to use in the arts and sciences of peace. Experiments have shown that detonating explosives such as TNT and picric acid may be used in various kinds of industrial blasting with entire success.

Among the explosives left over when the armistice was signed, however, was a large amount of smokeless powder. As ordinarily manufactured, this possessed qualities ill adapted to commercial blasting. It has been found, however, that granular introcelluloses which function as propellants by progressive burning, when ground to a fine powder may be detonated by a dynamite primer. This renders this explosive, known as comminuted smokeless powder, available for use in blasting.

The Bureau of Mines has performed extensive experiments upon this explosive, the results of which are set forth in a report (Serial No. 2,386) entitled "Comminuted Smokeless Powder as a Blasting Agent," by C. E. Munroe and Spencer P. Howell. Some of the conclusions drawn are as follows: This explosive can be used to advantage for certain kinds of blasting in the open, such as for stumps, boulders and ditches, but it should not be used where inflammable dust or gas is present or in close places such as tunnels or mines unless the ventilation is exceptionally good and ample time is allowed for the gases to be swept out by the air current circulating. It is fired most effectively by means of an electric detonator. In loading, an adequate quantity of stemming should be used.

A SANITARY SURVEY of the mining town of Tintic, Utah, has been completed by Dr. A. L. Murray, surgeon of the Bureau of Mines. A compilation of mortality and morbidity statistics of Park City, Utah, has been made by Dr. Murray. Conferences have been held with the state health authorities regarding sanitary surveys of the Price River and Spring Canyon districts in Carbon County in that state.

Safety Congress Debates Hazards to Health and Limb—II*

Radio Fails Underground—Metal Vs. Fabric Ventilating Tubes—Rounded and Gabled Locomotive Covers—Dangers of Broken Trip—Gongs, Lights and Tags—Cable Substitutions and Their Dangers—Hoisting Hazards

INTERESTING indeed was the discussion at the meeting of the mining section of the National Safety Council, Aug. 30, on the effect of air which is grievously lacking in oxygen as may result either from breathing from and into a bag unsupplied by or ill supplied with oxygen or fed from an oxygen supply in which nitrogen is present in some quanity. The subject opened with the reading of an article by D. J. Parker on "Mine Rescue Training and Operations," at the conclusion of which B. F. Tillson, the chairman, remarked that too great a restriction had been placed on traveling up ladders in mine-rescue work.

He could not altogether sponsor such a statement as that made by Mr. Parker: "Travel by crew up or down vertical ladders in irrespirable atmospheres should be absolutely forbidden, unless it is definitely known that there is a probability of saving life by such action."

Mr. Tillson felt that rescue apparatus showed such reliability as to make such precautions unnecessary. He thought that mine-rescue work still had coal-mining conditions mainly in view and that rules were made to suit conditions where vertical raises were the exception rather than the rule. His experience in apparatus had made him feel quite ready to undertake to climb ladders and crawl long distances. He realized, however, that laboring under the terrific strain of rescue work the nerves were likely to be unstrung and the action of the heart and breathing organs different from that under normal conditions. D. J. Parker said that men were only too prone to climb ladders and take risks. At the rescue work at the Argonaut mine fire in California, then still going on, he had been informed, a crew of men climbed up ladders for a distance of 200 to 300 ft. to open a door. They achieved their purpose and returned without injury, but had one fallen none of them would have come back alive.

Forgot to Turn His Oxygen Valve and Died

R. H. Seip asked D. J. Parker, the author of the paper, whether it was well to use more than one type of rescue apparatus. Commenting on Mr. Parker's reply that uniformity resulted in certainty that each man would understand the type of apparatus apportioned to him for use in any emergency and that uniformity also made a considerable saving in the number of spare parts required, J. S. Boardman related an incident of a man who went to the rescue station of the Anaconda Copper Mining Co. for an apparatus for the shift boss and one for himself.

Though shift bosses alone are allowed to requisition for these he was permitted to take them. It was arranged that he and the shift boss were to plaster up certain cracks in a brattice built to seal up a mine fire. The shift boss and man met in the mine and the boss, having other duties to perform, went away, saying he would be back in half an hour. The man could meantime mix the batch of plastering material. He did so, but as at the end of that time the shift boss had not arrived, he put on the apparatus himself and went in and nearly completed plastering up the brattice.

For some reason—probably because trembling of his limbs* convinced him that all was not right—he came out, got within about 6 ft. of the fresh air and fell dead. The nose clip was still on his nose. He was in fact practically in fresh air. Had he taken off the nose clip he would have had a fighting chance for life. It was found that he had failed to turn on the oxygen and had been working in the same air which was in the bag when he started in. The action of his breathing had, however, converted the oxygen into carbon dioxide, which the regenerators had in turn absorbed. Consequently the air had been largely depleted of oxygen. The air near the brattice contained 13 per cent of that gas and had he divested himself of the nose clip or the whole apparatus he could have continued to breathe and even to work in the atmosphere surrounding him.

Dr. R. R. Sayers said that with carbon dioxide absent there is no irritation of the respiratory centers in the brain, for the absence of oxygen causes no such stimulation. For this reason the lack of oxygen is not noticed until after a while, when the victim begins to tremble. He added that no pain is experienced from a deficiency of oxygen if it comes slowly. D. J. Parker remarked that such a deficiency will cause the victim to fall suddenly.

Low Oxygen Produces No Reaction but Death

Dr. Sayers said that during the war the British found that whereas only 2 per cent of their flyers were shot down, as many as 8 per cent fell with their planes. This was ascribed to men attempting to fly when not in normal condition. The men would not reveal their unfitness to the commanding officer because such a declaration of momentary unfitness might have been construed as cowardice. It was finally ordered that every man submit to inspection before every flight. In rescue work no man should be allowed to participate unless he has been examined and found to be in normal health.

J. S. Boardman said that the automatic valve of certain apparatus did not begin to feed until the oxygen percentage fell to 16 and the automatic valve of other apparatus delayed action until the percentage fell to 13.

D. J. Parker remarked that with automatic apparatus the relief valve should be opened every 20 minutes so as to clean the machine of excess nitrogen. Dr. Booher asked whether that was necessary only with the automatic feed and Mr. Parker replied that working hard with a fixed feed it was well also to open the relief valve by hand. With ordinary work the fixed feed is so excessive that the relief valve opens itself. With pure oxygen the relief valve would be needed only in case of excessive pressure, but with oxygen made by the liquid-air process and not electrolytically quite

*Continuation from preceding issue of the account of the meeting of the National Safety Council at Detroit Aug. 30-Sept. 1

*This trembling is not usually regarded as significant by the raw rescue-apparatus man and he may delay action till too late.

a percentage of nitrogen might be present—perhaps as much as 4 per cent—and then with the removal of oxygen by the combined action of the human organism and the regenerator the quantity of nitrogen in the air being breathed might be dangerously or at least injuriously excessive.

J. S. Boardman sided with Mr. Parker in regard to the climbing of ladders. In rescue work men rarely have to scale ladders, for before being overcome the men in the workings have usually been able to get down to the roadways and are all to be found there. In the North Butte disaster not a single one of the victims was found in his working place. It is rarely that anything is gained by leaving the levels. Nevertheless the Anaconda Copper Mining Co. is leaving room so that the apparatus men fully equipped can travel up ladderways without danger of colliding with the timbers, and moreover in fighting fires the crews have at times ventured to climb 100 ft. in their apparatus.

D. E. A. Charlton's paper on "The Use of Telephones in Mines" was then presented by R. H. Seip. Joseph W. Reed said that his company, the Consolidation Coal Co., had been experimenting with qualified success on the so-called "wireless telephone," which, though it does not operate with a wire specially strung for that purpose, depends on a single metallic feeder which is either a pipe line or a rail, the ground serving for the return of the circuit. This system is practically identical with the Reineke system, described in *Coal Age*, Jan. 31, 1914.

D. J. Parker took exception to Mr. Charlton's statement that the telephone should be kept under lock and key. He knew a case where the men in a rescue party found a telephone that they had managed to reach of much assistance in their work, and he felt that men shut in the mine by a disaster would hardly regard a locked telephone as a safety provision. C. L. Colburn said that the U. S. Bureau of Mines and the Westinghouse Electric & Manufacturing Co. were collaborating in an attempt to use radio-telegraphy underground.

Radio Waves Intercepted by 50 Ft. of Cover

They had endeavored from a point in a coal mine to listen in on the KDKA sending station. Where the cover was less than 50 ft. they could hear satisfactorily, but beyond that the volume decreased rapidly. The ground appears to absorb the waves, and this made the sending to points at great depth quite problematical. Perhaps it might be different where the radio communication was made with the underground workings of a metal mine. The metallic minerals might assist in conducting the waves. Experiments were still being made and it was found that the equipment which gave best results on the surface proved less effective underground. A 20-watt sending current was used.

Mr. Colburn then described his safety visits in the past year, those of the present year and those which he planned during the rest of the year, illustrating his itineraries with a chart. He stated that some criticism had been leveled at his short stops at any one station, but this activity was unavoidable in view of the large area to be traversed and it could hardly be corrected until two or three were engaged in making the rounds instead of one. Mr. Colburn described his duties as those of a consulting safety engineer. He furnishes information on safety practices only at the request of the managers at the mines visited. Not only does Mr. Colburn visit the mines, however; he also contributes two pages monthly to the proceedings of the *National Safety News*.

After the election of officers for the ensuing year, with which the third session opened on Aug. 31, E. G. Ludlam, of E. I. duPont de Nemours & Co., delivered an address on "Portable Ventilating Equipment for Mines." He said that a flexible tube is being made that will give as little resistance to air as metal tubing. It was, of course, unsuited to suction ventilation, but it had the advantage over metal tubing that it did not leak, which metal tubing invariably does after extensive use under the conditions to which it is subjected in mines. It furthermore was resistant to acid, which metal tubes, such as were used, were not. Mr. Rowe, of the American Blower Co., who had made many experiments, said that a coefficient k of 0.302 could be obtained for the use in the equation $p = \frac{kav^2}{a}$ where v = velocity in feet per second.

Lucien Eaton, superintendent of the Ishpeming District Mines of the Cleveland-Cliffs Iron Co., was not present. His paper on "Underground Transport" was read by William Conibear.

Locomotives Should Ring Gong Before Start

In a discussion on the use of gongs on locomotives Mr. Tillson said that such bells had been connected with the axle of the locomotive so that any movement would actuate the clapper of the gong. Some believed that locomotives in motion made noise enough to warn anyone and that the men soon became accustomed to the sound of the gong and failed to be warned by it. Some gongs were actuated electrically, but such bells did not operate when the locomotive was coasting. All such gongs sounded only when the locomotive was moving, whereas they were most needed perhaps when locomotive engineers were preparing to start, as at switches.

Mr. Eaton's paper was followed by those of H. L. Reese, electrical engineer of the Susquehanna Collieries Co., and J. S. Boardman, safety engineer of the Anaconda Copper Mining Co. These were discussed concurrently. Mr. Boardman said that in view of the use of chutes, which made the trolley wire especially dangerous, his company had begun to install storage-battery locomotives. They had now fifty such units. The first thirty had curved covers, which were furnished so as to make it impossible to use the top of the locomotive as a tray for tool steel. The new units are gable-covered for the same reason. He believed that, owing to the damage from trolley wires, storage-battery locomotives should be used wherever they can be installed with economy.

B. F. Tillson said that a man had recently been killed at his plant when riding on the electric locomotive. It had been the custom to allow two men besides the motorman to use this means of transportation. The men who dumped the cars into the skip had also to fill the cars at the chutes. To do this they had to travel with the locomotive, and he wondered why the designers of locomotives never made them long enough to accommodate more than the motorman. Since then he had provided on each trip a sort of caboose for these two men.

J. W. Reed wondered what could be done with such a caboose under normal operating conditions with the locomotive pulling the trip, as the caboose could not fail to be in the way. The manufacturers were always ready to make any needed changes if they could be embodied without detriment to the equipment. Any in-

crease in length, however, would increase the overhang and so make it more difficult to keep the locomotive on the track. It also would be more difficult to lower such a locomotive down the shaft.

Someone asked Mr. Reese if when friction shoes were placed on the rear car to keep the trip extended there was a risk that the loaded trip would part, causing a collision when some other trip came along or the locomotive returned along the same track with an empty trip. Mr. Reese explained that a tag was put on the last car. This, if its absence were duly noted, would prevent the broken part of the trip being struck by the locomotive on its return, but would not afford a safeguard against collision with another string of cars which might be following the first.

Mr. Reese said that a cowbell on a spring could be placed on the rear car for protection in pushing, and Mr. Reed recalled an accident caused by the use of a light on the rear car. A man of long experience was standing in the neck of a room as a trip passed. He noted the absence of a light on the rear of the trip and, speaking to a man nearby about it, he went up the track hunting the fallen light and was struck by the second part of the trip, the rear cars of which apparently had parted from the others some distance from the room where he had been standing.

Mr. Tillson said that for some time his company had made a practice of putting a light on the front car of a pushed trip. Unfortunately heavy blasts in the stopes would extinguish it just at the moment that it reached the place where most men were congregated and when by reason of the thickness of the smoke the cars could least readily be seen.

E. H. Denny, of the U. S. Bureau of Mines, read a paper written by himself in collaboration with G. M. Gillette, general manager of the Maryland Division of the Consolidation Coal Co., Frostburg, Md., on "Methods for Maintaining Safety Interest at Mines." Mr. Tillson declared that bonus systems for safety work were good if they were so arranged that an unfortunate occurrence early in the year would not destroy a foreman's chances of earning a bonus throughout the rest of that year, for if it did it would remove his interest in safety. Bonuses should be given for monthly, semi-annual and annual merit so as to give the man who had a bad record one month a chance in the following month to receive some reward for his safety activity.

For Attention, Put but One Bulletin on a Board

E. T. Solensten, supervisor of bulletins of the National Safety Council, spoke on "Bulletin Boards," urging that bulletins be posted on a proper board and not pasted on the sides of cars or barrels or even the walls of a shed. The psychological effect of giving the bulletin an honored place was not to be neglected. Bulletins should be posted one at a time and not more than one should be exhibited at any one time. They might be varied with photographs, especially such as are of local interest. Such bulletins might or might not carry a safety message. Some might have merely a gossipy interest to those for whom the board is intended.

J. S. Boardman condemned bulletins which instilled fear and someone remarked that if posted they would tend to make men fear to work at the plant even though its dangers were far less than those at plants which displayed no such bulletins. Another questioned bulletins which condemned tomfoolery as they were likely to promote imitation rather than abstention from the practices portrayed. One advocated that bulletins be posted when the men were gathered around, as the action advertised the bulletins. It was recommended also that the night watchman be designated to post bulletins under the instructions of the safety engineer. When left to the foreman the work was likely to be neglected. Mr. Colburn stated that one company employed a schoolboy to post bulletins in the evening.

Rudolf Kudlich, assistant to the chief mechanical engineer of the U. S. Bureau of Mines, then read an article on "Hoisting Equipment at Mines"; Graham Bright, general engineer, Westinghouse Electric & Manufacturing Co., one on "European Hoisting Practice," and E. O. Keator, civil engineer, of Dayton, Ohio, an article on "Wire-Rope Connections."

Danger Where Low-Strength Is Supplied

Mr. Keaton's remarks emphasized the importance of standardizing wire rope. His attitude to the subject was that of a civil engineer who had seen the ill effects of lack of uniformity in the cables used on contractors' equipment. Possibly it is true that contractors buy cable from jobbers without much inquiry as to the type of cable supplied or needed and that jobbers are likely not to know plow-steel cables from crucible-steel or the latter from iron cable.

Consequently accidents occur, but around the mines cable is bought mostly from the manufacturer, who has a likable failing for demanding specifications or details as to the kind of service required. No mistake is likely to be made by the purchaser after receipt of the cable, for he probably does not have more than one cable of the required length and diameter; so he can make no unsuitable substitution. Errors, of course, might be made with ropes purchased for crane hoists and general purposes but not with main-hoist equipment.

There is, however, some call for a little better understanding as to rope clips. The foreman may use too few clips and may fail to make them tight enough to hold the rope. However, as Mr. Tillson remarked, for hoisting purposes the clip is so far inferior to the spelter cap that clamps should be discarded. Care should be taken to use spelter and not babbitt or lead, and the wire should not be bunched but spread. The spelter takes such a hold on the rope that there is some justification for the statement that the spelter alloys with the steel. Mr. Tillson said, however, that some foremen preferred clamps because their condition could be noted and because the strain is not likely to be localized as it is when the spelter cap is used.

Someone advocated that not only should overwind devices be provided against raising men above the landing at which they left the cage but also for the decelerating of the hoist so that it could not arrive at the landing for the men at a speed that might tend to carry the cage beyond the landing.

Mr. Reese said that indications of the landing at which keps were out were furnished to the engineer because he was likely to forget to which level he was required to lower the cage. Mr. Tillson said that it would not be impossible to so interlock keps with the mechanism of the hoist as to prevent letting the cage fall on the keps with undesirable violence. He did not know of any instance in which this interlocking had been provided.

F. C. Carstephen, of the American Steel & Wire Co., read a paper on "Aerial Tramways." At the close of his paper the meeting adjourned.

Reports and Investigations State Geological Surveys and Mining Bureaus

Coal Reserves in Washington County Are Second Largest in Pennsylvania

By John F. Reese

WASHINGTON COUNTY has the second largest reserve of coal within the State of Pennsylvania. Five beds are considered of economic value, and the quantity of coal in the ground has been calculated for each of these beds. In order of present importance as shipping coals, these are the Pittsburgh, Redstone, Waynesburg, Washington and Freeport.

Extensive mining and prospecting in the Pittsburgh bed and its outcrop throughout the county have furnished many measurements of its thickness, thus making possible a reliable computation of quantity. For some localities, particularly the old abandoned workings along the Monongahela River and large areas in the northwestern part of the county, no maps or other data are available from which to determine the size of the areas already mined out.

The Redstone bed is developed locally in three townships within the county—namely, Union, Carroll and Fallowfield. Measurements on the outcrop and in mine workings furnish the only data available for computing the quantity. It has been assumed that the bed is continuous within these townships and an average thickness of 3 ft. has been used in the calculations. This coal is mined on a small scale for shipment and for local use.

The extensive outcrop of the Waynesburg bed throughout the county has furnished many measurements of its thickness, thus making possible a fairly reliable computation of quantity. This bed is broken by many partings, is extremely variable in its section, and in many localities is under shallow cover. For these reasons it cannot be considered as a good reserve for future commercial use, and in computing the quantity of coal only a small percentage of the bed has been figured as workable. The coal is mined for local use only.

Measurements on the outcrop of the Washington coal bed have been obtained in sufficient number to make a fairly reliable computation of the tonnage. Like the Waynesburg coal, this bed is broken by many partings, is variable in section, and in places lies under shallow cover. It is extremely dirty and in many places is represented by carbonaceous shale. For these reasons in computing the quantity of coal only a small percentage has been considered recoverable. The Washington coal is mined for local use only and cannot be considered as a good source of future supply.

Records of drillholes along the Monongahela River furnish the only reliable data on the thickness of the Freeport bed. Churn-drill records show coal at its horizon throughout the southeastern and central parts of the county. It is assumed that this coal underlies the entire county. A thickness of 42 in. has been assumed in the townships along the Monongahela River. The county has been divided into several northeast-southwest belts and an arbitrary thickness for the Freeport coal assigned in each zone. The assigned thickness was regularly decreased westward to a minimum of 24 in. in the northwestern part of the county. The quantity recoverable has been estimated as 50 per cent of the whole, from which has been deducted 15 per cent for loss in mining.

Because of the irregularity and many partings of the Redstone, Waynesburg and Washington coals, it is believed that the Freeport bed will yield a larger output than any of the others when the Pittsburgh bed had been exhausted and necessity demands the development of deep-lying deposits.

Other coals are mined for local use, but as they come from small beds and little is known of their extent and thickness, they are not included in the computation of reserves.

The result of computing the coal reserves in Washington County based on the latest maps, engineering data, and methods is shown in the following table:

COAL RESERVES IN WASHINGTON COUNTY*
(In Net Tons)

Bed	Original Deposit	Mined Out	Recoverable
Pittsburgh	5,091,310,000	556,163,000	3,516,860,000
Redstone	158,760,000	600,000	88,000,000
Waynesburg	1,914,084,000	700,000	665,340,000
Washington	972,315,000	300,000	212,548,000
Freeport	2,389,554,000		995,900,000
Totals	10,526,023,000	557,763,000	5,481,650,000

* The total area of Washington County is 884.6 square miles.

Detailed tables of the coal reserves in each township have been prepared and will appear in printed form in a report now being written on the bituminous-coal fields of the state. They can be consulted in the office of the Topographic and Geological Survey, or figures for a single township will be sent on request.

Shows Possibilities of Distillation of Pennsylvania Bituminous Coal

IN Bulletin No. 9 of the Bureau of Topographic and Geological Survey of Pennsylvania, George H. Ashley, state geologist, treats the subject of the "Future Use of Raw Coal." In this paper, mimeograph copy of which may be obtained upon request, Mr. Ashley shows some of the possibilities of distilling the bituminous-coal output of Pennsylvania.

After reviewing briefly the beehive and ordinary byproduct process of distillation the author takes up the various low-temperature coking processes that have been developed into commercial propositions. These include chiefly the Coalite process in England and the Carbocoal process in this country. While these two yield a residual fuel differing widely in appearance and physical characteristics, the byproducts, both in quality and volume, are closely similar. The solid fuels produced also are far more efficient as heat producers than are the coals from which they are made.

In the latter part of the paper Mr. Ashley goes into the possibilities of coking by the low-temperature process the bituminous output of Pennsylvania. It would appear that it would be well within the range of possibility to produce 400,000,000 gallons of motor fuel, 1,260,000,000 gallons of Diesel and lubricating oil; also 1,050,000 tons of sulphate of ammonia and about 105,000,000 tons of residual solid fuel, which because of its smokelessness and efficiency in burning is more valuable than an equal weight of raw coal.



Problems of Operating Men

Edited by James T. Beard



Testing a Safety Lamp Before Entering The Mine

Every Lamp Should Be Tested Before It Is Taken into the Mine —Blowing Hard Against the Lamp a Good Test—Tighten the Lamp Only After It Has Become Heated—Custom in France

WITH much pleasure I read the several letters that appeared in *Coal Age*, Aug. 17, p. 247, regarding the practical testing of a safety lamp to ascertain that it is in safe condition to be carried into the mine. This is an important matter that I feel has not been given the attention it should receive in this country.

In addition to carefully inspecting every part of the lamp when it is assembled, every lamp should be put to a practical test. In the old country, we have apparatus for that purpose. There, the lamp is subjected to horizontal and vertical air currents, by the use of compressed air. Besides this, each miner tests his own lamp by blowing against it. He also examines the gauze by unscrewing the bonnet that protects the lamp.

Many of the modern lamps are not made with a bonnet that can be removed without unlocking the lamp. For that reason, it is important that the gauze should be carefully examined before the lamp is locked. This, of course, must be done in the lamphouse when the lamp is assembled.

Blowing Against the Lamp Is a Good Practical Test

One writer seems to regard it as not being a good test to blow against the lamp. He claims that the carbon dioxide, in the breath exhaled from the lungs, has an extinctive effect and, for that reason, such a test does not prove that the lamp is unsafe.

In my opinion, the blowing test is a good practical test that should be applied by every miner, before he takes his lamp into the mine. The same writer claims that it is possible to blow out the light in any Wolf lamp, by blowing hard against it under the air admission ring. That statement I think is wrong.

Now, a word about tightening the lamp. It is my belief that there is no danger of cracking the glass in a lamp having good expansion rings. When properly made and adjusted in the right position in the lamp, these rings should take up any expansion due to the heating of the glass.

Back in 1895, when working in a mine in France, it was my duty to serve several entries with fresh safety lamps. The lamps had no relighters, in those days, and were easily extinguished when tilted only a little. It was nothing uncommon to have sixty lamps brought to the lamphouse in a single day to be relighted.

There have been many changes since that time, but there is far less care taken in the right use of lamps, today. Then, every miner was made responsible for his lamp if it was found defective on being returned to the lamphouse. For that reason, if a miner thought his lamp was unsafe he had the right to refuse to take the lamp and ask for another.

Precautions Taken in French Mines To Insure Safety

In this connection, a brief summary of the practice at the Carvin No. 2 mine (Pas-de-Calais) will be of interest. In that mine 500 miners were employed. On going to the lamphouse in the morning, each miner would find his lamp completely taken apart, glass, bonnet, small and big gauzes, standard bowl, etc. The miner would assemble his own lamp and, after satisfying himself that it was safe. He would then take it to the testing man, who must pass on the lamp before it is taken into the mine. This practice would, of course, not do, at the present time, in large operations; but it shows the care that was then taken to see that the lamps were safe.

A flame safety lamp is a dangerous thing at the best; and when carried into the mine by an inexperienced person, or is carelessly handled by a miner at his work, it is doubly dangerous. Sufficient attention has not been given, in this country, to instruct miners and daymen in how to use the safety lamp.

Mines Gassy in Southern Illinois

In a mine in southern Illinois, some time since, I noted a fireboss traveling, at a lively gait, with a lighted carbide lamp in his cap and a lighted safety lamp swinging at his side. I mention this only to draw attention to the fact that a man who falls into the habit of swinging his safety lamp will be apt to do this sometime when he is traveling in a gas charged atmosphere. The swinging of a lamp exposes it to a velocity greater than what is safe and should be avoided at all times.

Peru, Ill. GASTON F. LIBIEZ.

OTHER LETTERS

PERMIT me to add a few words to what has already been said in the interesting letters on the practical testing of safety lamps before taking the same into the mine. I fully agree with my friend, Joseph Cain, whose letter in *Coal Age*, July 13, p. 60, started this discussion.

With Mr. Cain, I believe there is no more practical test that can be readily applied by every miner, to test his safety lamp before going into the mine, than to blow hard against the lamp, both at the base of the gauze and below the globe. In my opinion it is a most effective way of telling whether the lamp is really safe.

To my knowledge, this method has been practiced for many years in the British Isles and I believe the same test is used by a large number of miners, in the majority of our coal fields, today. My observation is that it has always given satisfaction.

A Cautious Mine Inspector

Not so very long ago, a mine inspector, in the bituminous fields of Pennsylvania, was making an inspection of a mine, with the foreman in attendance. After descending to the shaft bottom, the inspector examined the foreman's lamp and found it to be improperly assembled. By blowing at the bottom of the globe, the lamp was readily extinguished.

Leaving the lamp at the bottom of the shaft, the inspector proceeded to make his inspection of the mine, accompanied by the foreman, who had procured another lamp. In their rounds, they found one entry that contained several hundred cubic feet of gas accumulated at its face.

It is easy to imagine what might have happened at that time had not the inspector taken the precaution of inspecting the foreman's lamp and blowing against it. It is probable that not only the two men would have been killed or badly burned, but other fatalities might have resulted.

In one of the letters, in this discussion, the belief is expressed that a Wolf lamp can be readily extinguished by blowing hard against the lamp. My experience is that if the lamp is properly assembled it cannot be put out by blowing anywhere around the globe or the gauze of the lamp.

Let me say, also, that the carbon dioxide exhaled from the lungs, in blowing, would have no effect to extinguish the lamp flame. Although the proportion of carbon dioxide exhaled in the breath is 2.6 per cent, at rest; and, I believe the Wolf lamp is extinguished in an atmosphere containing 3 per cent of carbon dioxide, it must be remembered that the exhaled air blown against the lamp will be rapidly diluted before reaching the flame. Neither of these statements appeal to me as correct.

Dante, Va. J. A. HOLMES, JR.

REFERRING to the instance narrated by Joseph Cain, in his letter *Coal Age*, July 13, p. 60, there is only one conclusion at which a person of any experience in the use of safety lamps can arrive. Either these three firebosses were very careless in putting their lamps together, or they did not know how to assemble them.

Whichever view is taken of the situation, a fair judgment must pronounce these men as clearly incompetent to hold the responsible positions for which they were chosen. It is not stated specifically in what respect the lamps failed; but I assume that they were all alike defective by reason of not being tightened up sufficiently.

PRACTICE OF AN OLD FIREBOSS

My last experience of this nature was with a Wolf lamp. The lamp was equipped with an expansion ring and I also used a rubber or asbestos washer on each end of the glass, where the cylinder came in contact with the metal frame of the lamp.

On arriving at the mine in the morning, it was my custom to light my lamp and tighten it up only partially. This being done, I would proceed to change my clothes and by that time my lamp would be hot and ready to be tighened up securely. I would continue to screw up the lamp, while blowing against the glass cylinder, until the flame seemed to flicker.

One mine at which I was employed was worked exclusively with safety lamps, and the practice there was to treat all lamps in the same manner that I have just described. I never heard of a glass cylinder being broken by expansion.

Dayton, Tenn. JOHN ROSE.
Former District Mine Inspector.

IN REGARD to testing safety lamps to ascertain that they are safe, before taking them into the mine, in British Columbia the law calls for all oil safety lamps to be submitted periodically to a test in a gaseous mixture. The results of this test determine whether or not the lamp is in a safe condition to be taken underground.

In this province, the procedure is as follow: Each miner receives his lamp at the lamp cabin where it has been assembled by men appointed for that work. At the mine entrance, each lamp is again examined by the fireboss, as the man enters the mine for work.

Just here is where I claim the blowing test has its value. I regret to see that some contributors, in this discussion, speak lightly of the test by blowing against the lamp. Besides blowing on the lamp, the fireboss examines to see that it is properly assembled and no parts missing.

BLOWING TEST MUST BE PROPERLY MADE TO BE EFFECTIVE

When the blowing test is properly applied it shows, by the flickering of the flame, that the parts are loosely fitted together or that some part is missing, or a washer is broken or damaged. If any one of these defects is revealed the test shows that the main principle on which all safety lamps are constructed is violated. In other words, no air must reach the flame, except through the proper channels and gauze-protected openings.

As far as the extinction of an oil-burning lamp by reason of the carbon dioxide in the exhaled breath blown against the lamp is concerned, Dr. Haldane has shown that the extinction of an oil-burning lamp by reason of the presence of carbon dioxide requires about 14 per cent of that gas; whereas the percentage of carbon dioxide in the exhaled breath varies from 2.6 to 6.6 per cent, according to whether the person is at rest or is undergoing violent exercise.

From these facts it is easy to see that the slight amount of carbon dioxide in the breath would have no effect to extinguish the lamp flame and would in no way affect the value of the test. It may be of interest to state here that, within the past year or two, the advent of the electric cap lamp has almost entirely eliminated oil-burning safety lamps, in this province, except for the purpose of testing for gas.

GEORGE MURRAY.
Nanaimo, B. C., Canada.

Improved Longwall Panel System

Method of side approach to longwall face—Plan reduces cost of development if properly applied—Criticism of proposed plan.

REFERRING to the interesting article of M. L. O'Neale, *Coal Age*, May 25, p. 877, in which he has proposed a new modified longwall panel system of mining, permit me to offer a few comments on the method he has outlined only too briefly.

If I understand correctly, the plan has many features that commend it to careful consideration. As Mr. O'Neale has stated, it can be modified in various ways to suit different conditions. The description he has given applies particularly to a fairly level seam of coal underlying a slight cover.

In my opinion, the method has certain features that cannot be excelled. It is certainly an improvement on the ordinary longwall advancing method, which requires the building of extensive packwalls to maintain the roadways leading to the working faces.

Again, the whole plan promises an increased production of coal from a given territory, together with a much desired concentration of the working faces, a practically complete extraction of the coal and the utilization of improved mechanical equipment.

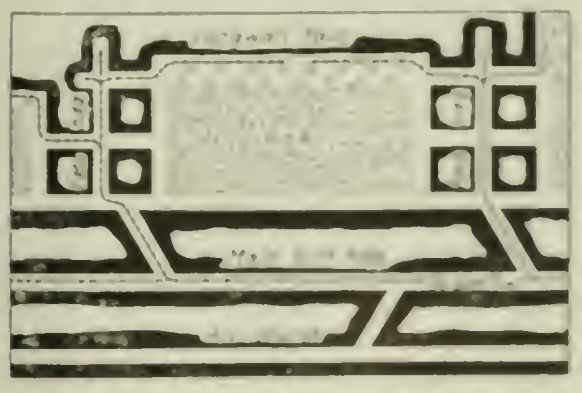
In all of these respects, the proposed method possesses distinct advantages over the room-and-pillar system of mining and either the longwall advancing or the retreating systems. As I regard it, the chief feature that distinguishes this method from other longwall panel systems is the driving of face headings that enable a side approach to the working face, without entailing the expense of driving separate pairs of headings.

SAVE COST OF DEVELOPMENT BY DRIVING FACE HEADINGS SINGLE

I may be wrong, but it seems to me that the sketch presented in Mr. O'Neale's article, page 877, does not properly illustrate the method he describes. In attempting to show both the longwall-advancing face and the drawing back of the face-heading pillars in one sketch, it appears as though the development required the driving of the face headings three abreast.

In this respect, let me say that, to my mind, the cost of development can be much decreased by driving only single headings, one on each side of the longwall face, keeping them in advance of that face, say 80 ft., or the distance between crosscuts. I believe this is the plan intended by the description given, as it would afford good ventilation of the working face, at a minimum cost for yardage in entry driving.

In the accompanying figure I have attempted to show this feature of the



REVISED PLAN OF LONGWALL PANEL

plan, as I understand it. Of course, it is understood that no face-heading pillars can be withdrawn before the panels on each side have been worked out and abandoned. Allow me to offer one other criticism of the plan, having reference to the distance apart of driving the butt headings; or, in other words, the length to which the face headings are driven before drawing back the pillars.

In the previous sketch, the distance between the butt headings is given as 1,200 ft. Assuming fair roof conditions, I cannot understand why the face headings should not be extended a distance of as many yards, or more, before turning another pair of butt headings.

The face headings are supported by good pillars on either side of the road

and there is no particular weight thrown on these pillars, inasmuch as the extraction of the coal in the panel is complete. If this is done, I do not see how the proposed method could be improved, in respect to producing coal at a minimum cost for development.

Finally, let me say had this method been in use before the present prolonged strike there would not be, now, the need of so large an expenditure of money required to put the mines in good shape again for work. I only wish that Mr. O'Neale had gone further in his description and given us an approximate estimate of what it would cost to open a mine on such a plan capable of producing say 5,000 tons of coal a day. I believe such an estimate would show some convincing figures in favor of the plan.

Linton, Ind. W. H. LUXTON.

Reply to Criticism of a Recent Canadian Report

Chemical analysis of air samples given in fireboss' report—Volume of gas generated, per ton of coal mined, estimated.

MY attention has been called to a criticism of a fireboss' report, contained in the Annual Report of the Minister of Mines, British Columbia. The criticism appeared in *Coal Age*, July 13, p. 60, and calls for some comment.

The contribution is signed "Mining Engineer." It criticises in rather severe terms, an alleged omission on the part of the fireboss making the report. It is claimed that he reports no explosive gas found in a mine that is rated as generating 4,500 cu.ft. of gas, per ton of coal mined.

Our critic does not state the page of the report from which he gleaned his information. I assume, however, it is probable he has reference to the table appearing on page G-247 of the Annual Report of the Minister of Mines for British Columbia, for the year 1921.

On that page is given the chemical analysis of air samples taken in the various coal mines, included in the East Kootenay inspectorate. Had our friend read all the data contained in the table mentioned, he would have found the answer to his question as to what is a fair percentage of gas that may be expected to be found in the return airway of such a mine.

Now, in order to ascertain the percentage of gas contained in the return air of a mine, it is absolutely necessary to know the quantity of atmospheric air passing into the mine and also the quantity of gas generated. These data are fully given in the table to which I have referred.

The chemical analysis of sample 376, taken in the main return of No. 3 East Mine, Michel, Aug. 23, 1921, is given as follows: Carbon dioxide, 0.14 per cent; oxygen, 20.5 per cent; methane, 1.09 per cent; nitrogen, 78.27 per cent.

The quantity of air circulated in this mine is given as 100,800 cu.ft. per min.; humidity 100 per cent; methane generated, 1,008 cu.ft. per min., or 1,569,600 cu.ft. in twenty-four hours. The output of this mine is given as 350 tons of coal, per day, from which it is estimated that the volume of methane generated is 1,569,600 ÷ 350 = 4,480 cu.ft. per ton of coal mined.

These quantities, let me say, were obtained by the compilation of all the samples taken during the year. In the course of inspection, explosive gas was found ten times, generally located in cavities in the roof (see p. G336 of the report). The mine employed 98 men and 8 horses were working in the twenty-four hours.

Tests were made daily, in the return of every split, with the Burrell gas detector, and the results were entered in the fireboss' book kept for that purpose. The percentage of methane shown in the return air (1.09 per cent) would only give a small cap on the Wolf lamp. This percentage is far below what is considered, by the Coal Mines Regulation Act of British Columbia, as necessitating the withdrawal of the men; namely, 2.5 per cent.

In view of these facts, there appears to be little need of the "rigid investigation by some higher official in the district," as thought by this correspondent.

HARRY E. MIAROL,
Member of Board of Examiners.
Department of Mines,
British Columbia.

Inquiries Of General Interest

Horsepower of Engine; Specific Gravity of Gas

Estimating the Horsepower of an Engine—Data Required: Diameter of Cylinder, Mean Effective Cylinder Pressure, Piston Speed—Specific Gravity of a Gas Its Relative Weight Referred to Air as a Standard

KINDLY explain, through the columns of *Coal Age*, two questions that are not clear to me and which, in my present situation, I have not the means to study, at hand. They are: 1. How is the power of a steam engine estimated? 2. What is meant by the specific gravity of gas, and how is it measured? STUDENT.

——, W. Va.

The horsepower of an engine is an expression of the work it is capable of performing in a given time. The unit of work is the foot-pound, or the work performed when a pound is raised through a vertical distance of one foot; or a pound pressure exerted through a distance of a foot. The accepted horsepower is the power capable of performing 33,000 units of work in one minute; or 550 ft.-lb. per hour.

In the steam engine, the total steam pressure acting to drive the engine is the mean effective steam pressure in the cylinder multiplied by the sectional area of the cylinder. The distance through which this pressure is exerted, in a single minute, is the piston speed (ft. per min.) of the engine.

Therefore, to find the horsepower of the engine, multiply the total steam pressure (lb.), in the cylinder, by the piston speed (ft. per min.), and the product will be the foot-pounds per minute; or the work performed in that time by the engine. Finally, dividing this item by 33,000, gives the horsepower of the engine.

Calling the mean effective steam pressure in the cylinder (lb. per sq.in.), p; the sectional area of the cylinder (sq.in.), a; length of stroke (ft.), l; number of strokes per minute, n; the indicated horsepower of the engine (H) is expressed by the formula

$$H = \frac{p\,l\,a\,n}{33{,}000}$$

In this formula, pa is the total average pressure of the steam in the cylinder, in pounds, and ln is the piston speed of the engine, expressed in feet per minute.

SPECIFIC GRAVITY OF GASES

Specific gravity is another expression for the relative weight of a substance, referred to an accepted standard, taken as unity. The standard for gas is air, at the same temperature and pressure as the gas. The specific gravity of a gas, therefore, expresses the relative weight of the gas as compared to the same volume of air, at the same temperature and pressure.

For example, the specific gravity of carbon dioxide is 1.529. This is another way of saying that carbon dioxide is 1.529 times as heavy as the same volume of air, at the same temperature and pressure. Again, the specific gravity of methane or marsh gas is 0.559, which shows that this gas is 0.559 times as heavy as the same volume of air, at the same temperature and pressure.

It is clear that when the specific gravity of a gas is greater than one, the gas is heavier than air; and when it is less than one, the gas is lighter than air. In practice, the specific gravity of gases is determined in the laboratory by careful measurements of equal volumes of the gases, at equal temperatures and pressures.

Examination Questions Answered

Miscellaneous Examination Questions

(Answered by Request)

QUESTION—*How much work, expressed in horsepower, is done in raising* 400 *tons of coal up an incline* 3,000 *ft. long, having an inclination of* 1 *in* 3, *when the friction of the cars adds* 40 *per cent to the load?*

ANSWER—For a rise of 1 ft. for every 3 ft. measured on the incline, the total rise or vertical height through which the load is lifted in ascending this plane is 3,000 ÷ 3 = 1,000 ft.

Adding 40 per cent for friction, the gross load hauled is 400 × 1.40 = 560 tons. The work performed in a single hoist is, therefore, 560 × 2,000 × 1,000 = 1,120,000,000 ft.-lb.

It is not possible to express this work as horsepower, without knowing the time in which it was performed. For example, 100 hp. would perform this work in

$$1{,}120{,}000{,}000 \div (100 \times 33{,}000) = \text{say } 340 \textit{ min.}$$

which would represent an 8-hr. day, less 40 min.

QUESTION—*A shaft,* 900 *ft. deep, is passing* 200,000 *cu.ft. of air per minute, under a water gage of* 2 *in. What is the horsepower producing the circulation; and what is the width of the furnace if the bars are* 5 *ft. in length?*

ANSWER—The horsepower on the air, in this case, is $H = (200{,}000 \times 2 \times 5.2) \div 33{,}000 = 63$ hp.

The area of grate (A), in square feet, for a depth of shaft (D), in feet, and horespower (H) on the air, is estimated by the formula

$$A = \frac{34\,H}{\sqrt{D}} = \frac{34 \times 63}{\sqrt{900}} = 71.4, \textit{ say } 70 \textit{ sq.ft.}$$

Therefore if the grate bars are 5 ft. long, the width of the furnace is 70 ÷ 5 = 14 ft.

QUESTION—*An airway is* 5 *ft. wide at the top,* 8 *ft. wide at the bottom and* 6 *ft. high. If the anemometer reads* 280 *what is the quantity of air passing?*

ANSWER—The sectional area of this airway is $\frac{1}{2}(5 + 8)6 = 39$ sq.ft. Then, assuming the given reading represents an average velocity for the entire section of the airway, the quantity of air passing is 280 × 39 = 10,920 cu.ft. per min.

QUESTION—*If you suddenly found yourself in an explosive mixture of gas, state briefly what you would do.*

ANSWER—Keep cool; make no quick movement, but promptly and slowly lower the lamp, at the same time smothering it as well as you can beneath your coat, while withdrawing as carefully and quietly as possible from the place. Any quick movement would only disturb the gas at the roof and cause it to descend, thereby increasing the danger of the lamp passing flame and igniting the gas surrounding the gauze. A fire-boss, under these conditions, requires great presence of mind to enable him to act intelligently and safely.

QUESTION—*Do you believe in systematic timbering? Who is the better judge of the need of timbering, the boss or the miner? How often should the roof be examined?*

ANSWER—Under uniform roof conditions, requiring the setting of posts to support the top, the safest plan is to adopt such a systematic form of timbering as is best suited to the conditions. Where the conditions are not uniform, the style of timbering employed must be determined by the best judgment and experience of the miner and the officials in charge.

Many experienced miners are good judges as to what timbering is needed in their places. However, such is the miner's desire to make a good day's run that he is prone to think the roof above him is not unsafe for a time. On the other hand, the foreman or safety inspector, feeling his responsibility for the safety of the men will generally make the best judge as to the need of timbering in a place. The roof in a working place should be examined frequently during working hours and every precaution taken to avoid even the possibility of accident.

QUESTION—*How much air will be required to dilute* 500 *cu.ft. of marsh gas to a* 4 *per cent mixture?*

ANSWER—In this case, 500 being 4 per cent of the mixture, the total volume of gas and air is 500 ÷ 0.04 = 12,500 cu.ft. The volume of air required is therefore 12,500 — 500 = 12,000 cu.ft.

QUESTION—*What precautions should you take to avoid accidents on a gangway along which men are obliged to travel and on which cars and mules or cars and motors are passing frequently?*

ANSWER—Where men are obliged to travel on haulage roads there should be provided a good clear space on one side of the road to enable men to pass the cars in safety. There should also be provided refuge holes, at regular short intervals, on one side of the road, and these should be kept free from all obstruction and whitewashed so that they can be easily found when needed. All trips, cars and locomotives should be provided with headlights and gongs, or other means of warning to herald their approach. The speed of hauling cars and trips should be limited to a reasonable amount, say not to exceed six miles per hour.

QUESTION—*What are the dangers pertaining to a broken power wire or a poorly insulated wire, in a coal mine?*

ANSWER—A broken power wire may, by contact with pipes or rails or other wires in that vicinity, cause a short circuiting of the current and the dangerous charging of such pipes, rails or wires. Anyone coming in contact with a pipe or wire so charged would receive a shock that might prove fatal. A poorly insulated wire presents the danger of accidental contact with the wire, together with loss of voltage, by reason of the short-circuiting of the current at that point.

QUESTION—*How would you determine whether a hoisting rope is unsafe and what portion of the rope would you consider the weakest part, or the part most liable to give out first?*

ANSWER—Every hoisting rope should be carefully examined at the beginning of each shift to detect any possible broken wires or other points of weakness. This is done by allowing the rope to pass through a bunch of waste held in the hand, while the engineer hoists the cage slowly. A close examination must be made of all ropes, sockets and fastenings on the drum. That portion of the rope within a few feet of the cage coupling is weakest and most liable to give out first, owing to its being subjected to the most severe usage and bending.

QUESTION—*State how you would commence to remove a large body of firedamp and what precautions you would take. State what danger there would be in doing the work.*

ANSWER—Without knowing the particular conditions, it can only be stated, in a general way, that no attempt must be made to disturb or remove the gas from its lodgment, until all the men have been withdrawn from that section of the mine and, if need be, from the entire mine. This will depend, however, on the arrangement of the circulation. Having withdrawn the men, except those engaged in the work of removing the gas, station reliable men at all entrances to the district and the return air-course leading out of the mine. This being done, the work of removing the gas must start from the intake end of the section. The circulation must be increased as much as practicable and brattices must be erected to conduct the air in such a manner that it will sweep the gas from its lodgment. No lights other than that of safety lamps of an approved type must be permitted and each lamp must first be carefully examined and tested before being taken into the mine. The brattice must be extended gradually, keeping a careful watch on the progress of the work, by making repeated tests of the gas with a safety lamp. In this manner the work must be continued, until all the gas has been removed from the section. Each working face must then be examined and reported safe before the men are permitted to return to work.

Anthracite Produced in 1921, by Regions*

(In Gross Tons)

	Local Sales		Used for Power		Total Production	
	Quantity	Value	Quantity	Value	Quantity	Value
	537,329	$1,905,323	1,117,214	$1,774,374	10,747,245	$60,023,992
	14,272	25,608	1,398	5,065	258,614	1,046,748
			150	300	21,749	27,636
	551,601	$1,930,931	1,118,762	$1,779,739	11,027,608	$61,098,376
	433,606	$2,659,909	3,311,935	$2,100,261	23,130,406	$124,019,280
			88,843	122,682	538,233	1,637,790
	286,725	363,692	4,550	4,631	517,188	588,333
	722,331	$3,023,601	3,405,328	$2,227,574	24,185,827	$126,245,403
	1,227,457	$6,920,174	3,834,466	$4,859,113	44,330,086	$260,646,179
	241	506	303,442	394,783	919,785	2,627,763
	308	1,520	100	50	17,607	34,685
	1,228,006	$6,922,200	4,138,008	$5,253,946	45,267,478	$263,308,627
	9,268	$57,474	52,000	$119,560	298,954	$1,652,497
	2,209,660	$11,542,880	8,315,615	$8,853,308	78,506,691	$446,341,948
	14,513	26,114	393,683	522,530	1,716,632	5,312,301
	287,033	365,212	4,800	4,981	556,544	650,654
	2,511,206	$11,934,206	8,714,098	$9,380,819	80,779,867	$452,304,903

Anthracite Shipped in 1921, by Regions and Sizes*

(In Gross Tons)

	Lehigh Region			Schuylkill Region			Wyoming Region			Sullivan County		Percentage
	Mines	Washeries	Dredges	Mines	Washeries	Dredges	Mines	Washeries	Dredges	Mines	Total	of Total
				9,703			2,627				12,330	
	174,252	1,143		641,957	3,507		1,643,335	68		10,416	2,474,690	3.6
		12,221		2,520,409	5,496		6,361,616	6,990		25,515	10,239,859	14.7
	1,272,426	16,293		3,773,819	4,991		9,035,728	35,344		44,037	14,687,638	21.1
		16,244		4,847,884	53,948		11,235,371	76,837		65,534	18,636,682	26.8
	984,502	28,910	885	2,020,435	47,060	28	2,684,236	68,646	1,280	34,661	5,865,379	8.4
	4,253,414	29,313	1,365	3,347,167	103,958	40,423	4,479,479	113,228	1,960		9,349,009	13.4
		29,082		1,151,726	90,587	2,915	2,508,298	134,325			4,515,614	6.5
	543,186	65,337	19,569	1,043,122	130,317	40,680	1,128,820	146,368	3,199		3,164,718	4.6
	13,473	1,208		4,985	21	68,799	147,082	29,748	10,760		278,196	0.4
	102,193			41,638	9,505	73,068	41,571	4,548		57,523	330,448	0.5
	242,944	21,599		449,390	225,913		616,102	17,199		237,686	69,554,563	100.0

* Compiled by U. S. Geological Survey. Includes quantity reported as culm, buckwheat No. 4, screenings, settlings, silt, mine run, dirt and slush.

Value of Anthracite Shipped in 1921, by Regions and Sizes*

	Lehigh Region						Schuylkill Region					
	Mines	Average Value	Washeries	Average Value	Dredges	Average Value	Mines	Average Value	Washeries	Average Value	Dredges	Average Value
							$72,768	$7.50				
	$1,748,633	$7.51	$8,326	$7.27			4,983,053	7.76	$27,090	$7.72		
	18,042,581	7.68	91,236	7.47			19,234,895	7.63	41,064	7.47		
	13,946,760	7.94	131,046	8.04			29,647,890	7.81	39,915	8.00		
	14,517,998	7.87	384,531	7.96			38,074,078	7.92	394,674	7.32		
	3,812,218	5.92	161,178	6.06	$2,890	$3.34	11,710,372	5.80	259,573	5.52	$56	$2.00
	4,897,715	3.49	101,947	3.57	2,562	2.20	11,508,711	3.44	348,767	3.35	49,244	1.22
	1,472,250	2.46	68,509	2.36			2,558,390	2.22	212,845	2.35	3,627	1.24
	856,214	1.54	146,143	1.63	21,884	1.12	1,425,757	1.37	184,536	1.42	33,554	0.82
	13,491	1.09	3,159	2.42			12,110	2.43	39	1.86	67,702	0.98
	49,173	0.46					31,086	0.75	6,605	0.69	65,827	0.90
	$48,344,293	$6.20	$1,016,075	$4.18	$27,336	$1.27	$119,259,110	$6.15	$1,515,108	$3.37	$220,010	$0.97

	Wyoming Region						Sullivan County		Total	
	Mines	Average Value	Washeries	Average Value	Dredges	Average Value	Mines	Average Value	Total	Average Value
	$13,693	$5.21							$86,451	$7.01
	11,939,868	7.20	$553	$8.13			$77,715	$7.46	18,245,258	7.37
	46,129,198	7.28	47,591	6.81			191,176	7.49	75,978,021	7.42
	44,893,208	7.16	262,090	7.42			338,167	7.68	112,671,027	7.67
	84,261,697	7.50	548,017	7.13			504,408	7.70	142,665,404	7.66
	15,118,474	5.64	384,487	5.60	$7,040	$5.50	204,683	5.91	33,672,963	5.74
	13,247,964	3.40	481,797	3.55	4,900	2.50			31,971,647	3.42
	3,650,883	2.25	304,732	2.27					10,236,205	2.27
	1,613,524	1.48	214,607	1.47	10,339	3.23			4,570,278	1.44
	548,494	2.29	60,518	2.03	10,836	1.01			506,535	1.82
	68,202	1.19	7,882	1.73			159,314	2.77	386,089	1.17
	$245,886,992	$5.34	$2,232,474	$3.62	$33,115	$1.93	$1,475,463	$6.21	$430,989,878	$6.20

* Compiled by U. S. Geological Survey.

GRATIFYING AS IT IS TO THE EXPERIENCE during this and other coal emergencies, there is a demand for a classification of coal as to use. This information is important in handling distribution problems, as is being demonstrated each day at the office of the Fuel Distributor. For instance, it is known that many mines produce bituminous coal so similar in character that no changes would be necessary in its firing. At present, great difficulty is being experienced in substituting coal on railroads where the firemen are accustomed to burning a certain character of fuel. Since there is no use classification in existence, it is impossible to substitute a coal of the same general character so that the engine crews will have no trouble in burning it. An effort is being made to induce the Bureau of Mines to undertake the preparation of such a classification.

One of the staff working on distribution remarked recently that they are not much better equipped to undertake distribution than were the Soviet authorities who attempted to distribute fuel on a B.t.u. basis. As a result, gas plants got peat, and plants equipped to burn peat were allotted gas coal. They got their requisite number of B.t.u.'s but in a form difficult to utilize.

Smokeless Output in June 90,000 Tons in Excess of That of May

West Virginia smokeless fields produced and shipped 3,777,558 net tons of coal during June, approximately 90,000 tons in excess of the May figure and 907,584 tons more than in June, 1921. Total smokeless output for the first six months of 1922 was 19,388,409 tons, 5,382,239 in excess of the corresponding period last year.

JUNE OUTPUT OF SMOKELESS COALS OF WEST VIRGINIA
(In Net Tons)

District	1922	1921	1922 Increase
Pocahontas	1,920,590	1,333,925	586,665
Winding Gulf	784,568	618,854	165,714
New River	582,515	467,520	114,995
Tug River	489,885	449,675	40,210
Total, June	3,777,558	2,869,974	907,584
Total, May	3,687,874	2,975,711	.....

Of this production the Norfolk & Western hauled 2,410,475 net tons, the Virginian 632,893 tons, and the Chesapeake & Ohio 734,190 tons. Total coal movement by these roads in June was as follows:

HAULED BY NORFOLK & WESTERN RY.

Pocahontas	1,920,590
Tug River	489,885
Thacker	689,455
Clinch Valley	252,300
Kenova	182,690
Total, June	3,534,920
Total, May	3,554,525

HAULED BY CHESAPEAKE & OHIO RY.

Logan	641,060
New River	512,350
Winding Gulf	221,840
Kanawha	114,160
Coal River	82,780
Kentucky	464,670
Total, June	3,036,860
Total, May	2,677,580

HAULED BY VIRGINIAN RAILWAY

Winding Gulf	562,728
New River	70,165
High Volatile	86,348
Total, June	719,241
Total, May	701,805

"Standardize" Still Is Watchword of American Mining Congress

Some notable advances in standardizing mining methods and machinery are expected to be made known at the twenty-fifth convention of the American Mining Congress in Cleveland, Oct. 9 to 14. Much will be said on the general subject at several sessions of the congress but the entire day of Oct. 12—the heart of the convention—is to be devoted to standardization, for this is to be the third national standardization conference. Many committees on various phases of the question will report.

It is expected that striking progress will be made known in the following discussions and recommendations: "Drilling Machines and Drill Steel," by Norman Braly, general manager of the North Butte Mining Co.; "Mining and Loading Equipment," by E. N. Zern, of the Keystone Consolidated Publishing Co.; "Mine Timbers," by Gerald Sherman, consulting engineer of the Phelps-Dodge Corporation, and by R. L. Adams, chief engineer for the Old Ben Coal Corporation; "Outside Coal Handling Equipment," by Dr. H. M. Payne, consulting engineer, of New York City; "Fire-Fighting Equipment," by William Conibear, of the department of safety, Cleveland-Cliffs Iron Co., and "Mechanical Loading Underground," by Lucien Eaton, superintendent of the Cleveland-Cliffs Iron Co. Many other reports will be read and addresses made, opening with an address on "What Standardization Has Done for the Coal-Mining Industry," by Colonel Warren R. Roberts, former chairman of the general committee on coal mining of the congress' standardization division.

Coal Production Costs and Profits in Great Britain

Costs of production, output and proceeds of the mining industry in Great Britain during the first quarter of 1922, as published by the *Iron & Coal Trades Review*, are as follows:

Output	Gross Tons
Tonnage raised	57,633,631
Mine consumption	3,957,585
Miners' coal	1,462,715
Tonnage disposable commercially	52,213,331*

Costs of production:	Amount	Per Ton Disposable Commercially
Wages	£34,827,133	13s. 4.84d.
Stores and timber	6,742,627	2s. 6.99d.
Other costs	8,271,937	3s. 2.12d.
Miners' Welfare contributions	239,781	1.10d.
Royalties	1,622,953	7.47d.
Total costs	£51,704,431	19s. 9.66d.
Deduct proceeds from miners' coal	300,408	1.38d.
Net costs	£51,404,023	19s. 8.28d.
Proceeds:		
Commercial disposals	£54,367,927	20s. 9.96d.
Balance:		
Debits		
Credits	£2,963,904	1s. 1.68d.

No. of workpeople employed	1,028,287
No. of man-shifts worked:	
(a) At the coal face	24,466,968
(b) Elsewhere below ground	25,795,084
(c) On the surface	12,971,262
(d) Total above and below ground	63,236,314
No. of man-shifts lost which could have been worked	6,171,819
	Cwt.
Output per man-shift worked	18.25†
Earnings per man-shift worked	11s. 9.16d.

* According to the Monthly Trade and Navigation Accounts, during the quarter, 17,639,766 tons were shipped for export and foreign bunkers, mainly from South Wales and Monmouthshire, Northumberland and Durham.

† The output per man-shift worked is based upon the tonnage of saleable coal raised and the total number of man-shifts worked, including week-end and overtime shifts. Calculated as it has ordinarily been calculated hitherto, upon the total tonnage raised and weighed at the pit and the number of ordinary man-shifts worked, the output per man-shift for the country as a whole was about 19½ cwt.

The second quarter of 1922 opened under adverse conditions for the coal industry. Industrial demand was affected by the dispute in the engineering trade. At the end of June, however, the market improved and production for the three-month period was brought up to 57,552,000 gross tons, which is nearly equal to the production figure for the preceding quarter.

Lake Coal Loaded During Season to End of August*

Ports	Railroad	1922 Cargo	1922 Fuel	1922 Total	1921 Cargo	1921 Fuel	1921 Total	1920 Cargo	1920 Fuel	1920 Total
Toledo	Hocking Valley	1,746,575	47,846	1,794,421	2,964,611	75,923	3,041,534	1,491,216	44,760	1,535,976
	Toledo & Ohio Central	37,430	772	38,202	811,064	22,425	833,489	814,713	23,864	838,577
	Baltimore & Ohio	1,775,230	45,956	1,821,186	1,684,110	48,591	1,732,701	944,944	28,701	973,645
Sandusky	Pennsylvania	1,230,472	51,551	1,282,023	1,022,312	28,999	1,051,311	723,958	21,311	745,269
Huron	Wheeling & Lake Erie	13,403	2,563	15,966	1,263,489	33,712	1,297,201	1,133,833	33,524	1,167,357
Lorain	Baltimore & Ohio	32,852	24,147	56,999	1,990,137	75,192	2,065,329	1,771,662	113,549	1,885,211
Cleveland	Pennsylvania	97,291	45,016	142,307	1,577,938	57,749	1,635,687	446,665	20,084	466,749
	Erie				110,858	10,402	121,260	140,809	10,817	151,626
Fairport	Baltimore & Ohio									
Ashtabula	New York Central	44,091	20,386	64,477	901,756	41,611	943,367	656,814	148,571	805,385
	Pennsylvania	55,201	16,135	71,336	1,712,874	55,739	1,768,613	810,664	64,934	875,598
Conneaut	Bessemer & Lake Erie	99,846	7,840	107,686	836,895	11,199	848,094	478,113	24,201	502,314
Erie	Pennsylvania	28,697	42,444	71,141	839,679	44,747	884,426	241,617	13,844	255,461
Total		5,161,218	328,810	5,491,848	16,940,765	511,308	16,499,273	10,667,110	496,161	11,163,271

* Compiled by Ore & Coal Exchange, Cleveland, Ohio. H. M. Gruber, Manager.

Legislation Passed in Ohio Would Control Coal Price at Mine and Bin

Final action on Ohio's coal-price-control legislation came shortly before noon Sept. 13, when Governor Davis signed the measure providing for appointment of a fuel administrator and setting up price-fixing machinery and that appropriating $1,947,000 for the use of the administrator in operating mines taken over under the bill and for payment of salaries. Officers of both houses of the Legislature had signed the measure that morning and officially adjourned the special session.

By the action of the General Assembly, Governor Harry L. Davis has the power at his disposal, effective whensoever he deems its use necessary, to create the necessary machinery to fix prices at the mines and at the coal bins and, if necessary, to seize the mines of the state to assure production and distribution.

The Senate enacted the law by a vote of 25 to 3 while the vote in the House of Representatives was 86 to 12. The enactment carries an emergency clause, both branches effecting this step by a margin of a single vote.

By virtue of the power conferred upon him Governor Davis is clothed with authority, at his discretion, to appoint a state fuel administrator, who shall make such an investigation as may be necessary to ascertain basic costs of production and distribution, in order to fix prices which may be charged by the producer and the dealer.

George T. Poor, of Cincinnati, chairman of the State Utilities Commission and present State Fuel Administrator, has been most frequently mentioned as the Governor's probable choice for the position.

What use the Governor will make of the new law depends on the course to be pursued by Ohio coal operators. If they refuse to recede from their present position that $5.50 at the mines is the lowest price at which they can sell their product, the Governor will appoint the administrator and set the machinery of regulation in motion.

It is not expected that the Governor will make use of his power to seize and operate the mines until a complete survey of the situation in Ohio by the administrator shows that coal cannot be obtained at prices fixed by him.

No official suggestion has been made as to the prices which may be fixed for the operators. Inasmuch as the Governor, in his efforts to reach a voluntary agreement with the operators prior to the calling of a special session, urged prices ranging from $3.75 to $4.80 a ton at the mines, it is believed that mine prices will be approximately those figures. There have been no indications as to retailers' prices.

Coal operators and dealers and mine-union officials opposed passage of the bill and now predict its failure as a law on the ground that the cause of existing high prices is the shortage of cars. Were there a full supply of cars and adequate motive power, prices would soon come down to normal, they aver.

While the ink on the bill to provide for price fixing was still damp, Hocking Valley operators came to the Governor with a proposition, presented by John S. Jones, head of the Sunday Creek Coal Co., and E. M. Poston, president of the New York Coal Co. It provides for a price of $3.50 at the mines when the car supply is 100 per cent, the price to increase 25c. on the ton each time there is a reduction of 10 per cent in the car supply, the maximum price to be $5. In the meantime Governor Davis intimated that the state would proceed with the organization of the Fuel Commission as provided in the new law.

Skillful Utilization of Reserves Was Achievement of H. B. Spencer

The most striking accomplishment of Henry B. Spencer in his handling of fuel distribution was the skillful way in which consumers were induced to utilize their reserves of coal. There has been no small amount of criticism of Mr. Spencer's acts, but to those who see the entire picture it is plain that it is entirely unfair to make Mr. Spencer the scapegoat for an impossible situation. It was apparent from the first that he would have to make bricks without straw. His job necessarily was a thankless one, since the character of his decisions obviously would offend many where one was pleased.

Despite these difficulties, many disinterested observers believe that the distribution plan as carried into effect by Mr. Spencer saved the consumers of the country many millions of dollars. It is true that the tangible effects of his organization hardly had begun to show themselves when production again approached normal volume, but the psychological effect of the distribution plan unquestionably was to hold prices within bounds. Large consumers were prevented from bidding against each other and means were found to relieve all cases of acute distress before serious disruption occurred.

It must be kept in mind that Mr. Spencer was not responsible for the general policy of distribution, which was framed prior to his appointment. He had no responsibility as to the prices which were agreed upon as fair. He was in charge of a distinctly new experiment in distribution. The situation was made particularly bad since there was a very limited quantity of coal available with which to meet the requirements of the country. The type of control was quite different than that exercised in 1919. When distribution is controlled at the point of consumption, relief can be given more promptly. In Mr. Spencer's case, however, control began at the point of production—distant from the point of consumption. In the best of times coal originating in the middle Appalachian region cannot be delivered in New England, in the Middle West or at the Lakes much under two weeks. Under the conditions such as existed during August, the delay in the movement from the mines to the point of consumption necessarily gave rise to complaints from impatient consumers.

Sight must not be lost of the fact that the acute emergency lasted only 23 days after Mr. Spencer took hold. As a result the accomplishments of the distribution plan were not fully apparent during the time that it was functioning

There are those who characterize the work done under Mr. Spencer as an absolute farce. They characterize the whole scheme as a gesture, and a menacing gesture at that, in which a club was held in a menacing position in the effort to carry out the so-called voluntary agreement. The public utilities feel that the operators dominated Mr. Spencer's administration and as a result things were so manipulated as to sever effectively the consumers having low-priced contracts from their source of supply, thereby making it necessary for them to buy coal at the higher prices. It was the contention of the operators, however, that it would be impossible to keep the coal producers in line unless there should be equitable distribution of cars. Had the wishes of the public utilities been observed it would have meant a preferential car supply to mines with contracts. This, it is argued, would have disrupted the whole co-operative plan.

P. W.

New Tariff Increases Duties on Explosives

The new tariff bill transfers dynamite, black powder and other high explosives suitable for blasting, when put up in sticks, cartridges or other forms, from the free list to the dutiable list with a rate of 1½c. per pound.

Coal-tar explosives are carried in the new bill at a heavy increase over the duties in the 1913 tariff law and the supplemental rates adopted in 1916. These rates are 60 per cent ad valorem, based on the American selling price of a comparable product, plus 7c. per pound for two years, after which the duty shall be 45 per cent, American valuation, plus 7c. per pound.

Coal and coke remain on the free list, with a provision for a retaliatory duty equal to the duty any other country may impose on these products from the United States.

Lumber, including mine timbers, remains on the free list. Structural steel was increased to 0.20c. per pound if not assembled and to 20 per cent ad valorem if drilled, punched or assembled. Wire, nails, spikes, nuts and screws were increased over the 1913 rates. Steam engines were given a duty of 15 per cent ad valorem.

Coal Distribution Control Bill Goes to President; Probably Will Become Law This Week

With the approval by the Senate on Saturday, Sept. 16, of the conference report on the bill intended to prevent profiteering in coal and providing for the control of distribution, the measure was sent to the White House. The signature of the President probably will be affixed and the bill become a law during this week. Only twelve votes were cast in the Senate against the conference report on this bill, despite the fact that it was vigorously opposed by such influential members as Senator Underwood, minority leader, and Senator Sutherland, of West Virginia.

Senator Underwood contended that the emergency has passed and that, under the changed conditions, the Senate should not assume the great responsibility of the precedent established by this measure. He declared that the government could not undertake to regulate the prices of commodities every time the price level exceeded that which commonly is regarded as fair. He expressed doubt as to the success of the Fuel Administration during the war. While there may have been some reason for attempting this control under war conditions, he contended that there is no justification for it in peace times, especially when it is doubtful whether such control does not do more harm than good. He emphasized the fact that he intended no criticism of Dr. Garfield and admitted that certain phases of the Fuel Administration may have accomplished good, but, he declared, "it annoyed nearly every man, woman and child in the United States and seriously hampered the business of the United States."

Misses Profiteer, but Lands on Consumer

One of Senator Underwood's objections to the legislation is that it does not reach the profiteer but concentrates its penalties on the consumer. "No provision is made," he said, "for a jail sentence for the coal profiteer. The only way he will be punished is by the refusal of the Interstate Commerce Commission to back up cars to his door. On the other hand, the consumer—the man who is being frozen because he cannot get coal—is to be sent to jail, if perchance, he should lie a little about the coal he needs. I do not think it would be a very great crime for a man whose family is cold to exaggerate a little bit about the coal he will need to run his house during the winter. He will not exaggerate a great deal, because he will not want to pay present prices. If he exaggerates at all, the fuel distributor can send him to jail. The only question now involved is whether consumers will have to pay a dollar or two more a ton than they should pay. That is not a great emergency."

Senator Sutherland, in the course of his remarks, said: "It is a great mistake to pass this bill. It is establishing a precedent that will be very dangerous. It is in contravention of the Constitution. It will come before us many times to plague us when similar measures are attempted in the future for the purpose of fixing prices by governmental action.

Too Much Left to Opinion of Bureau Official

"The bill is intended to be retroactive in its effect. It is not even intended that contracts in actual existence shall be protected. When those contracts are tested in the courts they will be sustained, but so far as it can be done by the arbitrary act of a bureau official, those contracts will be abrogated and the coal diverted. The entire matter will rest upon the personal opinion of an underemployee of a bureau here in Washington as to whether or not the coal has been sold at a fair and reasonable price.

"This situation will cure itself in a short time in so far as soft coal is concerned. The entire difficulty would be solved more readily if the transportation companies and the shippers were authorized to proceed to get this coal to the market in the usual manner, according to methods that have been adopted after many years of trial and experiment."

Senator Reed, of Pennsylvania, among other things said: "Because for the moment what we call profiteering is unpopular, we have an effort to tear up the Bill of Rights of the Constitution; an effort to pass an ex post facto law; an effort to take from the owner of coal a part of the market value of his property without pretending to make compensation to him for what is taken. It is all attempted to be justified by the assertion of an emergency which now has ceased to exist. Every time anything goes up in price and some people wish to get it cheap, they will come rushing again to Congress to fix the price."

Senator Kellogg, of Minnesota, asked if it is not reasonable that some priority in the distribution of cars be given to mines willing to charge a fair price. "The so-called Fuel Administration," he said, "was nothing more than a board of inquiry to furnish the Interstate Commerce Commission with facts and to make recommendations. The commission has not the force, the time nor the facilities for doing that. The government has been carrying on similar activities for some time. This bill merely is designed to enlarge the powers of the Interstate Commerce Commission temporarily to meet a great emergency. I submit that this bill is not retroactive at all. There is no power in the commission to deny cars on account of anything that has occurred in the past.

Does Not Think Emergency Has Passed

"I do not think the emergency has passed. It is true that coal is being produced in considerable quantities, but it is not possible before Lake transportation closes to produce and transport a sufficient quantity of coal to supply the needs of the Northwest."

The Senate bill was not greatly changed in conference. The length of the period during which the act may remain in force was increased from six to twelve months. The word "extortion" was eliminated from the bill and the words "unjustly or unreasonably high" were substituted where reference was made to prices. As much as may be necessary but not to exceed $50,000 of the appropriation may be used to meet the expenses incurred since May 15 by the President's Fuel Distribution Committee. The full text of the bill follows:

Emergency Endangers Public Health

"That by reason of the prolonged interruption in the operation of a substantial part of the coal-mining industry in the United States and of the impairment in the service of certain carriers engaged in commerce between the states and by reason of the disturbance in economic and industrial conditions caused by the World War a national emergency exists which endangers the public health and general welfare of the people of the United States, injures industry and business generally throughout the United States, furnishes an opportunity for the disposition of coal and other fuel at unreasonably high prices, limits the supply of heat, light and power, threatens to obstruct and hamper the operation of the Government of the United States and of its several departments, the transportation of the mails, the operation and efficiency of the army and the navy, and the operation of carriers engaged in commerce among the several states and with foreign countries.

"Sec. 2. That the powers of the Interstate Commerce Commission under the act entitled 'An act to regulate commerce,' approved Feb. 4, 1887, as amended, including the Transportation Act, 1920, and especially under Section 402 of said Transportation Act, 1920, are, during the aforesaid emergency, enlarged to include the authority to issue in transportation of coal or other fuel orders for priorities in car service, embargoes, and other suitable measures in favor of or against any carrier, including vessels suitable for transportation of coal on the inland waters of the

United States which for such purpose shall be subject to the Interstate Commerce Act, or which municipality, commodity, person, copartnership, or corporation, and to take such other necessary and appropriate steps for the priority in transportation and for the equitable distribution of coal or other fuel as an Act to meet the emergency and to promote the general welfare, and to prevent upon the part of any person, partnership, association or corporation the purchase or sale of coal or other fuel at prices unjustly or unreasonably high. This act shall not be construed as repealing any of the powers heretofore granted by law to the Interstate Commerce Commission, but shall be construed as conferring supplementary and additional powers to said commission and as an amendment to Section 1 of the Interstate Commerce Act, and subject to the limitations and definitions of commerce controlled by said act, and all powers given said Interstate Commerce Commission shall be applicable in the execution of this act.

CREATES OFFICE OF FEDERAL FUEL DISTRIBUTOR

"Sec. 3. Because of such emergency and to assure an adequate supply and an equitable distribution of coal and other fuel and to facilitate the movement thereof between the several states and with foreign countries, to supply the army and navy, the Government of the United States and its several departments, and carriers engaged in interstate commerce with the same during such emergency, and for other purposes, and for the further purpose of assisting in carrying into effect the orders of the Interstate Commerce Commission made under existing law or under Section 2 hereof there is hereby created and established an agency of the United States to be known as federal fuel distributor, whose appointment shall be made and compensation fixed by the President of the United States. Said distributor shall perform his duties under the direction of the President.

"Sec. 4. It shall be the duty of the federal fuel distributor to ascertain:

"(a) Whether there exists within the United States or any part thereof a shortage of coal or other fuel and the extent of such shortage;

"(b) The fields of production of coal and other fuel and the principal markets to which such production is or may be transported and distributed and the means and methods of distribution;

"(c) The prices normally and usually charged for such coal and other fuel and whether current prices, considering the costs of production and distribution, are just and reasonable; and

MUST ASCERTAIN WHO SHALL BE GRANTED PRIORITY

"(d) The nature and location of the consumers, and what persons, copartnerships, corporations, regions, municipalities or communities should under the acts to regulate commerce administered by the Interstate Commerce Commission, including the Transportation Act, 1920, in time of shortage of coal and other fuel, or the transportation thereof, receive priority in transportation and distribution, and the degree thereof, and any other facts relating to the production, transportation, and distribution of coal and other fuel; and when so ascertained the federal fuel distributor shall make appropriate recommendations pertaining thereto to the Interstate Commerce Commission from time to time, either on his own motion or upon request of the commission, to the end that an equitable distribution of coal and other fuel may be secured, so as best to meet the emergency and promote the general welfare. All facts and data within the possession of the federal fuel distributor shall be at all times accessible and furnished to the Interstate Commerce Commission upon its request. The Interstate Commerce Commission is hereby authorized and directed to receive and consider the recommendation of the federal fuel distributor, based upon his reports upon the foregoing subjects and any other information which it may secure in any manner authorized by law.

"Sec. 5. The federal fuel distributor may make such rules, regulations and orders as he may deem necessary to carry out the duties imposed upon him by this act, and may co-operate with any department or agency of the government, any state, territory, district, or possession, or department, agency, or political subdivision thereof, or any person or persons, and may avail himself of the advice and assistance of any department, commission or board of the government, and may appoint or create any agent or agency to facilitate the power and authority herein conferred upon him; and he shall have the power to appoint, remove, and fix the compensation of such assistants and employees, not in conflict with existing laws, and make such expenditures for rent, printing, telegrams, telephones, furniture, stationery, office equipment, travel, and other operating expenses as shall be necessary for the due and effective administration of this act. All facts, data, and records relating to the production, supply, distribution, and transportation of coal and other fuel in the possession of any commission, board, agency, or department of the government shall at all times be available to the federal fuel distributor and the Interstate Commerce Commission, and the person having custody of such facts, data, and records shall furnish the same promptly to the federal fuel distributor or his duly authorized agent or to the commission on request therefor.

"Sec. 6. That whenever the President shall be of the opinion that the national emergency hereby declared has passed he shall by proclamation declare the same, and thereupon, except as to prosecution for offenses, this act shall no longer be in force or effect, and in no event shall it continue in force and effect for longer than twelve months from the passage thereof.

FALSE REPRESENTATION SUBJECT TO HEAVY FINE

"Sec. 7. Every person or corporation who shall knowingly make any false representation to the Interstate Commerce Commission or the Federal Fuel Distributor or to any person acting in their behalf or the behalf of either of them respecting the price at which coal or other fuel has been, is being, or is to be, sold or bought, the inquiry being made for the purposes of this act, or whoever having obtained coal or other fuel through a priority order or direction shall dispose of the same for purposes other than those for which said priority order or direction was issued without the consent of the Interstate Commerce Commission, shall be deemed guilty of a misdemeanor and upon conviction thereof shall be punished by a fine or not less than $1,000 nor more than $20,000: *Provided*, That any person or any officer or director of any corporation subject to the provisions of this act, or the interstate commerce act and the acts amendatory thereof, or any receiver, trustee, lessee, agent, or person acting for or employed by any such corporation, who shall be convicted as aforesaid, shall, in addition to the fine herein provided for, be liable to imprisonment in the penitentiary for a term not exceeding two years, in the discretion of the court. Every violation of this section may be prosecuted in any court of the United States having jurisdiction of crimes within the district in which such violation is committed, or through which the transportation is conducted, or in which the car service is performed, or in which such concession or discrimination is granted or given or solicited or accepted or received; and whenever the offense is begun in one jurisdiction and completed in another it may be dealt with, inquired of, tried, determined, and punished in either jurisdiction in the same manner as if the offense had been actually and wholly committed therein.

"Sec. 8. There is hereby authorized to be appropriated the sum of $250,000, available until expended, for the purposes of this act, including payment of personal services in the District of Columbia and elsewhere, and all expenses incident to organizing the work of the President's fuel distribution committee, and not exceeding $50,000 thereof shall be available for reimbursement and payment upon specific approval of the President of expenses incurred since May 15, 1922, in connection with the work of the President's fuel distribution committee organized for the purpose of helping to meet the emergency existing in the matter of fuel."

THE HERCULES POWDER CO., of Wilmington, Del., announces a reduction in its selling prices of high explosives and blasting powder effective Monday, Sept. 18.

Nash Counsels Better Co-operation Among Rocky Mountain Mining Men to Hold Trade

Oil and electricity have cut so deeply into the natural market for coal that today it is more than ever necessary for the operating men of a coal-mining company to work in thorough harmony with the selling end of the business, Harry F. Nash, vice-president of the Oakdale Coal Co., of Denver, Col., told the Rocky Mountain Coal Mining Institute at its fall meeting in Glenwood Springs, Col., Sept. 7 to 9.

The program of the meeting included a good deal of sport as well as some solid and interesting technical contributions, including these papers: "Electricity in Coal Mining," by Graham Bright, of Pittsburgh, Pa.; "Wire Rope in Mining," by J. F. Howe, of Worcester, Mass.; "Practical First-Aid Work," by W. F. Murray, of Dawson, N. M., and Mr. Nash's paper on co-operation. Mr. Bright was the particular star in swimming contests in the Glenwood pool, winning three events. In the water sports for mine inspectors Robert Snedden, of Wyoming, won the all-round swimming championship from John Crawford, of Utah, though Mr. Crawford was the victor in diving. Thursday night some absorbing coal-mining and industrial moving pictures were shown and Friday evening C. W. Darrow was the principal speaker at the annual banquet, over which Harry Nash presided as toastmaster. A dance followed the dinner. All sixty of the men at the meeting enjoyed the automobile rides through beautiful canyons near Glenwood Springs as the guests of the Lion's Club.

Potential Bituminous Output Greater Since War

"Within the last ten years," said Mr. Nash, "electricity and oil have largely displaced coal in industry, so that the use of bituminous coal is decreasing, relatively, though the potential production of bituminous coal has largely increased since the war. High wage scales and high freight rates make the delivered price of coal to the consumer so out of proportion to the cost of electricity and oil—and strikes make the supply of coal so uncertain—that industry is rapidly turning to electricity and oil. The energy in a ton of coal can be transported by electric current a distance of 250 miles for 78 per cent of what it costs to ship the coal in bulk by rail in the East, and for about 60 per cent of what it costs in our section of the country.

"The use of fuel oil, distillate and gasoline in industry has increased by leaps and bounds. Especially was this noticeable during the strike this year, as the large packing plants in Kansas City, Omaha and Sioux City, that formerly used nothing but coal, are now practically all using oil. This also applies to other industrial plants throughout our territory in Texas, Oklahoma, Kansas and Nebraska. Many railroads are using oil, as are also the smelters, cement plants, etc. Then years ago 100 per cent of the threshing in the State of Kansas was done with coal; today not over 25 per cent of it is done through that means—and so it goes all along the line. The use of our coal is being yearly more restricted in industry.

"In the case of domestic consumption the circle is also ever decreasing. In small towns and on farms kerosene, gasoline and wood are largely utilized for cooking. For the past four years along any country road it has been a common occurrence to hear a buzz-saw cutting old fence posts or timbers taken from creek bottoms. Many thousands of tons of coal are displaced each year through the use of corn and cobs. In larger towns gas plants have been installed, and many housewives use gas—in communities contiguous to natural gas, that is used for industrial and domestic purposes.

"The time has gone when industrial and domestic consumers or dealers are satisfied to buy anything that is black. Competition among the coal producing states is keen, and will become more so. Eastern and Southern fields are turning out splendidly prepared coals of high quality, and with their lower freight rates to competitive territory, will entirely nullify the use of our Western coals unless harmony and co-operation exist between the sales department, the mine superintendent and his assistants.

"To be successful, the salesman must, first of all, believe in his product—must feel that he has a good article in point of quality and preparation to offer his customers—and must feel that the initial shipment a new customer receives will measure up to the salesman's representations—and all subsequent consignments to be similar. The salesman knows full well that if the coal shipped any customer is not up to standard, the next time he calls, the customer's reception to him will be far from pleasant; in short, the salesman will be unable to sell that customer again because through no fault of his, the salesman's representations have been false. A salesman further knows that a disgruntled customer will tell other dealers of the poor preparation of his coal, so that defeat stares him in the face wherever he goes, as he sees dealer after dealer ordering other coals of better and more uniform preparation.

"Probably the mine staff do not realize what trouble, expense and loss a company is put to in forwarding a car that has been refused by the original consignee. Let us take for example that a poorly prepared car of coal arrives at Brush, Col. The original consignee refuses it and the shipper diverts it to another customer at Holdrege, Neb., but not without paying a $6.75 reconsigning charge, plus any demurrage which might have accrued at Brush. Let us suppose the car is also refused by the consignee at Holdrege. In order to get rid of the shipment, the company is compelled to pay another reconsigning charge of $6.75, plus demurrage and the through freight charges to Holdrege, plus the local freight rate from Holdrege to wherever the car is finally placed. Ofttimes this local rate is greater than the sales price of the coal at the mine, so that the transaction is a total loss. To cap all of this, it is very often necessary to make a reduction in the mine price of the coal, to say nothing of telegrams and telephone calls incident to reselling the originally refused car of coal.

Cites Advantages of All-Round Co-operation

"How much better it would be to have every car sent out from the mine absolutely free from rock, bone, slate or an excess amount of slack. How many operating men have had their attention called by someone at the mine to the fact that the coal in certain cars was not up to standard, but have taken the attitude that they were too busy to inspect those cars, have the coal cleaned, or even to notify the sales department of the poor preparation of coal in that particular car? How often have they known that the coal coming from certain places in the mine was being loaded dirty, but permitted the cars with this poor coal in them to be billed out, with the idea of "passing the buck" to the sales department? How many of them, when they receive a letter from the sales department, to the effect that customers are complaining of preparation, give the sales department a "bawling out" before their assistants, and do nothing to obviate further complaints? Harmony and co-operation between the mine and sales force would stop this friction and insure larger revenue for each company.

"I am quite sure that the sales department will always gladly co-operate with the mine force. Most of the salesmen know the many troubles that confront them at the mine, as many of them have worked at the mines formerly in various capacities or have at least often visited the properties.

"As soon as the mines throughout the country have recovered from the recent shutdown, and the car shortage is a thing of the past, the coal operators of the West will have to "fine-comb" the territory for orders, and unless the operating departments see to it that nothing but clean and well-prepared coal is sent out, a decrease in annual production is sure to follow, rather than the increase we should expect."

Questions Propriety of Car Distribution Based on Price of Commodity Carried

The attitude of the Interstate Commerce Commission toward the emergency fuel distribution and price control act may be summarized from the testimony of Commissioner Clyde B. Aitchison to the effect that the commission never seeks jurisdiction, yet in every emergency finds the duty of coal distributor for the country thrust upon it, and if this is to be the case welcomes the additional authority granted it under the Winslow Cummins act.

In giving his testimony before the House Interstate Commerce Committee, Commissioner Aitchison appeared more in the rôle of a member of the President's coal committee than as a member of the Interstate Commerce Commission yet because of his office it was generally considered by committee members that he spoke for the commission.

Commissioner Aitchison agreed with Representative Graham that the Federal Fuel Distributor, created by this emergency legislation, functions as a referee and that the executive or administrative duties of creating priorities or embargoes for the equitable distribution of coal and control of the price rests in the Interstate Commerce Commission.

"I do not think it is sound public policy as a business proposition that the Interstate Commerce Commission should have to do this," said Commissioner Aitchison, "yet it is thrust upon us every time we are confronted with a situation of this sort, to be the coal distributor of the country."

Later, Mr. Aitchison said: "I trust the position of the commission in the past that it never seeks jurisdiction is clearly in the minds of all the members of the committee."

Commissioner Aitchison asserted his opinion that the Transportation Act, in its emergency clause, gives the commission authority only to deal with emergencies of car service and not for sociological emergencies to distribute any commodity equitably among various sections of the country, and certainly not to order a distribution of cars based upon the price of the commodity these cars are to carry. He declared that Chairman McChord and, he believed, Commissioners Lewis and Cox, held a contrary position that the emergency clause "is broad enough to cover anything that may occur to us as being detrimental to the condition of the country," excepting the question of price, but that no other member of the commission, or its chief counsel, had voiced such views and that it was not the policy administered by the commission in its last efforts to handle the car situation two years ago.

The question of whether the Transportation Act is broad enough to include all emergencies excepting price control was the basis of considerable debate in Congress during passage of the Winslow-Cummins Act and it generally was answered in the affirmative. Senator Cummins, chairman of the Senate Interstate Commerce Committee, declared repeatedly that the only additional power conferred upon the Interstate Commerce Commission by the emergency legislation was the power to regulate car supply according to the price charged for coal at the mines.

Woodin Names District Fuel Administrators

William H. Woodin, State Fuel Administrator of New York, appointed his district fuel administrators last week, all of whom have accepted. They are Arthur S. Learoyd, of Thorne, Neale & Co.; Albert E. Cluett, Troy; Clarence B. Kilmer, Saratoga Springs; Samuel J. Koerbel, Binghamton; George D. Boubright, Rochester; Arthur W. Lawrence, Brockville; A. Conger Goodyear, Buffalo, and Carlton H. Chase, of Syracuse.

Mr. Woodin held several conferences during the week. In Albany he met his newly appointed district administrators and at a conference in New York City he met the representatives of the public-utility advisory group at which J. W. Lieb, vice-president of the New York Edison Co., presided.

Roderick Stephens, formerly president of the National Retail Coal Merchants' Association will represent the coal dealers on the staff of the State Fuel Administrator. Harry T. Peters, of Williams & Peters, was appointed Assistant State Fuel Administrator and Girvan M. Snyder will be the director of the bituminous coal division.

The first general order issued by the State Fuel Administrator prohibits dealers from delivering more than a two weeks' supply of domestic sizes or pea anthracite and then only if a customer has less than that quantity in his bin.

Defends Kentucky-Tennessee Operators

Editor *Coal Age*:

We refer to statement in your valued paper, page 256, Aug. 17, to say that we deny in toto the malicious implications contained in statement referred to.

Members of the Kentucky-Tennessee Coal Operators' Association have not profiteered to the extent that some others have, now active in spreading propaganda detrimental to the Kentucky-Tennessee membership. Our membership is in full sympathy with the Hoover plan to control prices and are co-operating fully to that end with federal and state committees.

The Kentucky-Tennessee Coal Operators' Association was the first to restore the 1920 wage scale in the mining industry and has no apology to make to anyone. Our operators knew, or thought they knew (time has proven their wisdom), the trend of the industrial conditions, that living costs were advancing and that there was a shortage of labor in the steel mills and that they were going to increase wages immediately following settlement of the coal strike, if not sooner. This information coupled with other well-known financial and economic facts indicated clearly we were entering another period of inflation and that the sooner employers realized the situation and made just wage adjustments, the better for all concerned.

The Kentucky-Tennessee Association is operating under a local wage agreement, open-shop basis with no "*check-off*", being a modification of the Knoxville 1920 wage agreement, extended to run to March 31, 1924. The principal feature of the modification is the clause providing for wage adjustments from time to time to meet competitive conditions. Under this plan our mines have operated (barring car shortage) almost continuously until the railroad strike, July 1.

J. E. McCoy, Secretary,
Kentucky-Tennessee Coal Operators' Association.
Knoxville, Tenn., Aug. 26, 1922.

Government Department Reorganization to Be Carried Out; Plan Being Modified

There has not been the slightest surrender on the part of the administration of its intention to bring about practical reorganization of the executive departments of the federal government. A tentative report was laid before the President several months ago. It has not been made public due to the fact that the report as submitted is not acceptable to all of the department heads. It is believed, however, that certain changes in the plan can be made so as to obtain for it the unanimous support of the department heads or at least any dissenting opinions that may be offered will be of minor importance.

Were the report to be sent to Congress without the indorsement of certain of the department heads, it is recognized that the possibility of obtaining the legislation would be lessened. Moreover the legislative situation, since the report was submitted to the President, has been such as to preclude action on reorganization. In addition if the report were made public in its tentative form and before unanimous indorsement by department heads had been obtained, there is a feeling that it would invoke nonconstructive criticism and arouse agitation which would serve no good purpose.

It can be stated authoritatively that the reorganization proposal has not been laid aside indefinitely, but will be taken up at an early date.

C. E. Spens to Be Appointed Federal Fuel Distributor, Is Report

Washington, D. C., Sept. 19.—It was stated unofficially today that Conrad E. Spens, vice-president in charge of traffic of the Chicago, Burlington & Quincy R.R., would be appointed Federal Fuel Distributor under the distribution and price-control act.

Mr. Spens was director of transportation of the U. S. Food Administration in 1918 and early in 1919 was appointed assistant director of traffic of the U. S. Railroad Administration and later that year also assumed the duties of manager of inland traffic of the U. S. Wheat Corporation. He resumed his official position with the Burlington R.R. March 1, 1920. His home is in Chicago.

Though Anthracite Shortage Is Inevitable, Public Lags in Ordering Substitutes

Indifference marks the attitude of the general run of householders who depend on anthracite for their homes. The same is true of most of the small retail dealers. Ask the man on the street what he has done about his hard-coal supply for this winter and more than likely he will tell you that he has put in his order and that his dealer has told him that he will get the coal all right. "It may be a little later this year than usual, you know, because there has been a strike, but you will get it," is what they are being told. On the part of the householder there is little or no planning to use substitutes. The feeling seems to be that whereas some may have to do with soft coal, this particular fellow stands all right with his dealer and therefore will get his hard coal as usual. Many dealers feel the same way.

The general manager of a moderate-sized house in the East recently sent out a letter to his retail dealer trade, telling them that the supply of hard coal would be short this winter, and belated as well, and suggesting that dealers order some well-prepared soft coal. Just one out of twenty was the way they replied with orders. The other nineteen intended to wait, they said, util they had some orders on their books for soft coal. Then they would order. But, they were told, that would be too late.

The vice-president of another company, producing several million tons of bituminous coal, has found considerable interest in bituminous coal on the part of a certain class of consumers, notably large apartment houses, hotels, schools and churches and this interest is manifesting itself in orders through the dealers. The order starts with the ultimate consumer, however, and the dealer orders soft coal only when he has to.

Opinion is divided among the larger producers as to how serious the situation will be this winter because of the lack of production of anthracite this summer. There are some in high places who feel that they will be able to worry along without causing anyone hardship, that all they have to do is to distribute their larger sizes with care, that there is no cause for alarm. They are said to be advising the several state fuel administrations and officials at Washington to that effect. The result is that there has been little effort on the part of the public servants to whom the people look for advice to get the ordinary man interested in putting in substitutes for part of his winter's requirements. The figures of production and consumption of hard coal show, it is pointed out, that the country will have but little over 60 per cent supply and that even that will be late in reaching the consumer.

Last week Mr. Woodin, state fuel administrator for New York, ordered that dealers should in no case deliver a customer more than two weeks' supply. This is considered by the trade as an impossible and impracticable dictum. Two weeks' supply may be, and in most instances is, less than half a ton, they say, and add that they hope for modification setting a minimum of at least a ton. The trade feels that this order, however, has done much to awaken interest in the hard-coal situation.

Next to distribution, price of anthracite is bothering the trade. About half the "company" tonnage has announced circular prices. These prices are little different from those of last March. The Hudson Company has adopted the new range size and quotes that instead of nut and pea. The other companies are said to be disposed to want advances over last year, but as time goes on and the older prices come out, their chance of adding anything is lessened. Independents are feeling their way about with price ranges on the large sizes from $9.25 to $11 per gross ton, having one eye on the Pennsylvania state administrator and the other eye on Washington and the price-control legislation.

Deadlock of Conferees on Coal-Commission Bill May Endanger Its Passage

Washington, Sept. 19.—Failure of the conferees of the two houses of Congress to agree today on the terms of the bill to create a fact-finding commission to investigate the coal industry led administration leaders to express some fear that the deadlock might be prolonged, so as to endanger passage of the measure before the adjournment of Congress.

While this was considered an extreme view, it is true that members of both houses are extremely anxious to end the session this week and adjourn until the regular short session, which will begin Dec. 4. Although not considered strictly as emergency legislation, administration leaders are anxious to have the fact-finding bill enacted immediately in order that the commission may be named and begin its labors within a few weeks, so that there may be opportunity for full investigation before the time for the next wage contracts in the coal fields to be negotiated.

Conferees on the bill stated that the deadlock was over the scope of the instructions to the proposed commission, principally because of inclusion by Senator Borah, author of the Senate bill, of instructions to report on the wisdom or advisability of nationalization of the coal mines. The House conferees are vigorously opposed to this clause and also oppose inclusion in the Senate bill of instructions to report on various forms of standardization.



THE THREE NEW GOVERNORS FROM THE CONGRESSIONAL EMPLOYMENT AGENCY

Consolidation Coal Co. Gets Restraining Order in Georges Creek Region

In an effort to prevent riots and mob depredations in the Georges Creek region, the Consolidation Coal Co. obtained a temporary restraining order on Sept. 8 against the officers of District 16, which embraces the Georges Creek and Upper Potomac regions. The order names officers, local union and members of the United Mine Workers as defendants, President Frazier J. Dean being included in the list. A hearing is to be held on Sept. 25, at which time arguments will be made upon the question of making the injunction permanent. Many charges of lawlessness and intimidation as well as acts of violence are incorporated in the bill of complaint. The Consolidation and other companies operating in the Georges Creek region have refused to recognize the union in this field. Here as in the Upper Potomac district the coal strike is still officially in effect. The mines are being operated on a non-union basis with a short labor supply.

Fines and jail sentences were imposed on several individuals by Judge George W. McClintic of the United States District Court for the southern district of West Virginia during the course of a special term of district court held during the week ending September 9. These fines and sentences were imposed for violation of federal injunctions issued by Judge McClintic in recent months in connection with the coal strike, the defendants being adjudged in contempt in at least twelve cases.

According to reports received in Cincinnati the Kanawha operators who have refused to deal with the United Mine Workers because of the check-off and other features that are objected are still firm in their stand and each week shows more and more men returning to work in their mines. Some who signed up at the time of the Cleveland agreement are taking stock of the situation and are voicing their regrets. The directing head of one corporation wrote his directors the other day that he had just laid out $1,600 to the union as check-off dues. "This means $30,000 a year that we are giving them as the sinews of war to fight us again when the time comes," was his concluding remark.

Storrow Quits as Massachusetts Fuel Chief: Phelan Appointed to Succeed Him

James J. Storrow has retired from the chairmanship of the state advisory fuel committee of Massachusetts. Governor Cox has accepted his resignation and has appointed as chairman James J. Phelan, who has been head of the Boston fuel committee.

The reason given for Mr. Storrow's resignation is that as he is chairman of the Governor's committee to work out a plan for grouping the New England railroads, it has become urgent that he devote his greatest efforts to preparing for the hearings to be held before long in New England by the Interstate Commerce Commission.

It was announced that the fuel committee will continue to seek a fair allotment of coal, an equitable distribution and to restrain prices.

Middle West Does Not Enthuse Over Ogle Plan for Legislative Conference

Leaders of the coal industry in the Middle West are deeply interested in but not seriously worried by the pending coal legislation in Congress. The idea of national price fixing and control is generally regarded as fraught with great possibilities for confusion, and the bills, now in committee or conference, that are aimed to create a coal-investigation commission are viewed with interest because they may very well produce governmental action that will completely overshadow the Lewis plan for a fact-finding body of miners and operators. In spite of the fact that some operators profess a desire for Congress to create a federal commission quickly—even before the Oct. 2 Cleveland meeting which President Lewis of the miners' union has arranged—there is general hesitancy in the West about rushing to Washington to express an opinion to the congressional committee which is working over the bill.

The suggestion of A. M. Ogle, president of the National Coal Association, for a meeting of operators either in Cleveland, Buffalo, or elsewhere, this week, to formulate a legislative plan did not receive a favorable reply in Illinois. The position of many operators is that if Congress is going to do something that will cast even greater confusion into the coal business, the quicker it does so and the greater the confusion thus caused, the sooner a normal condition will thereafter be attained.

Logan Mine Marcher Convicted of Treason; Ten-Year Sentence Recommended

Walter Allen, accused of being one of the union marchers on the unorganized mine fields of Logan and Mingo Counties in August and September of 1921, was adjudged guilty of treason against the State of West Virginia by a jury at Charles Town, W. Va., Saturday, Sept. 16. The jury, which was out forty-six minutes, recommended that a sentence of ten years in the penitentiary be imposed.

Allen's bond was increased from $10,000 to $15,000, and he was sent to jail until the higher bond is furnished. Attorneys for District 17, United Mine Workers of America, who conducted the case for the defendant, will appeal to the State Supreme Court for a writ of error.

C. Frank Keeney, president of District 17, United Mine Workers, is the next defendant scheduled for trial. His trial on a charge of murder will begin Oct. 23. He is also indicted for treason. There have been two previous convictions and one acquittal so far, the Rev. James E. Wilburt and his son John having been convicted of second degree murder and William Blizzard, the first to be tried, acquitted.

Herrin Grand Jury Resumes Its Work

On Monday, Sept. 18, the Williamson County grand jury, which has already indicted 59 men in connection with the massacre of a score of non-union miners and the wounding of 30 others at Herrin, June 22, resumed its investigation at Marion, Ill. It is expected the jury will finish its work soon. Of the 59 men indicted, many are still at large though the Williamson County jail with its remodeled tier of cells is about full. Men indicted for murder have been refused bail but those indicted for conspiracy to kill are out under bond given through lawyers for the miners' union. Prisoners are fed the best that the Marion restaurants can supply and at the expense of the union. This relieves Williamson County of part of the heavy cost of the case.

ARTHUR W. AMBROSE has been selected to succeed E. A. Holbrook as assistant director of the U. S. Bureau of Mines. Mr. Ambrose has been in the service of the Bureau since 1917, during which time he has risen through the various grades from petroleum technologist to chief of the petroleum division of the Bureau. His appointment as assistant director is an indication of the increasing importance of the Bureau's petroleum work. F. B. Tough, who has been serving the Bureau as chief supervisor of oil and gas leases, will succeed Mr. Ambrose as chief petroleum technologist. F. J. Bailey, the assistant to the director, under a rearrangement of the work, will take over a portion of the duties formerly assigned to the assistant director so as to allow Mr. Ambrose to give a portion of his time to the petroleum work. Salary provision has been made to compensate for Mr. Bailey's enlarged responsibilities.

STUYVESANT PEABODY, president of the Peabody Coal Co., automatically assumes the office of chairman of the board lately vacated by the death of his father, Francis S. Peabody. Thus is ended a great deal of speculation throughout the coal industry as to who the successor of the late Mr. Peabody would be. There remains a vacancy in the directorate of the company that has not been filled. No other changes in the personnel of the company are to be made, it is informally stated at the company's headquarters in Chicago.

Pledge Aid to Expedite Movement of Bituminous Coal; Distribution on Highest-Bidder Basis Decried

A pledge by leading commercial interests to aid in expediting the natural processes of increased supply, in order that the price of bituminous coal may be kept down and complete supplies be assured the householders and industry, was given at the conference on the bituminous coal situation held Friday, Sept. 15, at the Department of Commerce in Washington. At the same time determination was evidenced on the part of the government that advantage shall not be taken of the recent strike to exact high prices for coal. Officials of the U. S. Chamber of Commerce, the American Railway Association, the National Association of Manufacturers, the National Association of Purchasing Agents and the Public Utilities Associations met with the Secretary of Commerce, H. Foster Bain, Director of the U. S. Bureau of Mines, and C. B. Aitchison, of the Interstate Commerce Commission.

Secretary Hoover, in opening the conference, stated that the government welcomed the co-operation of the commercial and industrial community in solving the situation. It was most desirable, he said, that readjustments in prices and distribution take place by the natural means of increased supply and the holding down of consumption pending such increase. Protection for the public must come, he warned, by one means or another.

"In every situation such as this," the Secretary said, "there are social considerations which absolutely override the economic. The government cannot permit the distribution of coal this winter on a highest-bidder basis. That condition during the present emergency is an impossible social conception."

The Secretary stated that while the bill pending in Congress would give powers to embargo shipments of extortionate priced coal moving in interstate commerce, the federal government could exert no constitutional control over coal produced and sold within state boundaries or over speculation in interstate coal once it had reached its destination. Many states were taking drastic legislative powers in these domestic matters and unless the situation quickly improved no doubt many more of them would do so in order to protect their citizens.

It was agreed that the mines had ample capacity, even to the point of surplus, to meet the situation, that the problem was wholly one of transportation, and that the price would ameliorate if transportation could be increased and if in the meantime consumers would purchase only for their immediate needs.

The conference voted to organize voluntary campaigns for three major purposes:

(1) To induce manufacturers, utility corporations and buyers generally not to purchase coal beyond their day-to-day needs until the flow of coal becomes more normal.

(2) To persuade holders of coal contracts not to call for delivery on those contracts past their day-to-day needs. It was considered that about one-half of the coal in the country is under contract at normal prices and that a relaxation in the demand for this coal to the minimum daily requirements would increase the supply to the general public.

(3) To expedite movement of coal in every possible way. The co-operation of the responsible coal operators in these matters will be sought.

The question of priorities in coal movement was discussed at great length, it being the consensus of opinion of the meeting that more mobility would be given to movement with less opportunity for speculation if the priorities to special uses, which have been necessary prior to the reopening of the union mines, should be relaxed and priority parallel with agricultural produce should be given to the movement of all coal without discrimination as to consignees. It was also pretty generally the opinion of the meeting that all reconsignment rights upon coal should be abolished in order to prevent speculation in coal.

It was decided to organize special committees under the leadership of the U. S. Chamber of Commerce to advance these purposes. Those present were:

Gerard Swope, president, General Electric Co., New York.
Harry Coulby, Pickands Mather Co., Cleveland, Ohio.
R. P. Lamont, American Steel Foundries, Chicago, Ill.
A. A. Landon, American Radiator Co., Buffalo, N. Y.
E. A. S. Clarke, Consolidated Steel Export Co., New York.
A. J. Brosseau, International Motors Co., New York.
J. P. Jackson, representing Public Utility Associations.
S. M. Vauclain, president, Baldwin Locomotive Works.
W. W. Atterbury, vice-president, Pennsylvania System.
R. C. Wright, general traffic manager, Pennsylvania System.
C. W. Shaeffer, chief of transportation, Pennsylvania System.
Samuel Porcher, general purchasing agent, Pennsylvania R.R.
J. N. Snider, coal traffic manager, New York Central Lines.
A. C. Needles, vice-president, Norfolk & Western Railway Co.
D. E. Spangler, superintendent of transportation, Norfolk & Western Railway Co., Roanoke, Va.
J. F. Porterfield, general superintendent transportation, Illinois Central Railroad Co., Chicago.
H. W. Miller, vice-president, Southern Railway System.
C. B. Kellogg, vice-president, Munson Steamship Lines.
J. E. Edgerton, president, National Association of Manufacturers, Nashville, Tenn.
Nathan B. Williams, associate counsel, National Association of Manufacturers, Nashville, Tenn.
Conrad E. Spens, vice-president, Chicago, Burlington & Quincy R.R., Chicago.
Charles K. Foster, vice-president, American Radiator Co.
E. E. White, president, E. E. White Coal Co., Glen White, W. Va.
Charles E. Bockus, president, Clinchfield Coal Corporation.
J. A. Campbell, president, Youngstown Sheet & Tube Co.
Daniel Willard, president, Baltimore & Ohio R.R., Baltimore.
A. C. Bedford, president, Standard Oil Co.
R. H. Aishton, president, American Railway Association.
M. J. Gormley, chairman, Car Service Division, American Railway Association, Washington.
Clyde B. Aitchison, commissioner, Interstate Commerce Commission.
John C. Roth, director, Bureau of Service, Interstate Commerce Commission, Washington.
H. Foster Bain, director, Bureau of Mines, Washington.
Alexander Legge, president, International Harvester Co.
Julius H. Barnes, president, U. S. Chamber of Commerce.
C. T. Starr and W. du B. Brookings, U. S. Chamber of Commerce.
F. R. Wadleigh, Department of Commerce.

Acting on the recommendations of Friday's meeting the Chamber of Commerce called on national business associations, local chambers of commerce and individual corporations and firms in an attempt to equalize and expedite the distribution of coal and to prevent prices from soaring to undue levels.

Full co-operation by all concerned, the Chamber declares, will relieve the federal and state governments of increasing regulatory legislation and will be welcomed by the administration as offering a promise that business itself will solve its problems without injection of government into its affairs.

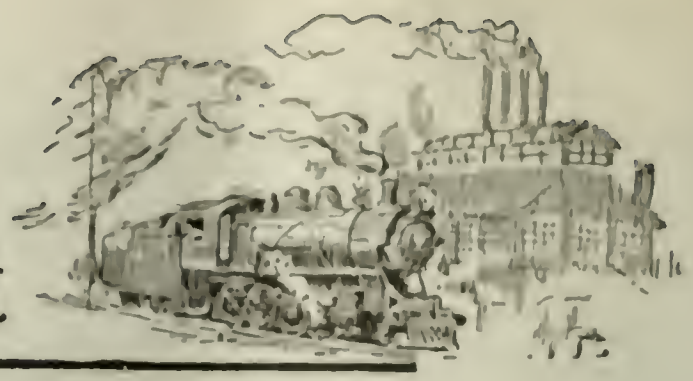
Industries throughout the United States are asked in a letter which is being sent out over the signature of Julius H. Barnes, president of the Chamber, to lend their assistance to the effort by performance of the following acts:

Confining purchases of coal under present conditions as nearly to current needs only as safety permits.
Suspending accumulation of advance stocks of coal until the present emergency pressure on production is relieved. This particularly applies to persons having low priced contracts and who are, therefore, under no price pressure to withhold immediate delivery.
Unloading coal cars immediately and returning them to service.
Promptly furnishing of material required for new railroad equipment or repairs.
Local commercial organizations are asked to obtain local information as to the range of prices for various kinds and qualities of fuel for the guidance of the members of the local organizations and to hold conferences with local wholesale and retail coal handlers, enlisting them in the cause of fair trade practices.

In his letter to industries, Julius Barnes, president of the Chamber of Commerce of the United States, says: "It is obvious that the bituminous-coal problem is one solely of transportation, as the productive capacity of the mines is able to care for the current needs and at the same time quickly to rehabilitate stocks. The railways are able to handle current supplies, and any shortage is due to the inability of transportation to handle both problems of current supplies and re-establishment of stocks during the readjustment of the railway strike. This situation greatly disturbs the normal readjustment of prices under the law of supply and demand."



Production and the Market



Weekly Review

Production is being held in check by the diminishing supply of cars and the congestion of loads. The surplus of empties on hand when the strike ended has dwindled to almost nothing and a shortage is now general. Car shortage usually enlivens the market, but so far this one has had little stimulating effect on prices. With the exception of the growing Midwest demand for domestic coal, caused by the approach of cool weather, bituminous coals weakened all along the line and *Coal Age* Index of spot bituminous prices declined to 412 on Sept. 18 from 427 last week. This represents an average mine price of $4.99 as compared with $5.17 the previous week.

The lowering prices continue to hold back orders. Consumers, anticipating that the rail strike is about over, argue that with the roads functioning properly they should be able to pick and choose their replenishments at prices that are more attractive than at present. So, while the quality fuels still move easily much of the tonnage now produced is sold under strongly competitive conditions. Nevertheless there is a wide range in quotations and a strong undercurrent of belief that the market is due before long for a long sharp upturn.

Jam of Lake Coal at Lower Ports

Priorities are taking most of the production. Shipments under Priorities 1 and 2 have eliminated free tonnage for general demand, particularly from those fields shipping to the Lakes. The pressure on Lake shippers has forced a jam of 12,000 loads at Erie ports awaiting dumping. Slow vessel movement, disability of machines and multitudes of pool classifications is responsible for the congestion, to offset which embargoes have been placed in several fields. These are only temporary, although they cause the priority shipper to rest around in a hurry for another outlet, often at a cut price.

The situation in the Northwest is improving. More coal is afloat and while Canadian, Lake Michigan and river points are obtaining more than their share, the upper docks are sure to benefit. The Northwestern buyers' strike shows signs of weakening. The Great Northern R.R. has just purchased 500,000 tons of Lake and rail coal, setting an example which it is hoped others will follow, so that the docks can cover on seasonal commitments while there is yet time. It is not anticipated that to exceed 50 per cent of the requirements on Lake Superior will be moved up the Lakes.

Heavy arrivals of British coals have congested the Atlantic seaports. Demurrage costs are large and it is evident that few new orders will now be placed. Southern coals via water are plentiful, especially since a N. & W. embargo on west-bound movement makes mandatory larger shipments to Hampton Roads.

Anthracite has commenced to move in good volume. Production is not expected to reach normal before Oct. 1 at the earliest, but mines are seeking to reach maximum work time as soon as possible. The resumption has drawn many cars from the soft-coal fields, where they had been used during the strike. But few prices have been announced although all sorts of independent quotations are rumored, ranging from 50c. above old company schedules up to $14 for the family sizes. Half of the companies have announced circular prices approximating their old schedules and absorbing the Pennsylvania State Tax. No settled policy of distribution has as yet been made. The entire movement so far has been eastward and no coal has been sent to the Lakes.

BITUMINOUS

Production of bituminous coal during the week ended Sept. 16 may reach 9,500,000 net tons, according to the Geological Survey, based on statistics at hand when the report was issued.

"Final returns on soft-coal production in the week ended



Estimates of Production

(Net tons)

BITUMINOUS		
Week ended:	1921	1922
Aug. 26 (*b*)	7,753,000	6,736,000
Sept. 2 (*b*)	7,606,000	9,359,000
Sept. 9 (*a*)	7,083,000	8,756,000
Daily average	1,336,000	1,652,000
Calendar year	269,836,000	241,676,000
Daily av. cal. yr.	1,273,000	1,336,000
ANTHRACITE		
Aug. 26	1,893,000	36,000
Sept. 2	1,800,000	38,000
Sept. 9 (*a*)	1,483,000	53,000
Calendar year	64,285,000	22,255,000
COKE		
Sept. 2 (*b*)	58,000	138,000
Sept. 9 (*a*)	60,000	139,000
Calendar year	3,900,000	4,368,000

(*a*) Subject to revision. (*b*) Revised from last report.

Sept. 9 show 8,756,000 tons, which, although less in the aggregate than for the week before, was at a higher daily rate, the holiday (Labor Day) considered," says the Survey. "For last week (Sept. 11-16) the output of bituminous coal is not expected to exceed 9,500,000 tons. Over the three-weeks period following general resumption of mining under the Cleveland agreement production has been at a rate less than 9,500,000 tons a week."

Lake Loadings Pass 1,000,000-Ton Mark

Priority movement to the Lakes has increased rapidly in the last few weeks. Dumpings were 1,058,806 net tons during the week ended Sept. 18—1,020,680 tons cargo and 38,126 tons vessel fuel. The season's movement is now 7,453,327 tons, as compared with 17,669,670 tons last year.

Tidewater dumpings at Hampton Roads increased to 341,558 net tons during the week ended Sept. 14 from 315,628 tons in the preceding week. The C. & O. piers showed a decline, the others a substantial increase. Accumulations at the piers are growing as the railroads are able to make quicker deliveries. New England is taking the bulk of the tonnage dumped, although the surfeited condition of that market is making it increasingly difficult to place spot coal.

TIDEWATER SHIPMENTS FOR AUGUST, 1922

(In thousands of net tons)

Destination	New York	Phila-delphia	Balti-more	Hampton Roads	Charles-ton	August Total	June Total
Coastwise to New England	40	4	5	711	1	761	710
Exports	1	1	..	57	3	62	80
Bunker	101	6	6	140	4	257	255
Inside capes	...	39	42	86		167	166
Other tonnage	122	..	..	445	6	573	626
Total, August	264	50	53	1,439	14	1,820	1,837
Total, July	215	53	24	1,484	61	...	...

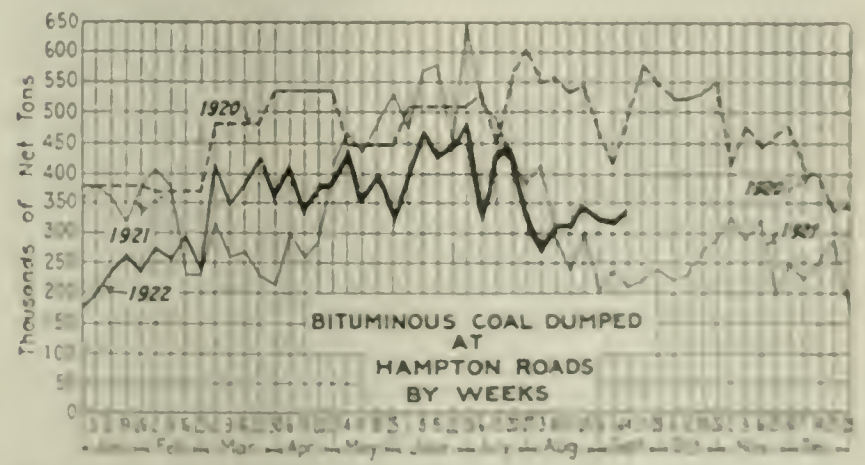
Tidewater business has been affected greatly by the strike, chiefly through the curtailment of exports. The total of 18,988,000 net tons dumped during the first eight months of 1922 was a third less than the average during the three years preceding. The principal factor in the decline was a drop in exports to 1,292,000 tons. During the corresponding period in 1920 and 1921 13,043,000 and 8,732,000 tons, respectively, were exported overseas. Dumpings for bunkers also decreased sharply to 3,171,000 tons, which was little more than half the 1921 figure. Waterborne shipments to New England were greater than in any of the three years

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 Inclusive	April 3 to Sept. 2, 1922 Inclusive	Week Ended Sept. 2, 1922
U. S. Total	45.6	55.7	....	.
Non-Union				
Alabama	63.5	64.6	(a)	(a)
Somerset County	55.5	74.9	46.6	46.7
Panhandle, W. Va.	55.3	51.3	46.7	60.8
Westmoreland	54.9	58.8	84.1	54.6
Virginia	54.8	59.9	71.8	51.1
Harlan	53.3	54.8	37.5	17.4
Hazard	51.7	58.4	45.6	12.2
Pocahontas	49.8	60.0	67.5	56.4
Tug River	48.1	63.7	70.5	54.5
Logan	47.6	61.1	56.2	28.1
Cumberland-Piedmont	46.6	50.6	19.6	33.4
Winding Gulf	45.7	64.3	59.2	37.0
Kenova-Thacker	38.2	54.3	70.1	61.7
N. E. Kentucky	32.9	47.7	45.4	25.2
New River‡	24.3	37.9	31.2	38.5
Union				
Oklahoma	63.9	59.6	16.1	42.6
Iowa	57.4	78.4	5.5	97.1
Ohio, Eastern	52.6	46.6	4.8	47.7
Missouri	50.7	66.8	6.0	53.8
Illinois	44.8	54.5	2.8	62.8
Kansas	42.0	54.9	19.9	84.5
Indiana	41.4	53.8	(a)	(a)
Pittsburgh†	41.2	39.8	(a)	(a)
Central Pennsylvania	39.1	50.2	16.5	72.7
Fairmont	35.3	44.0	8.6	41.8
Western Kentucky	32.5	37.7	60.2	45.7
Pittsburgh*	30.4	31.9	(a)	(a)
Kanawha	26.0	13.0	7.5	19.5
Ohio, southern	22.9	24.3	4.1	49.4

* Rail and river mines combined.
† Rail mines
‡ Union in 1921, non-union in 1922.
(a) No report.



Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Aug. 21, 1922	Sept. 5 1922	Sept. 11, 1922	Sept. 18, 1922†
Smokeless lump	Columbus	$6.10	$6.10	$6.40	$6.00 $6.50
Smokeless mine run	Columbus	6.00	5.50	5.75	5.50 6.00
Smokeless screenings	Columbus	5.90	5.35	5.65	5.75
Smokeless lump	Chicago	6.85	6.40	6.10	5.00 7.50
Smokeless mine run	Chicago	6.25	6.25	6.00	7.00
Smokeless lump	Cincinnati	5.75	5.60	7.00	7.00
Smokeless mine run	Cincinnati	5.50	4.75	5.50	6.00
Smokeless screenings	Cincinnati	5.15	4.40	5.50	6.00
*Smokeless mine run	Boston	8.70	9.00	8.35	8.85
Clearfield mine run	Boston	7.60	5.00	5.00	5.75
Cambria mine run	Boston	8.75	6.00	5.50	6.00
Somerset mine run	Boston	8.00	5.25	5.10	5.85
Pool 1 (Navy Standard)	New York	....	....	....	5.75
Pool 1 (Navy Standard)	Baltimore	....	....	....	5.75
Pool 9 (Super.Low Vol.)	New York	8.00	5.75	5.25	5.00
Pool 9 (Super.Low Vol.)	Philadelphia	8.25	5.85	5.60	5.75
Pool 9 (Super.Low Vol.)	Baltimore	....	6.25	6.10	6.85
Pool 10 (H.Gr.Low Vol)	New York	7.50	5.35	4.80	5.00
Pool 10 (H.Gr.Low Vol.)	Philadelphia	8.00	5.60	5.30	6.00 6.85
Pool 10 (H.Gr.Low Vol.)	Baltimore	7.75	5.85	5.75	6.00
Pool 11 (Low Vol.)	New York	6.50	5.10	4.35	5.85
Pool 11 (Low Vol.)	Philadelphia	7.75	5.10	4.85	4.75 5.00
Pool 11 (Low Vol.)	Baltimore	7.75	5.35	4.85	5.00
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	....	5.15	5.15	5.60
Pool 54-64 (Gas and St.)	Philadelphia	6.60	4.75	4.60	4.50 4.75
Pool 54-64 (Gas and St.)	Baltimore	7.50	5.25	4.60	4.50 4.75
Pittsburgh mine run (St.)	Pittsburgh	..		4.65	4.50 4.75
Kanawha lump	Columbus	6.40	5.85	6.40	
Kanawha mine run	Columbus	6.25	5.60	6.00	
Kanawha screenings	Columbus	6.00	5.35	5.75	
W. Va. Splint lump	Cincinnati	5.35	5.35	7.00	7.00
W. Va. Gas lump	Cincinnati	5.35	5.35	7.00	
W. Va. mine run	Cincinnati	5.50	5.35	5.65	
W. Va. screenings	Cincinnati	5.10	4.85	5.40	
Hocking lump	Columbus	6.65	6.25	6.25	6.60
Hocking mine run	Columbus	6.25	5.25	5.65	
Hocking screenings	Columbus	5.75	5.25	5.40	
Pitts. No. 8 lump	Cleveland	6.10	5.50	5.75	
Pitts. No. 8 mine run	Cleveland	6.10	5.35	5.10	

	Market Quoted	Aug. 21 1922	Sept. 5 1922	Sept. 11, 1922	Sept. 18, 1922†
Pitts. No. 8 screenings	Cleveland	$6.10	$5.25	$5.10	$5.00 $5.75
Midwest					
Franklin, Ill. lump	Chicago		5.85	5.40	5.25 6.00
Franklin, Ill. mine run	Chicago		4.65	4.75	4.50 5.00
Franklin, Ill. screenings	Chicago		4.25	4.40	4.35 4.50
Central, Ill. lump	Chicago		4.85	4.85	4.90 5.25
Central, Ill. mine run	Chicago		4.10	4.10	4.35 4.75
Central, Ill. screenings	Chicago		4.50	4.60	4.75
Ind. 4th Vein lump	Chicago		5.25	5.25	5.60
Ind. 4th Vein mine run	Chicago		4.85	4.85	4.75 5.00
Ind. 4th Vein screenings	Chicago		4.75	4.60	4.75
Ind. 5th Vein lump	Chicago		5.10	5.10	4.75 5.25
Ind. 5th Vein mine run	Chicago		4.60	4.60	4.75
Ind. 5th Vein screenings	Chicago		4.40	4.40	4.25 4.50
Standard lump	St. Louis		4.65	4.65	4.25 5.25
Standard mine run	St. Louis		3.90	3.85	3.75 4.00
Standard screenings	St. Louis		3.75	3.75	3.75 3.90
West Ky. lump	Louisville	6.50	4.25	4.25	4.75 5.00
West Ky. mine run	Louisville	6.00	4.25	4.25	4.75 5.00
West Ky. screenings	Louisville	6.00	4.25	4.00	3.75 4.25
West Ky. lump	Chicago	6.50	4.25	4.25	5.00 5.50
West Ky. mine run	Chicago	6.00	4.25	4.25	5.00 5.50
South and Southwest					
Big Seam lump	Birmingham	4.25	4.25	3.90	4.40
Big Seam mine run	Birmingham	4.25	4.00	3.90	4.00
Big Seam (washed)	Birmingham	4.25	4.00	3.90	4.00
S. E. Ky. lump	Chicago	6.15	4.25	4.25	5.00 5.50
S. E. Ky. mine run	Chicago	6.00	4.25	4.25	5.00 5.50
S. E. Ky. lump	Louisville	5.50	5.00	4.25	3.75 7.50
S. E. Ky. mine run	Louisville	5.75	5.00	4.25	5.00 6.00
S. E. Ky. screenings	Louisville	5.65	4.00	4.25	3.00 6.00
S. E. Ky. lump	Cincinnati	5.90	5.50	5.50	6.00 7.00
S. E. Ky. mine run	Cincinnati	5.75	5.25	5.50	6.00 6.50
S. E. Ky. screenings	Cincinnati	5.10	4.85	5.00	5.00 6.00
Kansas lump	Kansas City		6.00	6.00	6.00 6.50
Kansas mine run	Kansas City		5.00	5.00	5.00
Kansas screenings	Kansas City		3.40	3.25	3.00 3.25

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in heavy type, declines in italics.
NOTE—Circular prices now include New River and Pocahontas.



Coal Age Index 612. Week of Sept. 18, 1922. Average spot prices on mine prices $3.00. This diagram shows the relative but theoretical prices on fourteen grades representative of nearly 90 per cent of the total output of the United States weighted in accordance with, with respect to the proportionate sizes of each, prepared and sized mine screenings shipped and mined with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June 1914, as 100. After the method adopted in the report on

Values of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. (Pittsburgh District prices will included in figures for last week.)

Car Loadings and Surplusages

Cars loaded	All Cars	Coal Cars
Week ended Sept. 2, 1922	931,598	149,487
Previous week	890,838	110,030
Same week a year ago	831,288	154,586
Surplus cars		
Aug. 31, 1922	70,455	54,566
Aug. 23, 1922	120,961	96,405
Same date a year ago	246,740	130,596

preceding because of the necessity for replacing all-rail shipments which were shut off by the strike.

CUMULATIVE TIDEWATER SHIPMENTS, JANUARY TO AUGUST, 1919–1922
(In net tons)

Destination	1919	1920	1921	1922
Coastwise to New England	5,513,000	6,872,000	5,246,000	7,310,000
Exports	4,535,000	13,043,000	8,732,000	1,292,000
Bunker	4,509,000	5,687,000	6,252,000	3,171,000
Inside capes	2,341,000	2,151,000	2,071,000	1,980,000
Other tonnage	6,992,000	5,754,000	4,798,000	5,235,000
Total	23,890,000	33,507,000	27,099,000	18,988,000

ANTHRACITE

Production of hard coal started promptly after the ratification of the wage agreement on Saturday, Sept. 9. Work was resumed the following Monday and the loadings—1,783 cars—while not large, are encouraging evidence of the operators' determination to lose no time in filling the gap caused by the strike. In the last week of the strike 53,000 net tons was loaded, principally steam sizes dredged from the rivers.

Consumers are not yet clamoring for coal but with the first cool weather the distribution problem will be a difficult one. Small lots only, of course, will be doled out for many weeks to come. Not much substitute fuel has been purchased, as the feeling prevails that bituminous coal can be had quickly if needed.

COKE

Production of beehive coke was 139,000 net tons during the week ended Sept. 9, practically unchanged from the preceding week. Connellsville prices are unchanged, offerings are very light and the takers of merchant coke are largely miscellaneous users. Furnaces are only ocasionally in the market because of the prevailing high prices and variety of grades offered.

SHIPMENTS OF SOFT COAL FROM PRODUCING DISTRICTS

The table covering 39 sons to the car, based upon records of cars loaded, as reported by the railroads to the American Railway Association and as published by the Geological Survey

District	Week Ended July 22	Week Ended July 29	Week Ended Aug. 12	Average Daily, Week Ended Aug. 19	Average Daily, Week Ended Aug. 26	Average Daily, Week Ended Sept. 2	Average Daily, Week Ended Sept. 9	Days Sept. 11	Days Sept. 12	Days Sept. 13
Central Pennsylvania	146,350	154,950	176,300	32,467	75,958	141,225	129,250	157,400	156,150	153,000
Western Pa. (including Pittsburgh)	132,840	149,700	155,950	26,341	39,325	61,292	90,000	115,900	117,900	118,000
Panhandle	178,400	205,750	212,500	32,417	39,425	44,225	46,192	55,150	50,150	45,500
Cambria, Somerset, Connellsville & Somerset-Connellsville	249,200	315,450	340,450	57,141	58,742	59,750	60,800	67,200	63,050	68,750
Middle West and Westland	18,700	23,400	26,700	4,567	8,042	14,842	14,633	18,700	19,250	16,750
Total Pennsylvania	714,300	849,250	911,900	152,933	221,492	321,334	340,875	414,350	406,500	402,000
Georges Creek, Upper Potomac and Cumberland-Piedmont	58,250	56,750	80,400	13,508	14,883	15,017	10,700	14,000	10,650	13,000
Fairmont & W. Va. Panhandle	118,300	99,900	124,100	31,584	87,191	100,383	98,034	139,000	125,400	120,650
Coal and Coke	29,100	34,850	57,950	9,950	8,858	6,217	7,092	4,350	5,400	6,650
Kanawha and Coal River	64,150	68,950	82,250	13,867	18,092	20,750	13,975	31,400	16,350	20,000
Logan	114,000	117,100	203,200	29,733	27,225	26,708	27,100	28,600	32,100	24,000
New River, N. & W. New River Div.	115,400	91,600	123,800	22,908	19,367	18,642	17,558	21,050	16,800	14,000
Winding Gulf (Virginian)	91,700	89,750	56,400	15,500	17,383	18,825	14,683	32,150	15,000	14,500
Pocahontas and Tug River	281,900	358,900	426,550	67,183	71,067	67,583	49,408	61,350	59,750	45,100
Kenova-Thacker	102,300	118,100	144,150	27,442	27,400	26,308	22,675	37,950	19,800	7,650
Total West Virginia and Maryland	962,150	1,019,900	1,298,800	231,675	291,466	300,433	261,225	369,850	301,250	265,550
Eastern Kentucky	279,700	294,600	358,950	38,975	51,733	51,467	50,875	78,900	37,300	58,000
Western Kentucky	332,150	286,500	329,400	53,508	59,258	42,975	32,825	43,900	31,350	28,700
Tennessee	46,250	61,750	85,850	12,250	16,800	14,492	13,567	21,600	14,900	8,550
Illinois Valley and S. W. Virginia	117,650	145,000	130,300	23,650	22,475	21,433	21,792	32,800	25,500	18,700
Alabama and Georgia	294,450	318,850	328,900	54,575	50,842	44,166	44,833	62,000	59,050	56,000
Ohio	98,100	105,100	115,050	28,750	94,408	115,508	109,350	144,950	124,850	110,000
Indiana-Illinois	11,150	10,500	11,850	3,183	79,308	330,008	275,208	411,350	337,400	310,000
Iowa, Mo., Kans., Okla., Ark. & Tex.	83,400	80,450	80,250	14,883	19,675	51,508	60,850	81,700	78,700	86,000
Colorado	127,500	184,700	197,450	34,493	34,525	29,167	24,375	33,850	30,650	30,000
New Mexico	34,000	36,700	41,200	6,708	6,034	7,225	9,683	10,950	9,700	9,500
Utah	79,450	87,000	101,500	17,567	16,783	16,458	16,150	24,000	17,850	16,400
Wyoming, Montana and North Dakota	17,000	15,350	19,450	33,075	10,584	40,151	39,792	53,700	49,600	43,900
Washington	21,250	23,400	22,850	3,950	3,708	3,983	4,200	8,000	7,900	5,400
Michigan	*		*	0	1,475	3,892	3,592	4,800	4,050	5,100
Total bituminous shipped	3,847,850	3,484,950	4,033,700	680,175	980,566	1,394,200	1,309,192	1,796,700	1,536,550	1,453,800

* For some districts complete or subdivided figures are not available, see page 147, *Coal Age*, July 27, 1922."

Foreign Market And Export News

British Prices Soften as American Buyers Withdraw

French Market Improves as Result of Diversion of British Coal to America, but Wages Are Still Vexing Issue—Labor Unrest Upsets German Trade.

British shippers feel the slump caused by the withdrawal of American buyers. Prices have dropped to a point where they are attracting new business from the Continent and South America. An attempt is to be made to effect a further reduction in British rail freights.

The French market has improved materially. Emergency business in America, secured by Great Britain, diverted much tonnage that had been entering France to the detriment of home fuels and mines have been able to clear their heavy pit-head stocks. The wage controversy still continues and has resulted in an ultimatum by the owners, announcing a cut in pay as the last resort.

Germany is in the throes of labor shortage and unrest. Production is not ample for her own needs and imported coal is flooding in, further depreciating the value of the mark.

Declining British Prices Attract More Continental Buyers

Special Correspondence.

British shippers are very active in filling all orders for the United States. This movement continues around 200,000 tons weekly. New business from this source is falling off rapidly, but prices have receded, attracting more buyers from the Continent and South America. Germany is seeking a heavy tonnage but shippers are cautious in accepting these orders because of Germany's unstable financial condition. Production during the week ended Sept. 2 was 5,204,000 gross tons, according to a cable to *Coal Age*, close to the record for the year.

The recent increases in the retail prices of household coal have led to much speculation as to the causes that prompted them. What has happened is this: Recent developments have led to an increase in demand for certain varieties of house coal produced at certain mines. The inevitable effect of an increased demand is the same in the coal trade as in every other industry for producing or manufacturing commodities—there is a tendency for prices to rise.

It is no longer a case of disposing of stocks and cutting losses, but of producing at something approximating an economic figure. It is not reasonable to expect colliery owners more than anybody else to sell at an actual loss. This explains the slight increase in prices, which, however, is sent only a fraction of the amount which has been taken off the price of domestic varieties since last autumn.

The failure of representatives of the collieries and ship-owners and the men to come to an agreement on the question of the three-shift system in respect of the northeastern ports has caused profound disappointment.

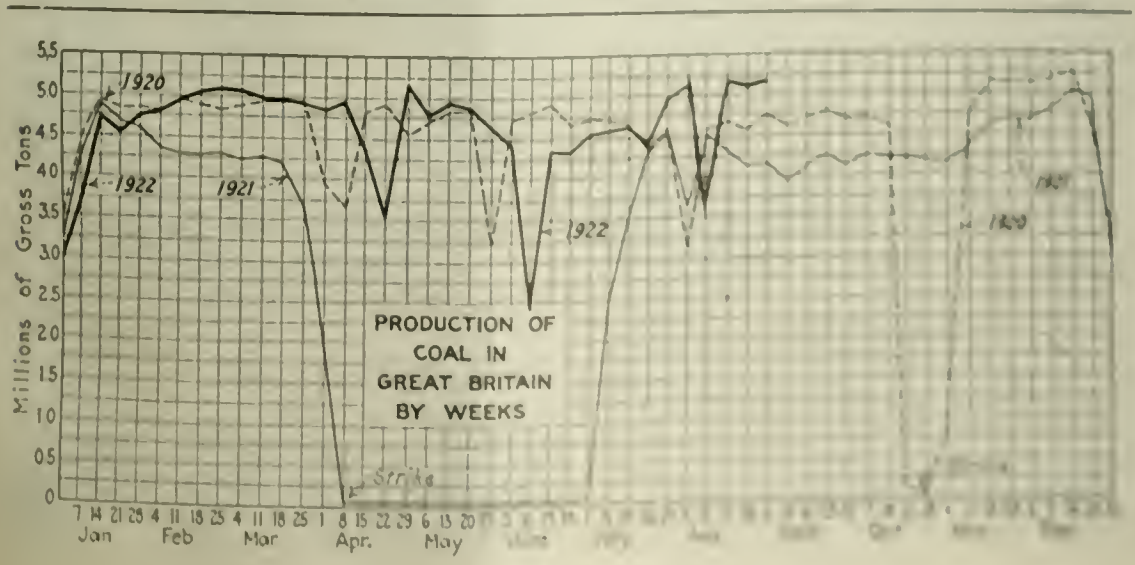
Overtime may do something to help matters, but it is by no means a satisfactory substitute for the third shift. It is all the more regrettable at a time when unemployment is so prevalent, for the additional "turn" would have absorbed an amount of extra labor.

As far as the collieries are concerned, the continuance of the two-shift system must tend to congest traffic, check output, and from time to time hold up operations.

The Mining Association has issued a statement pointing out that the Scottish coal trade is entirely unaffected by the reductions recently conceded by the Scottish railways to the representatives of the F.B.I. Except in respect to coal for shipment and for ironworks, the rates remain at the maximum attained in September, 1920, 100 per cent of the pre-war rate, plus 6d. per ton flat rate. The representatives of the Scottish coal owners met the Scottish railway managers recently to press for a substantial reduction.

The English and Welsh railway companies are again to be approached by the Mining Association of Great Britain with a view to obtaining a further reduction on the rates for the carrying of coal. These, under the agreement which took effect at the beginning of the month, are 60 per cent above pre-war level with the addition of a 2d. flat rate. It is the prevailing opinion in all branches of the coal trade that these rates should be reduced to 50 per cent and the flat rate abolished altogether.

It is understood that the subject will be reopened at the Railway Clearing House late this month



July Exports, by Customs Districts

Customs Districts	Great Britain Anthracite	Great Britain Bituminous	Coke
Massachusetts	44		
St. Lawrence	3,247	8,393	268
Rochester	57	7,915	
Buffalo	9,478	58,749	2,778
New York	477	206	613
New Orleans	89	200	1,735
San Antonio	86	37	
El Paso	119	3,242	3
San Diego	4	9	
Arizona	782	891	25
San Francisco	26	1,425	16
Dakota	1,224	1,488	1,135
Duluth & Superior	969	2,523	120
Michigan	96	85,967	15,985
Vermont		54	1,[illegible]
Philadelphia		1,119	[illegible]
Virginia		48,058	
Ohio		122,756	
South Carolina		19,025	
Mobile		4,147	2,612
Washington		90	60
Alaska		1	
Georgia			300
Florida			90
Maine and N. H.			316
Total	16,698	386,287	27,[illegible]

Outlook Improves at Hampton Roads

The situation was without much change last week, some slight improvement in coal movement being noted. A better supply of coal was on hand at the piers, while a slight increase in dumpings took place during the week.

The market was somewhat easier, with prospect of increased movement on the three roads serving the port. The downward tendency in prices on the spot market continued, reaching as low as $8 during the week.

Some prospect of a revival of export business was seen. One cargo of 9,[illegible] tons moved to the Canal Zone. All ships were being bunkered with fair regularity, none of the piers experiencing difficulty in serving the trade. Delay in service was being steadily diminished.

Hampton Roads Pier Situation

	Week Ended Sept. 7	Week Ended Sept. 14
N. & W. Piers, Lambert's Point		
Cars on hand	626	1,256
Tons on hand	42,816	73,441
Tons dumped	144,765	121,641
Tonnage waiting	118,500	74,000
Virginian Ry., Pier, Sewalls Point		
Cars on hand	1,664	1,184
Tons on hand	81,536	58,[illegible]
Tons dumped	76,[illegible]	55,[illegible]
Tonnage waiting	69,[illegible]	84,[illegible]
C. & O. Piers, Newport News		
Cars on hand	470	580
Tons on hand	23,[illegible]	28,[illegible]
Tons dumped	87,[illegible]	47,[illegible]
Tonnage waiting	7,[illegible]	28,[illegible]

French Market Improves; Miners' Wage Cut Is Imminent

[illegible] Correspondence.

The present selling activity of the Nord and Pas-de-Calais collieries remains satisfactory. Steam and industrial coals are in good demand, and pit-stocks are being further reduced.

A report from Rouen states that British coal arrivals in that port during August did not exceed a daily aver-

age of about 10,000 tons. They amounted to 120,000 tons in July. This seems to substantiate the assumption of a set-back in British competition.

German coal deliveries on reparation account have also been reduced, due at first to a strike of the Rhine bargemen and, subsequently, to a political move of Germany. This has been of some help to French coal mines. If the German plan had affected only her raw coal deliveries, it would not have been so objectionable, but it aimed especially at depriving French blast-furnaces in the East and in Lorraine of their coke supplies at a time when the iron market is just showing a better tendency. It is to be hoped that, in consequence of strong representations from the French government, the situation will soon become more normal again.

The representatives of the owners and miners of the Nord and Pas-de-Calais collieries met at Douai late in August. The owners declared that the reductions in rates proposed by the French Railroad Board were insufficient and that besides they were offset by similar reductions on Sarre coals, which would thus continue to compete on the Paris market.

The miners questioned the statement that the decrease of individual output was due to the introduction of the present working time. Finally, the owners' representatives, after having ascertained that no understanding with the men's delegates was possible, declared that if on Oct. 15 no other remedy had been found, they would be compelled to reduce the present rates of wages. The miners' delegates protested and the conference broke off.

Germany Must Check Flood of Import Coal by Working Longer Shifts

[illegible]

The coal situation in Germany has again become one of the chief topics of the day. Complaints are raised in all public and engineering meetings and the press, reminiscent of the great stringency in 1919. It is being pointed out that the reports coming from the coal districts show a steady decline in production, beginning with April, while imports are rising at an alarming rate.

Imported coal is mostly used in the shipping trade, which is growing steadily. Only a small tonnage, however, penetrates further inland, and an analysis of the situation shows little adequate foundation for alarm.

If imports have increased, it is largely due to the fact that they have been facilitated in every way. The coal tax, which on domestic coal is 40 per cent, has been abolished in the case of imported coal, thus bringing the price of the latter down to the German home market level. The loud and clamorous discussion of the coal situation is nothing more than a systematic propaganda. It draws its chief arguments from the decline of the daily output since March. The propaganda started early in April and has since then been put more and more prominently before the public.

For the decline in the Ruhr district several reasons are given. Vacations granted to miners are mostly taken during the summer, and numerous miners leave during the building season to take billets in the building trade. A large part of the increase of the force engaged in mining was drawn from this trade. Builders, anxious to draw trained hands back to their trade wherever they can get them, offer tempting wages, and miners are quick to exchange their strenuous work for occupation in the open. Building work terminates early in the fall, and the workmen as a rule go back to their previous vocation. Such fluctuations between the building trade and mining used to be customary in pre-war times, and had to be expected at the revival of building operations.

The June output was the lowest for some considerable time past.

GERMAN PRODUCTION IN JUNE

Kinds	Metric Tons
[illegible] coal	9,037,905
Lignite	10,486,949
Coke	2,378,478
[illegible] briquets	372,322
Lignite briquets	2,412,317
District	
Ruhr	6,797,703
Upper Silesia	979,890
Lower Silesia	438,641
Left of Rhine	442,910
Saxony	315,896

MONTHLY PRODUCTION OF BITUMINOUS COAL IN GERMANY

January	12,055,000
February	11,456,242
March	13,418,107
April	11,289,446
May	11,771,772
June	9,037,905

The drop in the June output was caused by the decline in Ruhr production, which has formed one of the chief topics during recent months, and the detachment of Polish Upper Silesia, which for the first time finds expression in the June returns. The 979,000 tons quoted still contains a considerable part of coal mined in Polish territory. The German production should have been listed at only 610,000 tons.

There is no doubt that since the detachment of Polish Upper Silesia, Germany has entered into a new era with regard to her coal supply. From a country with a decided surplus of coal she has become a coal-importing country. Her surplus was over 34,000,000 tons per year in pre-war times, while the shortage existing now is estimated at 39,000,000 tons.

Imports in June reached 790,000 tons, which is much lower than the figures rumored in trade circles. Of these imports the lion's share falls to Great Britain, which supplied in June 638,000 tons, according to German statistics.

The only way out of the difficulty consists in a systematic extension of working time, for which there is at present little chance, in view of the miners' attitude. This question played a prominent part in the recent negotiations for the adjustment of the coal tribute, and it was held against the German emissaries that work time in German mines is the shortest in all Europe and in its extension lay the relief desired.

Coal Paragraphs from Foreign Lands

ITALY — The price of Cardiff steam first is now 40s., according to a cable to *Coal Age*. Last week's figure was 42s. 3d.

A note from Milan says that Italy is feeling the indirect effect of the American demand for English coal. The tone of the market is strong and advancing. Later advices show that this has stimulated a better inquiry.

GERMANY—Production of coal in the Ruhr region during the week ended Sept. 3 was 1,729,000 metric tons, according to a cable to *Coal Age*, as compared with 1,819,000 tons in the preceding week.

SWEDEN — According to a message from Gothenburg, coal exports from Spitsbergen to Sweden this year, beginning with July, will be directed to Gothenburg instead of Narvik. The transport will be effected by Norwegian and German ships, which still charge considerably lower freight rates than Swedish vessels.

BELGIUM—The coal market shows signs of greater activity, even in the industrial section. The enormous stocks of coal in Belgium have been considerably reduced, owing to the long strike in the United States. Competition on the part of Great Britain is no longer felt so much on the Belgian market. The coke market has also improved as a result of consignments to France and Luxemburg.

Coal output in July was 1,669,290 tons, and stocks at the end of the month were 1,244,700 tons, a slight decline as compared with June 30. Coke furnaces produced 227,590 tons, the highest figure attained this year and nearly double the output for the corresponding month of 1921.

INDIA—The coal market is dull and rates are declining. Prices are: Bengal 1st., Rs. 30; Bengal good second, Rs. 27; British, Rs. 38; African, Rs. 26.

NEW SOUTH WALES — Coal shipped from Newcastle outside the state during June amounted to 347,273 tons, as compared with 362,012 tons in June, 1921.

Pier and Bunker Prices, Gross Tons

PIERS	Sept. 9	Sept. 16†
Pool 10, Philadelphia..	$9.25@$9.75	*$8.50@$9.00*
Pool 11, Philadelphia..	8.50@ 8.75	*8.00@ 8.75*
Pool 10, New York....	9.00@ 9.25	*8.00@ 8.50*
Pool 11, New York....	8.50@ 8.75	*7.75@ 8.00*
Pool 1, Hamp. Roads..	8.50@ 8.75	*8.00@ 8.25*
Pools 5-6-7 Hamp.Rds.	8.50@ 8.75	*8.00@ 8.25*
Pool 2, Hamp. Rds....	8.50@ 8.75	*8.00@ 8.25*
BUNKERS		
Pool 10, Philadelphia..	$9.50@10.00	*$8.75@$9.25*
Pool 11, Philadelphia..	8.75@ 9.25	*8.25@ 9.00*
Pool 10, New York....	9.25@ 9.60	*8.25@ 8.75*
Pool 11, New York....	8.75@ 9.25	*8.00@ 8.25*
Pool 1, Hamp. Rds....	8.50@ 8.75	*8.00@ 8.25*
Pool 2 Hamp. Rds....	8.50@ 8.75	*8.00@ 8.25*
Welsh, Gibraltar.....	40s. 6d. f.o.b.	*40s. f.o.b.*
Welsh, Rio de Janeiro..	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon.....	43s. f.o.b.	**50s.** f.o.b.
Welsh, La Plata.....	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa.....	42s. t.i.b.	42s. t.i.b.
Welsh, Algiers.....	38s. f.o.b.	**41s. 6d. f.o.b.**
Welsh, Pernambuco....	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia.....	65s. f.o.b.	65s. f.o.b.
Welsh, Madeira.....	43s. f.a.s.	**45s. 6d.** f.a.s.
Welsh, Teneriffe.....	41s. f.a.s.	**43s. 6d.** f.a.s.
Welsh, Malta.....	44s. 6d. f.o.b.	*42s. 6d. f.o.b.*
Welsh, Las Palmas....	41s. f.a.s.	**43s. 6d.** f.a.s.
Welsh, Naples.....	42s. f.o.b.	42s. f.o.b.
Welsh, Rosario.....	52s. 6d f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore.....	52s. 6d. t.i.b.	52s. t.i.b.
Welsh, Constantinople.	50s. f.o.b.	50s. f.o.b.
Welsh, St. Michaels....	50s. t.i.b.	50s. t.i.b.
Welsh, Alexandria.....	43s. f.o.b.	43s. f.o.b.
Welsh, Port Said.....	49s. f.o.b.	**51s. 6d.** f.o.b.
Welsh, Oran.....	.....	40s. f.o.b.
Welsh, Fayal.....	.....	50s. t.i.b.
Welsh, Dakar.....	.....	46s. 6d. f.ob.
Welsh, St. Vincent ...	.....	46s. f.a.s.
Welsh, Montevideo....	.....	50s. f.o.b.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	Sept. 9	Sept. 16†
Admiralty, large.....	29s.	*27s. 6d.*
Steam, smalls.....	19s.	*18s. @ 19s.*
Newcastle:		
Best steams.....	24s. 6d @25s.	*24s.@24s.6d.*
Best gas.....	24s.	*23s. 9d.*
Best bunkers.....	21s. 6d.@22s.	**22s. 6d.@23s.**

†Advances over previous week shown in heavy type; declines in *italics*.

North Atlantic

Spot Prices Sag as Demand Drops and Receipts Mount

Consumer Nurses Belief That Heavy Offerings Will Produce Bargain Replenishment Prices—Car Shortage Handicaps Output—Market for British Coal Hard Hit.

Consumers are not taking more coal than they actually need for current use. Heavier receipts, coupled with the weaker demand, have lowered spot prices still further. The weakness is attributed to the consumer's belief that, with the rail trouble over, the volume of offerings will depress prices to a point where he may replenish his supply. The car shortage is proving more troublesome, however, reducing production at the recently reopened mines and it is hard to see how prices can go much lower. The anthracite resumption has also taken away many cars that had been used in the soft coal industry during the strike.

The market for British coal is hard hit and new business is scarce. Cargo receipts have been heavy and discharging is slow, resulting in heavy demurrage costs.

NEW YORK

The receipt of anthracite had its effect upon the situation. Buying was quiet throughout the week. Car supply is playing a prominent part in the situation. On the B. & O. and Pennsylvania it was estimated that there was about a 50 per cent car supply while along the Shawmut and B. R. & P. complaints had to do with locomotive equipment.

Southern coals came forward in good volume with quotations around $10.50, New York harbor. Considerable British coal arrived here during the week. Railroads and public utilities continue to receive it but it was reported toward the end of the week that the enthusiasm was dying down and that orders were not being placed so freely. During the period, Sept. 7-14, 19 vessels arrived in this port with 114,601 tons. While most of it was on order there were some free cargoes which were offered to local houses around $8.25. Consumers were also offered Welsh anthracite at $14.80 per ton.

There were 1,446 cars at the local piers on Sept. 15, considerable of which was on order.

UPPER POTOMAC

Still further gains are being made in the output of the Upper Potomac as men gradually drift back to work. All the cars needed are being furnished, despite the shortage on other roads. Although there are a few mines in operation in the Georges Creek region, most of the miners are still on strike. Some of the larger companies, however, are attempting to operate with varying degrees of success and a few companies have signed an agreement with the union.

FAIRMONT

Between a holiday at organized mines on Sept. 4 and a most acute shortage of equipment less coal was produced during the week ended Sept. 9. There was a plentiful car supply on the day following the holiday but as soon as the accumulation had been absorbed, the supply dropped again and many mines were forced to close down for several days at a time. Mines having orders in preferential classes were given cars for the most part. Lake shipments were on a fairly large scale. As far as spot coal was concerned the price ranged $4.50@$5.25.

CENTRAL PENNSYLVANIA

Operators and miners alike are reaping a big harvest and production is steadily increasing throughout the entire union section. In Somerset County, where the operators refused to sign the agreement, production is somewhat curtailed owing to the inability to secure a sufficient number of men.

A shortage of cars is already being felt and it is feared the pinch will seriously affect production before long. The reopening of the anthracite mines has already had the effect of taking cars from this field.

During the strike, many new operations in Clearfield and Cambria Counties were prepared for production and are now in operation and the capacity of the railroads entering these fields is taxed almost to the limit.

PHILADELPHIA

Car supply more than anything else is dominating the situation. The consumer having found the shippers anxious to accept orders, is now becoming somewhat anxious that deliveries have slowed down.

There have been moderate receipts. The Pennsylvania continues to give the best service, but this road is also beginning to feel the transfer of many thousands of cars to the anthracite trade.

Buyers in many instances are shying at making heavy commitments at present prices, fully believing that much lower figures are due. There has been a particular tendency for high-grade coals to become scarce, as the smaller consumer seems intent on buying the best now, after having put up with some very inferior fuel during the past few months.

Some of the central city buildings who had shifted to bituminous coal on account of anthracite shortage have been bothered with smoke, and are now inclined to try out oil. For the present winter this will not worry shippers and many still express the opinion that the increasing cost of oil will eventually greatly offset all of its advantages.

The end of the month will probably see the last of the British receipts, as no new business has been placed. It is difficult now to interest the larger consumers in this coal.

BALTIMORE

While nobody is laying in any material amount of soft coal for storage, this due both to the urging of producers and agents to allow as wide a distribution as possible and to the thought on the part of a number of consumers that they may get better prices later, demand is at present keeping well up with the receipts. This has a tendency to hold prices firm, except that there is a little wider distinction between classifications.

The trade feels that the sweeping embargo placed by Eastern railroads on freight competing with coal will speed up the movement that has been delayed by other freight awheel and clear the way for the rush of anthracite shipments that must take place if the public is to be protected.

Except for taking the English coals and some other substitutes, the usual burners of anthracite here have ignored the suggestion that they lay in stocks of soft coal. In many cases consumers who have taken British fuel report excellent results. On the other hand, some who bought with the expectation of getting practically all lump, and who received instead a broken-up coal through frequent handlings, have complained to their dealers.

West

SALT LAKE CITY

The agitation here against the recent increase in price has grown so severe that an official investigation may be made. There is even some talk of placing mining under the control of the public utilities commission by special legislation. The Salt Lake *Telegram* has led the attack from the first, centering upon the retailers because they have an organization whereas the operators of the state have none.

One company with mines in Wyoming has announced a reduction of $1, which brings its retail price back to $9. It is claimed that this coal is of an inferior grade, but its producers deny this. The agitation has hurt the retail business and customers are very hostile. The newspaper responsible for the trouble is trying to show that costs of operating are no higher than they were before the strike, if as high.

Production continues satisfactory, except as far as the car supply hinders.

KANSAS CITY

An ample supply is being produced in the Southwestern states to care for all demands. Much to the surprise of a great many, the railroads are handling the coal in an expeditious manner. Very little steam coal is coming in from outside fields.

The prices for domestic coal are higher than last year, due to the low prices on steam grades that meet competition with fuel oil. The higher grade of domestic coming from Arkansas and Oklahoma, commonly known as semi-anthracite, is being quoted $6@$8 f.o.b. mines and slack is going begging at $2.

Anthracite

East Gets Fresh-Mined Coal Soon After Resumption

No Lake Tonnage Shipped—Western Markets Not Likely to Receive Any for a While—Some Prices Named but Companies Not Releasing Coal Pending Their Own Announcement.

Fresh-mined coal put in a prompt appearance in Eastern markets following the resumption of mining. The entire movement so far has been eastward. No Lake tonnage has been shipped and little is anticipated before Oct. 1, while Western markets will receive little hard coal for some time.

Prices have been published by only half the companies as yet, and no settled policy of distribution has been made. The announced prices adhere approximately to the old circulars, absorbing the State Tax. Companies are not releasing their coal to dealers at destination pending their announcement of prices. Independent coal is moving on sales ranging $9.25 @$14 on egg, stove and nut.

BUFFALO

Some coal is said to be on the way, so that it remains to be seen what will be done with it. The administrator for this district has not given out what he intends to do. The local distributors, if allowed to place the coal as they think best, will give it out in small quantities until every consumer has some, but as there is no real need of it yet it is expected that most of the coal will be sent up the Lakes for awhile at least.

One point also to be covered is the price that the companies will make. It appears that even the independents do not know what to expect, for as yet they have declined to give out any prices.

NEW YORK

The delay of the larger producing companies in announcing their prices at the mines for the various sizes occasioned some uneasiness among the retail dealers. Coal has been coming forward in increasing volume since early morning of Sept. 12, when the first shipment, consisting of 40 cars, arrived at Perth Amboy.

Retail dealers took in whatever coal they could get without waiting for the prices. Independent operators on the other hand announced their quotations, some stating they were only temporary. For domestic sizes they ranged from $8.50 upward, the general average being around $10. Some few operators were reported as quoting $11@$12. Pea quotations ranged $8@$9; buckwheat, $6@$6.25; rice, $5@$6; barley, $2.75@$3.25.

Many consumers of anthracite have apparently put in a supply of bituminous coal to tide them over until anthracite is more plentiful. Because of this retail dealers do not look for much of a rush before it is time to start furnaces.

BOSTON

Retailers are much relieved to find that barges are beginning to be assigned at the Philadelphia and New York piers. The process will be slow for awhile, but it is something to have a light gain in output from day to day.

Originating companies are slow in announcing prices. Eight dollars and fifteen cents has been named by one producer for grate, egg, stove and range (no chestnut or pea), while still another that was classified in 1918 as "independent" has named $9.25 as the figure for egg and stove.

ANTHRACITE FIELDS

There seems to be quite a shortage of labor at the mines, many of them reporting that they are short from 30 to 40 per cent. Many miners at the beginning of the strike went to Europe and have not returned.

It is extremely doubtful if the mines will be able to reach production before the end of the month. Six of the Glen Alden mines in the vicinity of Scranton have remained closed on account of the Kohler Mine Cave Law. The company is afraid to open these as there is considerable danger of caving the surface.

PHILADELPHIA

Some coal is now arriving in the city, being evidence of the railroads' intention to give the best of service.

The one drawback to better shipments is that the mines have only been able to reach about 60 per cent of their production, due to lack of men. It is believed that normal production will not be approached before Oct. 1.

The companies have not yet announced prices, although some independents have set schedules. At least one of the latter have announced $9.25 for egg, stove and nut, and $6.75 for pea, but most of the independents who have given out prices are 25c. higher than this on all sizes. There was quite a definite rumor that one of the small concerns was asking $14.

It would seem that the companies are intent on increasing their prices of last March by 25c.@30c., but are having difficulty to convince the various fuel authorities. Those who speak for the Government have repeatedly stated that there would be no increase over prices prevailing last March. It appears that the companies are determined to cover themselves for the State tax and something in addition for the losses suffered during the past five months.

BALTIMORE

Anthracite men here are figuring that they will probably get some fair receipts around the first of October. As a rule Baltimore gets some cold snaps in November and dealers realize that they have only about one month in which to make deliveries.

They are now figuring for the most part to hold down their deliveries to small lots. An open early winter will certainly prove a blessing not only to the public but to the coal men.

Coke

CONNELLSVILLE

Car shortages are now frequent and it is plain that the strike, which continues in a way, must take a remote place as constituting any factor in limiting the total output of the region. A very important proportion of the present working forces are men from out of the region, some imported by definite arrangement, some drifting in from union districts. Evictions have become common, as the houses are needed for workers.

Coke prices are quotable at precisely the same level as a week ago. There is a free movement in the foundry coke market, but of limited proportions. Offerings and demand are relatively light, many foundries being unable to pay prices now asked for pig iron.

In furnace coke the market is very narrow, sales being usually to water-gas producers, lime burners, bakeshops, etc. Furnaces are only occasionally in the market, which presents a far from inviting aspect. Only odd lots can be picked up, usually of indifferent grade, and any furnace attempting to operate on open-market purchases might have to use a dozen different cokes.

The *Courier* reports production during the week ended Sept. 9 at 77,320 tons by the furnace ovens and 20,010 by the merchant furnaces, a total of 97,330 tons, an increase of 7,030 tons.

BUFFALO

The situation does not clear up as fast as the bituminous coal trade does, for the standard ovens do not appear to get into operation readily, on account of the slow movement of coal. Jobbers still quote $14 for 72 hr. Connellsville foundry and $12.50 for 48-hr. furnace. Domestic coke has advanced to $11.50.

UNIONTOWN

Continued car shortage but without effect upon the coal market was the predominating feature of the industrial situation in the Connellsville region this week. Car placements for the week were very small, possibly about 20 per cent, and on two days the Pennsylvania placed none at all.

Recovery from the coal strike is now dependent upon the ability of the railroads to provide transportation. While the number of strikers who have returned to work is yet negligible there has been sufficient labor secured to load all the cars placed. The policy of evictions continues without abatement but instead of locating in tents near the plants, the evicted strikers are now gathering up their belongings and going to other fields.

Furnace operators are again looking toward the Connellsville region for coke requirements and there are several active inquiries for tonnage, with at least one contract closed for 15,000 tons, delivery in September.

Chicago and Midwest

Shortage of Cars Cuts Middle West Production

But Fields Working at 30 Per Cent Can Meet Fair Domestic and Light Steam Demand—Prices Generally Firm but Screenings Are Softening.

This region is having its troubles. Car shortage is the greatest of them. Railroads have been totally unable to supply enough cars to handle even a fair-sized output. Generally speaking, car supply has been about 30 per cent although it has averaged a little better than that in the central and northern Illinois regions where hauls average shorter and where several railroads are able to make most of their coal deliveries on their own lines without letting loose of their cars. The sharp restrictions upon production have reduced the available coal on the market to a point which makes it possible for a few jobbers to hike prices on domestic sizes although company circulars show few increases over those of last week.

Steam demand is still light. Buyers appear to expect a drop in the price of screenings. They were rewarded with a 25c. reduction on central Illinois and on the Chicago market every day or two big consumers were able to gather in large lots of mine run and screenings that had been shipped on consignment and were getting into distress. The price went as low as $2.90 in one case. St. Louis, with less coal available, steadily maintained as high a scale of quotations on most coals as prevailed in Chicago.

SOUTHERN ILLINOIS

Box car supply has almost put the Carterville field out of operation. This week will show about a two-day car supply. Some mines are getting less than that but few get better than three days. An average would show about 25 to 30 per cent.

Some of the mines are loading almost entirely railroad coal on account of the assigned car ruling, which means that railroads cannot assign cars to mines and give the mines more working time than competitive mines working on commercial business. This has practically tied up some of the big fields in Illinois and is the subject of much controversy at the present time.

Prices vary from day to day, but always going higher. There are no unusual labor troubles. Everything is quiet, excepting that the miners are uneasy over working time. Somewhat similar conditions prevail in the Duquoin field. Mt. Olive district gets about three days' car supply per week.

In the Standard field an unsettled condition exists over car supply and the priority ruling that everything must be billed out in class 2 of Order 23 of the I. C. C.

CHICAGO

Coal trade on the Chicago market maintained its comparatively even way during the past week. The demand for domestic sizes of Illinois and Indiana coals continued sufficiently strong to hold last week's increased price firm and the call for steam sizes continued so weak that some operators stored fine coal on the ground in order to use the scanty supply of cars for more profitable shipments. Practically no coal other than the output of those two states was traded in here. A little Pocahontas appeared, selling at prices ranging from the Hoover level of $4.50 plus 8 per cent, up to $7.50 for a little that got into the hands of jobbers. It is expected that smokeless coals will reach here in fair volume as soon as certain heavy priority orders are filled by the producers.

Steam buyers still are holding aloof and have been rewarded every day or two by the chance to pick up large lots of mine run and small sizes, that have been moving into this city on consignment more or less regularly. Although screenings prices on company circulars have not dropped below $3.50 in any case except the central Illinois field, these consignment shipments often have sold for as low as $3.25.

Output has been so restricted by car shortage on practically every railroad serving the Illinois and Indiana fields that the market glut predicted at the end of the strike by several big buyers, and still confidently counted on by them, has not yet appeared.

INDIANAPOLIS

A scarcity of cars is reported from virtually every coal county in the state. In the meantime the demand, despite the approach of cold weather, has not been very active. Both industrials and domestic consumers are waiting until the last minute to buy in the hope that coal will recede in price. Some quotations for Indiana coal at the mines have reached as high as $5.75 and foreign mined coal is very scarce. One utility company with offices in Indianapolis reported quotations of $4.75 for screenings at the Indiana mines. At present quotations Indiana coal will cost the consumer about what Pocahontas did last year.

WESTERN KENTUCKY

It is claimed that unless Northern lines return cars more promptly, profits made in the summer may be turned into losses, as car supply is reported at around 17 per cent on the L. & N., and about 63 per cent on the I. C. The latter was furnishing 100 per cent prior to the reopening of Northern mines. The L. & N. supply is as bad as it was at the worst. Operators report good demand for all sizes, but are producing very little other than mine run.

Retailers are demanding lump more freely, while general demand for steam is picking up. With priority orders practically off the market, there is more and more coal moving for general use.

LOUISVILLE

With a full car supply it is felt that there would probably be some trouble in selling production. But with a car supply estimated at 10 to 15 per cent in eastern Kentucky, and between 15 and 20 per cent in western Kentucky, except on the I. C., which is reported to have about 65 per cent, operators are not making much headway in meeting demand, and so far there has not been much domestic stocking, as retailers are not supplied, and producers are not making prepared sizes in any amount. Eastern Kentucky production is so small that by the time contracts are filled and some Lake coal shipped, there is very little left for general utilities, gas and byproduct plants, steel and general industrials, to say nothing of the retailers.

With the whole country demanding coal, movement on shorter hauls will eventually slow down demand, but in the meantime prices are holding and are a little stiffer. Jobbers report that eastern Kentucky lump is quoted as high as $7.50 this week.

ST. LOUIS

The present week shows an improvement in the demand for domestic coal. Several of the big companies have suspended prices on Carterville, being unable to get it, even though they offer $6 at the mine. The dealers are forcing Mt. Olive coal, which retails at $7.50, though some dealers are charging slightly in excess of this. Standard is moving slowly on account of price, excepting on contract for apartments, and the like.

No smokeless and no Arkansas had arrived thus far, but some anthracite is promised for late in the month. Steam trade is quiet in the city but country steam trade is fairly good. Several steam plants are unable to get any coal on account of the priority ruling, even though the mines are reported as carrying no-bills.

The situation is an uncertain one and carries with it an uneasy feeling for the future.

Canada

TORONTO

There is no anthracite in sight and it is not expected that any considerable quantity will be received until after the close of navigation, as in the meantime all supplies available for Canada are likely to be sent up the Lakes. Domestic consumers show little disposition to use substitutes, buying bituminous as a rule only in small quantities for present needs.

Quotations for bituminous coal f.o.b. cars at destination, are about $10.75 for 2 in. lump and $10 for slack, with some fluctuations from day to day. British coal is beginning to arrive. The Welsh coal purchased by the city will be reserved for emergencies.

Eastern Inland

Output Rests on Car Supply; Congestion Slows Deliveries

Consumer Stays Out Market Except for Current Needs—Lake Vessels Move Slowly, Causing Car Jam and Embargoes—Ohio Fuel-Control Bill Has Marked Effect.

Production is now measured by the car supply. Line congestion is slowing deliveries, but despite these warning signs the consumer remains out of the market, except for his day-to-day needs. Prices have declined further.

The slow movement of Lake vessels has caused a jam of 12,000 cars at the lower ports and has resulted in temporary embargoes along the lines. Priorities are taking most of the current output and these embargoes are forcing priority shippers to cast around hurriedly for an outlet, often at a cut price.

The passage of the Ohio fuel-control bill is an important development of the week and this, together with the end of the labor trouble on the B. & O., is mainly responsible for the apathetic buying attitude of consumers in that state.

COLUMBUS

With possible state control of prices in the future, buying has not been quite as brisk. Dealers are rather anxious, however, to replenish stocks, which are still at a low point, and since some householders desire immediate delivery retailers are asking for quick shipments. Retail prices are still at high levels, with Pocahontas selling around $11 and Hocking grades, $9.50@$10. Only a small amount of West Virginia coal is coming in.

Steam demand has fallen off. Purchasers are loath to pay the high prices and have been waiting for some sort of price control.

The Lake trade is considerably up in the air. Shippers are objecting to the prices asked and in many cases are holding off. But since priorities force the producer to ship a large tonnage to the Lake much of it is going begging.

Except for the Pennsylvania the car supply is far below 100 per cent. There is little hope for improvement in this situation and consequently firm prices are expected to prevail for sometime.

PITTSBURGH

Production is now at the limit of car supply. Mines of consumers are shipping their product with little if any interference by the distribution authorities, or confiscation by the railroads. Substantially all the merchant production is absorbed by priorities, and any producer shipping without a priority is almost certain to find himself without cars the next day.

There are about 12,000 loaded cars at Lake docks, due to slower vessel movement than was expected. Embargoes are being put on or taken off almost daily, sometimes on roads, sometimes on small divisions. The bulk of the merchant coal produced in the district is for the Lake trade. Placing of an embargo requires a shipper to find a new customer in a priority class and as coal must be moved promptly the regular price frequently has to be cut. Sales have been made at $4.25 and even $4, in such cases, the regular market, otherwise applying, being $4.50@$5, for Pittsburgh district steam coal.

There are reports of byproduct coal being sold at $5, but it is impossible to see how such sales could be effected in the case of the byproduct plants of the Middlewest which as a whole are simply steel works adjuncts not public utilities, and thus have no priority.

CLEVELAND

The settlement of the railroad strike on a number of important roads, and the passage of the coal control bill by the Ohio legislature have been developments of outstanding interest to the coal trade in this section. The immediate result of these events has been to further slow down the demand for industrial fuel. Consumers feel certain that the end of the strike will help to expedite coal shipments, and that the state machinery will cause quotations to work lower. The prevailing level in the last days has ranged $4.50@$4.75 for spot coal. This represents a decline of $1 in a week, and about $3 since the termination of the coal strike.

The natural operation of the market is expected to do more in regulating the price than the state. Hocking operators have offered to settle on a price of $3.50 at the mine, based upon a 100 per cent car supply. This proposal is being considered by state officials.

Lake shipments are being speeded up. For the season up to Sept. 11, 6,019,000 tons of cargo coal had been shipped, against 16,650,000 tons in the same period of 1921 and 12,201,000 in 1920.

EASTERN OHIO

Daily output during the week ended Sept. 9 was increased some 8,000 tons, notwithstanding no operations on Labor Day. Total production was 280,000 tons against a potential capacity for the 5 days of 517,000 tons. Cumulative figures for the calendar year indicate that 6,280,000 tons have been produced, with potential capacity placed at 21,637,000 tons, 29 per cent for the year. Now that the railroad strike seems to be in a fair way of settlement, a more optimistic tone is prevalent that not only a greater quantity of coal will be available in the open market, but that it may be had at lower prices than those now quoted.

No general or widespread demand for coal exists and steam users throughout this section continue to procrastinate so far as commitments for immediate delivery are concerned. Despite a sliding off of 50c.@$1 a ton on spot quotations during the week, no increase in inquiries is discernible.

Retail dealers have not yet been able to replenish their yards to meet the fall demand as little domestic fuel can be had from West Virginia and eastern Kentucky because of the railroad congestion at Ohio River crossings, and on railroads originating coal in those fields. However, relief from this situation is expected within the next few weeks.

Bituminous coal receipts at Cleveland during the week ended Sept. 9 were only 697 cars, 577 cars for industries and 120 cars for retail yards. Industrial receipts have declined during the past two or three weeks.

BUFFALO

Consumers refuse to be disturbed by the warnings of a car famine. The idea seems to be that the crisis is over and there is coal enough. Jobbers believe that the worst car shortage on record is near.

Still the consumer is holding off until even Pittsburgh, which always holds prices the longest, shows signs of weakening. Shippers believe that the failure to deliver coal promptly will soon convince consumers that it is the thing to buy freely now, before prices go up on account of a short supply.

Prices are naturally far from uniform. Some members of the trade, as well as consumers, find that the higher the price the better the coal is as a rule and the faster it moves. So shippers who have the confidence of the consumers are often able to get $6 in preference to a lower price and some coal is selling for even more than that. A fair quotation would be $6.25 for gas lump, $5.75@$6 for Pittsburgh ¾-in. and $5.25@$5.50 for all mine run, with slack scarce enough to command a few cents more than mine run.

DETROIT

Consumers display no eagerness to add to their stocks although the supply of coal available continues far short of normal requirements. According to railway figures, the daily receipts have averaged about 250 cars through the last month, while local representatives of the coal trade place the daily requirements at about 550 cars.

William W. Potter, Michigan Fuel Administrator; Charles F. Dunn, Wayne County Administrator, and the Detroit Coal Exchange have joined in an urgent appeal to the I.C.C., asking for modification of Service Order 23. It is their contention that the continuance of this order in effect serves to prevent obtaining coal for domestic consumers by requiring that the coal be sent to public utilities. No improvement has taken place in the situation as regards anthracite.

NORTHERN PANHANDLE

Some mines were unable to work for a time during the week ended Sept. 9, owing to a wreck on the main line of the B. & O. Then, too, Labor Day curtailed production to some extent. Little more than half the potential capacity of the district is being produced, due to lack of cars. There is a ready demand, much of which is for railroad fuel. Lake shipments are larger in volume.

Northwest

Lake States Feel Good Over Arrival of Coal

Vessels Deliver Heaviest Volume Seen Since Normal Times—Prices Remain High—Many Buyers Hold Out—Wise Men Say There Will Be No Drop.

There is better cheer in the states around the Lakes nowadays. During the past week more coal reached the docks than had arrived in any one week in a long time. The tendency of prices does not seem to be definitely upward any further for the time being and all in all conditions are much brighter.

Many buyers are still holding off, counting on a heavier flow of fuel within the next two or three weeks and a resulting drop in price. Others expect all-rail coal from the Midwest to reach here in great volume. Coalmen, however, feel that prices will not drop and that the Northwest will get just barely enough fuel for the winter. The first hard coal is yet to be loaded.

DULUTH

Twenty-six cargoes arrived during the last week, and twenty-four more are scheduled to arrive here before the week end. This will be by far the highest number of coal-laden ships to come here for several years within one week. This resumption of shipments is perhaps the best indication of the way the Northwest is recovering from the coal strike. Coal moves off the docks as fast as it arrives which insures against dock congestion. No contracts are being made by the dock men.

The first anthracite is expected Thursday, Sept. 21. It may sell at the old price. Fairly steady levels have been reached in soft coal. Youghiogheny, Hocking and Splint lump are selling at $12, run of pile at $11.50 and screenings at $7.50. Strangely, one dock is selling the last Pocahontas at the same price as high-volatile coal.

Since the Northwest got plenty of coal after the 1902 strike which ran a month later than this one, it seems certain enough will arrive this year.

MINNEAPOLIS

A few cargoes of coal have finally reached the upper docks. But instead of the 400,000 tons a week which were supposed to be the minimum there was hardly more than 25 per cent of it. It still appears that priorities do not assure coal. Buyers here apparently must bid high if they are to get coal. Car shortage has its inevitable effect on conditions generally.

Dock men are predicting a shortage that cannot be prevented. State officials are alarmed over this, and have issued proclamations urging economy of fuel and cutting down unnecessary consumption. They are looking to the Illinois all-rail fields for a supply at lower prices. All-rail coal from southern Illinois has been offered at $4.75@$5 at the mine, and has been refused in some cases as too high. Buyers are counting upon a break in the market and ample supplies of coal within a short time. They recall the situation two or three years ago, when after a panicky fall, the first of December saw all the coal that could be used, and prices slumping constantly.

Coal men fear that a bad situation is being made worse by the frantic efforts of politicians, doubtless earnestly seeking to find coal, but not forgetting the main chance of personal aggrandisement. They have pyramided the probable needs of the district to an impossible figure.

MILWAUKEE

Milwaukee is experiencing considerable relief from the soft coal shortage for eleven cargoes, aggregating 124,813 tons, have been received since last week's report. Anthracite is still an unknown quantity in this market, and the outlook for consumers is not good. Railroads have been refusing cars for carrying coal to interior points because of a federal order directing the prompt return of empty cars to the mines, but they have now agreed to provide cars to dock companies when shipments are authorized by the state committee.

A local coal company, which has a contract to deliver 54,000 tons of coal of a specified analysis has requested the city council to relieve it from compliance with the quality clause of the contract until it is able to secure coal which does not have to be shipped to the pooling ports established by the government. The company stands to lose approximately $200,000 if it is held to the contract.

The following figures show the receipts from all sources at Milwaukee from April 1 to Sept. 1, 1922, compared with the receipts during the same period last year:

	1922 Hard	1922 Soft
Cargoes	700	852,912
Carferry	18,188	64,946
Rail	[illegible]	123,94[illegible]
	18,888	1,041,7[illegible]

	1921 Hard	1921 Soft
Cargoes	645,230	1,846,18[illegible]
Carferry	50,868	82,1[illegible]
Rail	1,995	243,8[illegible]
	698,093	2,172,3[illegible]

New England

Big Buyers Well Supplied, Market Lacks Life

Rehandling Piers So Congested That Few Shippers Send Coal Forward—Hoover Level Is Price Basis—Recession Expected Before Long.

There is no life to the current market. The larger consumers are surfeited with supply for a long time to come, and there is so much congestion at rehandling piers here that few shippers will take the chance of sending coal forward on the market. It is only with the utmost difficulty that contract deliveries are being received, for practically every unloading facility is being worked to the limit.

The west-bound embargo on the N. & W. is throwing an extra volume to Hampton Roads. The Hoover fair price now is the basis of trade and lower figures can be looked for within a reasonably short time. Several of the agencies are working hard to plug what holes are remaining and there is every reason to think that September quotas will be amply filled by the end of the month.

At this writing there are seventeen steamers in the harbor with British coal awaiting berth, and since but two or three of these are for utilities or retail dealers at their own wharves, the rest are for railroad docks where there is now detention for at least three weeks. The charges on these cargoes will therefore mount to high figures and there are more than a few large consumers railroads included, who regret following the broad advice given them a few short weeks ago. We understand there has been but one cargo of Southern coal shipped here on the order of Mr. Hoover's organization for distribution under direction of the Massachusetts Distributor, and on this one shipment not only have there been difficulties over landing the coal but the original applicants have in several instances canceled their orders.

Steam grades from central Pennsylvania are offering freely at prices up from $4.50 per net ton at the mines. Efforts to interest retail dealers in screened bituminous have thus far met with meager results. Now that the press informs consumers that anthracite is being produced in volume it will take a touch of cold weather to make householders take notice. Pennsylvania operators are also apt to overlook the high rates that apply to New England points; in many cases the price asked for screened lump and egg makes the cost well in excess of what the companies are announcing their intention to charge for prepared anthracite.

At Boston, Providence, and Portland there is so much cargo coal awaiting discharge that consignees are naturally indisposed either to charter steamers or agree to receive further deliveries even on contract, and several barges are being tied up. Steamers that have been operating regularly for several months are now being laid up

Cincinnati Gateway

Softness in Market Brings To Light More $5 Coal

Recession of $1 from Early in Previous Week—Railroads Now Turn Back Cars Shipped on Open Contract—Cincinnati Jobbers Undersold by Some Competing Fields.

A perceptible softness has developed in the market and as a result there is more $5 coal to be had, in small lots to be sure and for the lower grades, but this is in direct contrast to the price that was $1 higher early last week. The earmarks of the buyers' strike that could be seen last week became more and better defined. Perhaps the hardest blow of all is the fact that the railroads, which have been the heavy takers of coal, are now turning back cars that were being shipped on open contract. Lake buyers are proceeding cautiously and there is no longer a rush to complete cargoes.

More and more the Cincinnati jobbers are coming in contact with Ohio and Indiana as well as Illinois coal, and in many places these fields are underselling. Operators not shipping under Permit 1 bewail an ever-increasing car shortage.

LOW-VOLATILE FIELDS

Pocahontas and Tug River

Progress is being made by Pocahontas producers in speeding up production to some extent in view of more favorable transportation conditions prevailing on the N. & W. During the early part of September mines were getting as much as 75 per cent of allotment. Relief from the congestion which prevailed for a time is enabling the N. & W. to handle more coal westward. Tidewater is securing the bulk of the coal, with some moving northward by rail but with a prospect that such movement will cease with better anthracite production. Spot prices range $4.50@$5.25, but with comparatively little tonnage moving.

Under more favorable transportation conditions the Tug River field is now maintaining production at about 90,000 tons a week, which is considered normal. Western territory, to which much of the product of this field is usually shipped, is being opened up slightly. Prices are getting more stabilized, not ranging much above the Hoover maximum.

New River and the Gulf

Mines in the New River field are not getting a car supply of more than 32 per cent of the total to which they are entitled under their allotment. Transportation conditions are being slightly improved but the process is very slow.

Conditions in the Winding Gulf are much the same as in the New River region. Following an improvement in transportation conditions on the western end of the Virginian, however, a little more coal is being handled. There is an active market with the demand still in excess of the supply. What spot coal there is to be had is quoted $4.50@$5.50.

CINCINNATI

Small operators in the splint and gas districts have not awakened to the change in market conditions. They do not seem to realize that even though there is a tremendous shortage of coal the competition from other fields is increasing and there is only one thing that talks when the two meet on a common ground. Cincinnati jobbers, however, are fully aware of the situation and some of them already are reverting to tactics that mean sales.

Permit 1, by which certain mines are favored with either cars or billing, is the big problem. Some mines saw the light this week and as a result have been getting a good flow of empties. Others that could not square with the permits have been bewailing a shortage.

The smokeless situation seems to have hit the most even stride of all. Prices are balanced better with mine costs and orders are booked ahead with the hope that they will be caught up with some day. Orders for total shipment east still hamper some of the operators who were about to catch up with the orders ahead.

The retail situation has not varied since the last report. Most dealers are putting in only what will just run their customers instead of making an attempt to fill orders that have been on the books for months. Pocahontas lump sells $10.50@$11, mine run, $8.75@$9; bituminous lump, $8.75@$9; slack, $6.50@$7.

HIGH-VOLATILE FIELDS

Kanawha

Labor Day had a tendency to curtail production, although an accumulation of cars over the double holiday made it possible to make up for the loss later in the week. Open-shop mines continued to produce to a great extent on the holiday. The biggest handicap under which all operators are laboring is the car shortage. Not more than 20 or 25 per cent of the normal supply is being furnished. The car supply is a little better on the Kanawha & Michigan than on the C. & O. There is a strong demand for coal in all grades, but the difficulty is in getting orders in preferred classes, without which it is hard to secure cars.

Logan and Thacker

Not more than a third of the number of cars allotted to the Logan region are being actually furnished so that mines are limited to between 35 and 40 per cent of potential capacity. With so few cars available, mines having orders coming within certain classifications are of course being given preference and that is tending to disarrange marketing plans of producers. There is little or no spot coal available and much of the fuel shipped from the field is greatly delayed in reaching its destination.

More coal is being mined in the Kenova-Thacker field owing to a better run of cars. Labor Day made a little difference in the region, the only factor standing in the way of capacity production being a shortage of motive power and equipment. Railroad fuel loadings are large but there is also a heavy commercial movement to Western points when embargoes do not interfere. Most of the coal is moving under contract or preferential orders so that there is comparatively little free coal to be had.

Northeastern Kentucky

A heavier domestic demand is being reflected in a call for prepared sizes at the mines even with rather stiff prices prevailing, such as $6@$6.50. At the same time there is a firm demand for mine run, but screenings are not quite so active. Conditions have shifted and it is now a selling proposition with the mines instead of merely waiting for orders to turn up.

South

BIRMINGHAM

The market is fairly good. Demand from industrial users is general in character, but not insistent as heretofore. Mines have sufficient business in hand and being booked to take care of the output, but with any great relief in car supply and accelerated movement the activity will be further lessened. Bunker coal is in fair demand.

Priority in the use of cars has been annulled by the Public Service Commission, as Class 1 and 2 consumers were getting more coal than necessity warranted, while other classes were unable to get fuel account of cars not being available. Domestic sizes are somewhat scarce in the spot market and dealers are slowly stocking account poor transportation conditions.

Prices are practically stable on basis of the fair-price schedule, comparatively little coal being sold above the established figures, which is permissible on interstate business.

Car supply was somewhat better in the field the first of the week but grew worse during the last half—particularly on the Southern, where mines lost considerable time. On an average all lines probably furnished 60 per cent. A further decrease in production is not anticipated unless brought about by a more serious shortage of equipment.

VIRGINIA

Car shortage continues to curtail production. There has been a further loss of approximately 3 per cent owing to the inadequate transportation facilities, reducing the output to about 125,000 tons a week or little more than 51 per cent of capacity. There is an active market for coal but cars are difficult to obtain except where companies have shipments to make under certain preferred classes. Quotations range $4.50@$5.50 on mine run on a spot basis.

News Items From Field and Trade

ILLINOIS

Eugene McAuliffe, for five years president and general manager of the Union Colliery Co., with headquarters at St. Louis, resigned all connection with the company effective Sept. 11. **L. E. Young**, who has been associated with the company for some time, becomes general manager of the Kathleen Mine, in Jackson County, the company's main property. A new president has not yet been announced. Mr. McAuliffe, one of the best-known figures in the Midwestern coal industry, will remain in the coal business in a more important capacity, the nature of which will be made known soon. Despite the fact that he has been closely in the confidence of the present administration at Washington with respect to coal matters, he denies flatly that he is to receive any governmental or political appointment.

INDIANA

Articles of incorporation have been filed by the **Neal Coal Co.**, of Indianapolis, which recently bought the **F. W. Little Coal Co.**, owning two mines in Pike County, near Petersburg. The capital stock of the new company is given as $100,000. Banus E. Neal is president and Hermann E. Neal is secretary and treasurer.

The boiler room at the **Glencoe mine, No. 1**, formerly the Bement mine, east of Terre Haute, was burned recently. The loss includes part of the machinery, besides the building. The origin of the fire has not been determined.

The Columbus Coal Co., organized in Brazil, with A. L. Allais, of Chicago, and Thomas Grant, of Brazil, as the promoters, has bought the mine of the **McClelland Coal Co.** from the receiver. The mine is near Riley. Several of the leading stockholders are interested in the **Brazil Collieries Co.** and the **Bright Gem Coal Co.**, both of Indianapolis, and the company will establish combined offices in Terre Haute. Thomas Grant, of Brazil, will be manager of the three mines.

KENTUCKY

The Coal, Coke & Iron Ore Committee, Central Freight Association Territory, Pittsburgh, will hold a public hearing on the basis for rates on byproduct coke, carloads, to New Richmond, Ripley and Manchester, Ohio, from Ashland, Ky., to all points in Central Freight Association Territory. Rates to be established on the basis of 88c. per net ton over prevailing rates to New Richmond, Ripley and Trinity, Ky. Hearing will be held on Sept. 28, 1922, at 10:00 a.m.

NEW YORK

Alfred D. Thompson has been appointed vice-president of the Titan Fuel Co., 32 Broadway. Mr. Thompson will be in charge of sales for central and western New York and western New England, with offices in Utica. Until the end of August he was manager of bituminous coal sales for Pattison & Bowns, Inc., and has been identified with the trade since 1902.

OHIO

The Trojan Coal Co., Cincinnati, has been incorporated with a capital of $10,000 to job coal. The incorporators are Everett C. Kline, Robert D. Conway, George W. Hollis, J. F. Roberts and Chester H. Clark.

The States Coal Co., Columbus, has been chartered with a capital of $20,000 to do a general mining and wholesaling business. Incorporators are P. L. Weaver, T. H. Moore, K. W. Rittenhouse, C. F. Weaver and Bess Allen.

The Dudley Coal Co., W. S. Dudley, president, and the **Marion Coal Co.**, C. P. Morrison, president, have issued a card announcing that these concerns have purchased an interest in the **Kearns Coal Co.**, of Cincinnati, through whom they would market their coal in the future. Both have their offices in Lexington and mines in the Hazard field. S. S. Ashen, who was sales manager for the two companies, is now with the Kearns Coal Co., and is located at Lima.

Jake Brady has been appointed general sales agent for Jewett Biglow & Brooks, according to an announcement issued by E. H. Jewett, the president of the company. Mr. Brady takes the place of **Louis Stone** who was in charge with headquarters in Cincinnati for several years. Mr. Stone is now connected with the Wallin's Creek Coal Co. Mr. Brady has been with "J.B.B." for the past five years and worked his way up from the sales force.

Dan Pritchard, of the Virginia Fuel Co. is at his home in Bramwell recuperating from an attack of penumonia and blood poisoning. Dan Pritchard, his brother and his father are forming a new company which will begin this fall on smokeless operations that have cost a half million.

The Bellevue Coal Co., Adena, has been chartered with a capital of $100,000 to mine coal in the eastern Ohio field. Incorporators are Lewis S. Moscrip, Lee D. Shearer, W. H. Bernhard, Henry Warner and H. M. Casper.

PENNSYLVANIA

The Jefferson Coal & Coke Co. was formed Sept. 1, and is a partnership composed of Messrs. Crawford, Cameron and Ashcom. It will sell the coal produced by the Jefferson Gas Coal Co., the Lindley Coal Co., and the Wet Branch Mining Co. The



N. C. ASHCOM,
General Sales Manager
Jefferson Coal & Coke Co.

gas coal company is located at Penowa, on the P. & W. Va. The Lindley company is located at Houston, on the Pan Handle Division of the Pennsylvania. The Wet Branch company operates Wet Branch Nos. 1 and 2 mines on the Cabin Creek Division of the C. & O.

The Dauphin County Court, on Sept. 12, heard appeals from the **State anthracite** coal tax, amounting to many hundreds of thousands of dollars and based on the claim that the law is not only unconstitutional but that its provisions are impossible to carry out. The Watson group of companies owe, under the law, approximately $20,000. The Philadelphia & Reading group of thirty-six collieries has been taxed $477,619, and these cases were called for hearing. Other companies figuring in the day's proceedings were the Lehigh Coal & Navigation Co., $142,[illegible], Cranberry Creek, $25,670 and the Alliance Company, $6,174. Other cases will be heard on Oct. 17.

W. L. Connell, prominent independent coal operator and former mayor of Scranton, has been seriously ill. A complete rest has been ordered by his physician. During the negotiations with the anthracite mine workers, Mr. Connell represented the independent coal operators on the policy committee of the operators. As a result he is in a run-down condition.

A strike of several hundred union men of the Erbton mines developed in protest over alleged discrimination in the awarding of "places" to the workmen. The strike is said to be an indirect outgrowth of the change in the management of the Erbton plant. Heretofore the **Northwestern Mining & Exchange Co.** has maintained a machine shop but this is done away with by the **Peabody Coal Co.**, which is now supervising production, and about 30 outside men were thrown out of their positions by the closing of the machine shops.

At a meeting of the board of directors of the First National Bank at Cresson, Cambria County, **C. Law Watkins** was elected to the directorate to fill the vacancy caused by the death of Edward O'Brien. Mr. Watkins is vice-president and general manager of the Pennsylvania Coal & Coke Corporation and president of the Watkins Coal Co., at Barnesboro.

Coal briquet manufacturers in the anthracite region of Pennsylvania have raised questions relative to the right of the State to tax their product. The anthracite tax has been assessed against briquets by Auditor General Samuel S. Lewis and the manufacturers will probably take appeals to the Dauphin County Court, at Harrisburg. It is also likely that certain questions relative to washery plants will be carried to court for decision as the auditor general has held that coal production is taxable where it is prepared for the market.

WASHINGTON

Earl McMillan, a mining engineer on the staff of the Bureau of Mines who has been conducting coal washing tests at Seattle, has resigned to enter consulting practice with George W. Evans, in Seattle. He will complete, however, the tests in which the Bureau of Mines, the University of Washington and the Washington Coal Operators' Association are co-operating. Mr. McMillan has been in charge of extensive investigations for the Bureau of Mines in Washington, Oregon and Alaska. He will continue with the Bureau in a consulting capacity.

WEST VIRGINIA

The property of the **North American Coal Co.** in Monongalia County, has been taken over by the **Chaplin Collieries Co.** interests. The North American company was owned and operated by A. P. Fiegler and Louis H. Brown of New York, and its general manager was C. D. Jenkins who will be continued in that capacity by the new owners. The North American company was among the first to open a mine on the Monongahela, beginning operations in 1915. **The Fiedler Coal & Coke Co.** of Morgantown will handle the output of the concern.

Plans have been completed for the purchase by the **Brady-Warner Coal Corporation**, of Fairmont, of 14,000 acres of coal land in Clay County, as heretofore chronicled in this correspondence. This land is owned by the **Elliott-Splint Coal Co.** The coal is in the Kanawha series.

Suits in unlawful detainer have been brought by the **West Virginia Coal & Coke Co.** against about fifty-five miners and their families at Clarion, where operations have been resumed by the company on an open-shop basis. The case was originally set for a hearing on Sept. 7 but was continued at that time for one week. Suit brought by the same company to obtain possession of company houses at Norton was compromised, the miners confessing judgment and agreeing to vacate on Sept. 15.

Coal is to be produced for the **Co-Operative Gas Coal Co.** at Morgantown, the company being capitalized at $100,000. Having an active part in effecting the preliminary organization of this concern were J. P. Wolf and Herman Kammerer of Morgantown, John A. Sigafus of Lewisburg, Pa., and John Verna and John Hornyak of Farmington, W. Va.

The Robinson Coal Co. has moved from the Hevener Building at Fairmont to the C. & M. Bldg., in the same city. Clarence D. Robinson is president of this company.

The Riverville Coal Co. will operate near Riverville, having obtained from Frank Hood and others a lease on approximately thirty-five acres of Sewickley coal land.

WISCONSIN

The Fellens Coal and Dock Co., Milwaukee, have elected as directors Frank W. Fellens, Edwin C. Landwehr, Charles D. Weeks, T. H. Dyrenforth and E. A. Biedenbeck. The company is operating as an exclusively coal-handling concern with a large clientele and is also interested in the commission end of the coal business.

The Wisconsin Coal & Products Co. has been formed in Milwaukee with $10,000 capital by Joseph A. Boris, William W. Dreyer and Martin P. Wenk.

Traffic News

The Pennsylvania Railroad [illegible] for the operation of stoppers on the line to the [illegible] Gulph. Wherever possible, in the interests of maximum service, the loading of D-1-A and H-21 cars marked specially for this purpose, as outlined in circular No. [illegible] of the Pennsylvania System, preliminary to the coal cars at Mount Airy, N. J., Overbrook, Philadelphia, Pa.; Canton, Baltimore, Md.; Cleveland and Akron, Ohio, or Erie, Pa., where rapid transfer facilities for delivery to [illegible] cars are to be arranged and agreed upon in the manner in use [illegible] H-21-A or H-21 type cars marked specially for this purpose will not be loaded with coal consigned to any railroad using the Pennsylvania System, of other suitable cars are available.

To avoid congesting and permit proper movement of anthracite, the **Lehigh Valley R. R. Co.** has placed an embargo against all anthracite except from all connections [illegible] to all destinations beyond the rails of that road, except fuel for railroad and general consumption, livestock, poultry, perishable products, coal coke, fuel oil, and mine supplies for current operations, newsprint paper, brewers' spent grain, fertilizers, and railroad material.

The claim of the **Hartland Railroad Co.** [illegible] against the **Baltimore & Ohio and other railroads** was heard by the I. C. C. early in September. The case involves a division of rates received for the transportation of coal and a division of joint rates to the points of consignment. That controversy it is claimed is not removed a fair system of rates which is claimed to bind coal out of the South east of Charleston to the lines of other railroads. There were two intervenors supporting the complainants of the Hartland company, both companies being the **Hartland Colliery Co.** and the **Middle Creek Coal Co.**, both of which are on the line of the Hartland.

The West Virginia Public Service Commission is continuing at Charleston its hearings on intrastate freight rates; parties are applied to coal and more particularly to adjusting short-haul coal rates in the Fairmont, Clarksburg and Morgantown districts.

The Hoosier Lime Co., of Salem, Ind., [illegible] an investigation into the rates on coal from Victoria and Midland, Ind., to Salem.

In the case involving coal rates from the Northwest to Omaha, the **Illinois Coal Traffic Bureau** requests the commission to declare that the present rate adjustment as between Illinois and Southwestern fields is not discriminatory and that the proposed [illegible] have not been justified. **The Fifth and Ninth Districts Coal Bureau** requests the commission to refuse to permit the proposed reductions without corresponding reductions from the Illinois groups. **The Oklahoma Coal Operators' Association** says that the Plate is prejudicial and should be a disadvantage to the present rates and that the proposed rate should be made effective. The railroads intervened request that the proposed reductions be not allowed.

Association Activities

Oklahoma Coal Operators' Association

At the annual meeting of the association held at McAlester, Dan McAlvie, of Hartshorne, was re-elected president; Wm. Hartshorne, Hartshorne, vice-president; A. C. Carey, McAlester, secretary-treasurer, and J. B. Wilson, McAlester, commissioner. Preparations had been in progress at the mines of the members for several days so that all operations are expected to be working in full blast at an early date.

National Coal Association

The Publicity Committee of the association, appointed as of June 1 1920, is composed of the following: Edwin C. E. (chairman), president, Cleveland Coal Corporation, N. Y. City. Barnum, Walter, treasurer, Pacific Coast Co., 61 Church St., New York City. Cunningham, W. H., president, Consolidation Coal Co., Baltimore, Md. Dickinson, W. Va. Dickinson, C. C., president, Dry Branch Coal Co., Charleston, W. Va. Donaldson, John A., vice-president, Pittsburgh Coal Co., Pittsburgh. Douglass, E. L., vice-president First Creek Mining Co., Cincinnati. Heimold, F. C., secretary, Coal Operators' Association, Chicago. Lukens, F. W., president and general manager, Farmers Fuel Co., Kansas City, Mo. Robbins, S. H., president, Youghiogheny & Ohio Coal Co., Cleveland. Taylor, H. N., vice-president, Central Coal & Coke Co., Kansas City, Mo. Watkins, T. H., president, Pennsylvania Coal & Coke Corp., New York City. Davis, T. B., president, Island Creek Coal Co., New York City. Harrington, Geo. B., Chicago, Wilmington & Franklin Coal Co., Chicago. Kavanaugh, W. K., president, Southern Coal, Coke & Mining Co., St. Louis. Ramsay, Erskine, first vice-president, Pratt Consolidated Coal Co., Birmingham. Alex. White, E. E., president, E. E. White Coal Co., Glen White, W. Va. Jones, M. E., president, Empire Coal Co., Birmingham.

Trade Literature

Hesco Superheaters. The Superheater Co., New York, N. Y. Bulletin T-1. Pp. 8; 8 x 10 in., illustrated. Among the advantages claimed for these superheaters are their suitability for application to all types of boilers, freedom from leaks, ease of application and accessibility for inspection and repairs.—Advertiser.

Powdered Coal Application to Four 2,610-hp. Boilers. This is the title of a paper presented by H. D. Savage before the Mechanical Section of the Engineers' Society of Western Pennsylvania, at Pittsburgh, Pa., Feb. 1., and is incorporated in a bulletin published by the Combustion Engineering Corp., New York, together with [illegible] later data on the operation of this installation for a year or more.—Advertiser.

Regulating Boiler Feed Water. Northern Equipment Co., Erie, Pa. Pp. 20; 8 x 10 in.; illustrated. The first part of this booklet is devoted to an article reprinted from Power Plant Engineering, next is an analysis of a regulator that meets the most exacting requirements, and finally are charts showing how the various service requirements are met.

The following bulletins on lighting have been gotten out by the **Edison Lamp Works of the General Electric Co.** Bulletin L. D. 125A describes effect of color of walls and ceilings on resultant illumination; Bulletin L. D. 138 contains information on fundamentals of projection, and Bulletin L. D. 139 is on the lighting of small stores. These are all 6 x 9 in., illustrated.—Advertiser.

Pure Malleable Nickel. American Nickel Corp., Clearfield, Pa. Pp. 12; 8 x 11 in.; illustrated. A résumé of the properties and uses of the malleable nickel manufactured by this company.

Obituary

David W. Hann, a coal operator near Cayuga, Ind., died recently in a hospital at Danville, Ill., as a result of burns received when rescuing his four children from his home that was wrecked by the explosion of a can of blasting powder some of which his nine-year-old son threw on a hot stove.

William G. Pritchard, head of the Virginia Fuel Co., and connected with several mining interests in West Virginia, died on Sept. 15. Mr. Pritchard was one of the best known men in the splint fields of the southwestern section of West Virginia.

A report from Knoxville, Tenn., stated that **Daniel Cooper Swab**, of Middlesboro, Ky., 51 years of age, coal operator, politician and prominent business man, was found dead of heart trouble in his room at a hotel there.

The Birmingham district has lost two prominent men in the coal mining industry. **Harry E. Fleetwood**, superintendent of the Burnwell Coal Mining Co., Burnwell, Ala., died at the Inge-Bondurant Sanatorium, Mobile, where he had been undergoing treatment for some time. Mr. Fleetwood was widely known and his death will be keenly felt among his large circle of friends. **R. L. Williamson**, superintendent of the Dora Fuel Co., for some time, and prior to that time connected with the Empire Coal Co. for about thirty-five years, died at his home in Birmingham. Mr. Williamson was one of the pioneer mining men of the district.

Recent Patents

Coal-Cutting Machine. Arthur Russell, Hucknall, England. 1,414,586. May 2, 1922. Filed April 16, 1920; serial No. 374,357.

Controller and Synchronous Motors. Edwin W. Seeger, Milwaukee, Mis., assignor to the Cutler-Hammer Mfg. Co., Milwaukee. 1,414,791. May 2, 1922. Filed Feb 12, 1921, serial No. 444,399.

Automatic Mine-Car Door Opener. Fasten Szemanske, Parsons, Pa., 1,414,760. May 2, 1922. Filed Dec. 1, 1920; serial No. 427,465.

Shoveling Machine. Howard B Dennis, Grass Valley, Calif., assignor of one-fourth to F. W. Nobs and one-fourth to G. W. Starr, Grass Valley, Cal., 1,414,398. May 2, 1922. Filed May 1, 1919; serial No. 295,292.

Coal-Pushing Device. James M. Johnson, Mobile, Ala., 1,411,105. March 27, 1922. Filed April 25, 1921; serial No. 464,344.

Coal Pocket. Howard M. Sankey, Alliance, Ohio, 1,411,190. March 28, 1922. Filed Jan. 9, 1920; serial No. 350,329.

Coal-Loading Machine. Norton A. Newdick, Columbus, Ohio, assignor to James E. Jones, Switchback, West Va., 1,413,128. April 18, 1922. Filed Aug. 24, 1918; serial No. 251,330.

Mine-Door Operating Mechanism. William Kortkamp, Hillsboro, Ill., 1,413,335. April 18, 1922. Filed Sept. 30, 1921; serial No. 504,352.

Apron-Feed Loader for Skip Hoists. William E. Hale, Fort Washington, Pa., assignor to the R. H. Beaumont Co., Philadelphia, Pa., 1,413,401. April 18, 1922. Filed May 18, 1921; serial No. 470,501.

Coal Agitator for Mechanical Stokers. Robert S. Riley, Worcester, Mass., assignor to the Sanford Riley Stoker Co., Worcester, Mass., 1,413,428. April 18, 1922. Filed Oct. 28, 1919; serial No. 333,917.

Gasification of Coal and Obtaining of By-products. Charles H. Smith, Short Hills, N. J., assignor to the International Coal Products Corp., Richmond, Va., 1,413,799. April 25, 1922. Filed Feb. 16, 1918; serial No. 217,469.

Plant for and Method of Treating Coal. Charles H. Smith, Short Hills, N. J., assignor to International Coal Products Corp., Richmond, Va., 1,414,223. April 25, 1922. Filed April 3, 1918; serial No. 226,409.

Coming Meetings

Kentucky Mining Institute will hold its annual meeting Nov. 3 and 4 at Seeback Hotel, Louisville, Ky. Secretary, Elizabeth C. Rogers, Lexington, Ky.

The National Industrial Traffic League will hold its annual meeting Nov. 15 and 16 at the Hotel Commodore, New York City. Secretary, J. H. Beek, Chicago, Ill.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

Alabama Mining Institute will hold its next meeting Oct. 3 at Birmingham, Ala. Secretary, J. L. Davidson, Birmingham, Ala.

Coal and Industrial Exposition under the auspices of the Huntington Chamber of Commerce will be held Sept. 18-23 in the Chamber of Commerce Bldg., Huntington, W. Va.

American Mining Congress. Twenty-fifth annual convention and exposition of mines and mine equipment will be held at Public Hall, Cleveland, Ohio, Oct. 9-14. Executive offices, the Hollenden Hotel; E. C. Porter, convention manager.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Institute of Mining and Metallurgical Engineers will hold its fall meeting during the week of Sept. 25 at San Francisco, Cal. Secretary, F. F. Sharpless, Engineering Societies Building, New York City.

American Gas Association will hold its annual meeting Oct. 23-28 at Atlantic City, N. J. Secretary-Manager Oscar H. Fogg, 130 East 15th Street, New York City.

Canadian Institute of Mining and Metallurgy, annual Western meeting Nov. 15-17, at Vancouver, B. C. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Can.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, *Editor*

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The Cleveland Meeting

MUCH thinking and some talking is being done these last days of September on the question of whether to go to Cleveland for the gathering of the clans on Oct. 2, and if to go, what to do. Until the gavel falls for the first meeting no one can say how representative the operators' side may be, but as the days pass it seems as if the tide is turning toward participation.

The meeting has two announced purposes—to set up a committee of inquiry to make report at a later date on the best, or a better, method of negotiating wage scales in the bituminous-coal industry and to arrange for negotiations next January looking toward a contract between the United Mine Workers and the operators of union mines to become effective on April 1 next. Necessity for the committee or commission of inquiry seemingly has passed with the provision for a commission of broader power and jurisdiction by Congress. Collection of the same data and hearings on the same general topics by two bodies would be a needless duplication of expense. But a study and report by a group from the main body that may assemble at Cleveland, a study and report on the very important question of future relationships between the operators and miners is something that might be accepted with better grace and be more effective than if the congressional commission should attempt the same thing.

Left to their own devices the operators and miners may not succeed in bringing back that time-honored method of wage settlements in time to forestall a strike in April, 1923. In view of the history of the past year, it is quite possible that the Cleveland meeting and such successors as it may have will be sterile of results. So thoroughly ingrained is the theory and practice of collective bargaining in the soft-coal industry, however, that if peaceful effective relations are not restored this winter, they will be one, two or three years hence. Barring outside interference, the bituminous-coal industry will in the course of time work around to sounder methods of handling its relations with labor. The schisms of recent months will heal.

The industry is not to be left to its own devices, however. The country is in no mood to put up with turmoil year after year, its coal supply threatened and curtailed, prices fluctuating wildly the meanwhile. The war and post-war relations of labor and capital have been such as to produce a definite urge on the part of the public for the initiation of steps to forestall and prevent these periodic upheavals in the coal industry. The congressional coal commission is primarily for that purpose. It is only to be expected that if the coal operators and the miners' union are not able at once to demonstrate their willingness and ability to get together on a sound, sensible basis, then the government will be compelled to step in. Which, being interpreted, means that if the industry cannot satisfy as to its ability to restore collective bargaining in its true full sense, then we will see imposed something in the form of a national coal labor board.

Cleveland therefore presents an opportunity. The miners' union, which does not want the government to settle its wages under such a scheme, must recede from its position of extreme arrogance and power; the several groups of operators must merge their interests and overcome their many differences and the two sides must convince the public and the congressional commission that they are capable of intelligent self-government if they hope to be left to govern themselves.

There are many who think that the day has passed when the country may be left at the mercy of a nationally organized union of miners and another of operators, who feel that some governmental check must be placed on the industry. The federal commission may make such a recommendation. Whether or not that follows, the need is as great for the organization on a national basis of the operators who deal with union labor. The avowed purposes of the Cleveland meeting cannot be attained unless the operators are unionized. Not having accomplished that in advance, such may be a result of the meetings next week.

On the Use of Weapons

CONGRESS has put in the hands of the administrative branch of our national government a weapon to hold over the coal industry. This weapon is the Coal Control Act that provides a method for punishing those who charge for their coal more than some price which an officer of the federal government may decide is just or reasonable. This legislation is predicated on the theory that the country is short of coal and that a high market is impending. A great many consumers are facing short rations of fuel. Generally speaking those who burn coal are in no wise responsible for the present condition of shortage, yet under the circumstances they will be called upon to pay the cost, and then some, of the strife that produced the shortage. The control of prices, whether by state or nation, is held to be justified on the ground that high prices will not, under the circumstances obtaining in either the anthracite or bituminous coal fields, operate to produce an added supply. Lack of men and mines in the hard-coal region and lack of transportation from the soft-coal areas act as a brake on the law of supply and demand. Beyond a certain figure, which is not so very high in either instance, doubling or trebling of price brings forth no more coal. General appreciation of these simple and established facts will tend to popularize price control by government.

It was an axiom in the olden days of two-gun men out West that he who reached for his six-shooter and did not shoot as he drew was not a dangerous man. Our government has not only pulled its gun but has cocked and aimed it at the coal man, but instead of

bring has asked him to come along peacefully. There are those who draw the inference that the shells are blanks and that this is but a gesture. A great many are ready and determined "to stand on their constitutional rights" and defy the Fuel Control Act. It will be unfortunate indeed if matters be allowed to come to such a pass that the Federal Fuel Distributor and the Interstate Commerce Commission are jockeyed into a position where they attempt to set a price and discriminate in car supply to force its acceptance, and the operators retaliate with legal proceedings to prevent such discrimination—unfortunate on the one hand because the law is unfortunate and on the other hand because of the extremely bad odor that will adhere to the coal trade for fighting it. Bear in mind that if there is a pinch in coal prices this fall it will first appear in the last half of October, and that the country is full of congressmen campaigning for re-election in November. If the present law isn't effective, more drastic action can be promised if a constituency appears to make the demand.

There is a way, of course to prevent all this prospective trouble. Just make the railroads haul all the coal the mines can produce and tell the anthracite-burning public to buy one ton of soft coal or coke and two tons of hard coal where three tons of hard coal are nominally required.

Real Men, These

DOWN at Marion, Ill., the seat of "bloody" Williamson County, a grand jury of 23 men has finished its investigation of the Herrin massacre of nineteen non-union miners on June 22. It did a masterly job of it. No less than 214 men stand indicted for "conspiracy and rioting," "conspiracy to commit murder," "assault to murder" and 44 of them for "murder." It was a mighty mob of bloodthirsty men who, unhampered by law or any enforcers thereof, encircled the strip pit of the Southern Illinois Coal Co., accepted the surrender of the non-union workers and guards therein and then shot and cut nearly half the captives to death, wounding many others. Nobody could hope that a grand jury three months later could learn who all of the men in the mob were. But indicting 214 of them was a masterly job.

When the grand jury was impaneled in August it began one of the most undesirable tasks imaginable. There they were, those twenty-three farmers, selected from among the non-mining residents of a county whose main industry is mining. It is a county where popular sentiment was such that a man either said he was against the prosecution or else he kept his mouth shut. Dark threats against prosecutors down there were not uttered idly. It was in "bloody" Williamson County. But as the jury took the case Judge Hartwell, of the Circuit Court, leaned across the rail of the jury box that momentous day and told them he knew them all and he knew they were real men ready to acquit themselves as such in the face of "influence," bribes and direst threats. They have done so. Their action and the language of their report to the court is sound evidence that there lives in "bloody" Williamson County an element worthy of the title "American."

The grand jury is to be commended not only for the fearless investigation it made but for the evident honesty of its effort to get at the truth and the whole truth. It minced no language in blaming a mining company for foolhardy action. It flatly said the ill-advised message of John L. Lewis, president of the United Mine Workers, telling the union miners of southern Illinois that the men in the strip mine were strikebreakers "and should be treated as such" was the spark that touched off the magazine of hate. It charged the miner sheriff of the county, a candidate for office, with a cowardice that was indulged for political gain and stripped state officers of the flimsy defence of their own failure to do their duty before the massacre took place. It gave the miners' union a much-soiled bill of health and otherwise displayed its impartiality and stalwartness.

The grand jury's work may be finished. It has named 214 men who may be guilty. The case now goes to the courts for trial. It remains to be seen whether a jury impaneled in the ordinary way in the solidly unionized county of Williamson can be as fearless and honest and impartial in the upholding of the arm of the law. It is by no means proved that government and justice and decency have regained command in "bloody" Williamson.

Keep Your Hand Close to the Work

AN ARTICLE this week by Joseph A. Maguire gives an interesting description of the ways in which power is wasted. In fact it was the misuse of compressed air that made it disappear so suddenly from its former rôle as the main medium for power transmission at mines. It was too freely used to remove smoke, gas and even water. Lines were laid too carelessly; valves were left "with just a crack open" for air to escape, and the result was inevitable.

Of course there were other causes, line friction being among them. The lines were designed to provide certain machines with air and to do it at a certain location. As the pipes were extended and more machines were needed and used and more places had to be ventilated by valve cracking (for it seemed inevitable to use the air when it was so handy) and when, also, leaks became more frequent and troublesome, the main lines became inadequate, and it seemed too great an undertaking to dismantle the line, move the pipe forward and put new and larger pipe near the main compressor.

But losses due to leaks and cracked valves turned the tide definitely against compressed air. One way to avoid leaks as also line losses is to put the compressor near the work to be performed, driving it by electricity.

Such a compressor needs no attention, automatic regulation providing for its operation without raising excessive pressure or using power wastefully. When only a few men are served by a compressor they will be more likely to see to it that the air is not wasted, though they may be somewhat careless as to what happens when none of the men is using his drill. Where a big compressor is used the men are too far apart to watch wasteful users of air, and so the responsibility, being largely spread, is almost entirely unfelt.

Small units also provide for the shutting down at off-hours of all the compressors save the one near the pump or other machine that must work during the otherwise idle period. With the compressor portable the hand is kept near the work and the air power is always under control. When generated at the mouth of the mine the chances are that it will be largely wasted in inefficient ventilation and leakage.



More Power Often Wasted by Leaky Pipes and Cracked Valves Than Would Run a Compressed-Air System

In Off-Shift Operation Leakage Consumes Unusually Large Proportion of Power—Partial Change from Air to Electricity May Merely Add Cost of Latter to Former Air Cost

By Joseph A. Maguire
Dunmore, Pa.

COMPRESSED air plays an important part in the production of coal, particularly anthracite, being largely used to operate inside hoists, pumps and drills. Electrification of hoists and pumps has tended to reduce the use of this medium of power transmission, but this reduction is being offset to a certain extent by the increasing use of air drills. The efficiency of an air system is of the utmost importance, not only on account of the operating expense of such a system but also because the production of coal and its total cost per ton is greatly affected by the efficiency of the air system.

It may be beneficial, therefore, to point out some of the common ways in which this efficiency is lowered. The average mine using compressed air contains a network of distributing pipes, the result of various extensions, generally made in a hurry, with little or no regard for proper sizes, drainage and the like. This network is an ever-growing one, as lines are not generally taken out when the work in a section is stopped.

These pipes soon cause losses, for leaks develop either at the joints, where the valve packing gives out, or at points where the roof falls and breaks the pipe. It is not uncommon to find that this method of making extensions to the piping system causes an excessive pressure drop in the pipe lines. In time this results in such low pressure being maintained that neither hoists nor drills can operate effectively. This pressure drop sometimes occurs at the shaft but more often in sections of the mine where lines, put in originally to supply one or two hoists, have been converted, in part at least, into mains. It is not uncommon to find hoists that are barely able to pull a trip at more than a snail's pace, or to find these machines waiting until the demand eases up and the pressure increases, before being able to operate at all. Frequently this can be remedied by putting in a few hundred feet of larger pipe or sometimes by merely installing traps.

Loss in energy and pressure due to leaks is likely to be heavy unless pains are taken to keep leakage at a minimum. It is not always easy to cut good threads upon present-day pipe. The dies employed do not get as careful usage as could be wished, making it a still more difficult matter to get tight joints. For these reasons it would pay handsomely to furnish the mechanics doing this work with white or red lead or some other pipe compound. The practice of running air pipes along the bottom or on the mine floor is another prolific source of leakage, particularly when the pipe is rela-

Note—The frontispiece shows one way to circumvent leaks by putting the compressor near the work to be performed, driving it by electricity. This photograph of a compressor and air drill was taken at Canaanville, Ohio, in the mine of the Canaan Coal Co. The many men present are there because they know that a photographer likes to get "action" in the picture. The compressor is quite capable of running without attention.

lively small. In this location it is subjected to undue stresses as the result of men and mules stepping on it and from various other causes. Such stresses cause leaks. A saving in maintenance and in operating power will be obtained by keeping the pipes off the bottom.

While it is necessary to maintain pressure on the piping system continually, as for the operation of pumps, leaks become of serious importance. As a rule 24-hour operation is required for only one or two pumps or to supply a contractor in one section, but service is nevertheless maintained on the entire system. This means that the losses from leaks on the entire system are going on continually.

Just what this amounts to may be appreciated from tests made to determine these losses. One mine plant tested consisted of two 1,700-cu.ft. cross-compound non-condensing steam-driven compressors supplying hoists, pumps and drills. One pump was operated by air continually and for this purpose pressure was maintained on the entire system at all times. The results obtained from this test follow:

Average flow of air from compressors during working periods, 1,950 cu.ft. per minute; average horsepower input, 340; flow of compressed air to supply leaks, 950 cu.ft. per minute; horsepower to supply leaks, 157; total power cost per year to supply compressed air, $18,200; power cost per year to supply leaks, $12,400; power cost to supply mechanical apparatus, $5,800.

Thus because pressure was maintained on the lines continually, the losses in energy from leaks were twice as great as the energy actually furnished to the hoists and other mechanical apparatus.

Loss by Reason of Leaks Is Great

Another installation which was subject to test maintained pressure 24 hours a day to supply a small dip pump of 200-gallons capacity operating against a 30-ft. head. With nothing operating off the air system but this pump, the input to the air compressor was 105 hp. The magnitude of the loss incurred by reason of leaks can readily be appreciated when it is realized that 3 hp. would be ample to pump the water handled.

These two instances are cited from a number of similar tests. It is believed that they cover average installations, neither better nor worse than hundreds of others.

Another large source of loss is the use of compressed air to ventilate chambers. It is much easier to crack an air valve in a chamber before going home than to stop and put up brattice cloth. Many foremen seem to wink at this practice even when the ventilation in the section is beyond criticism and in spite of strict orders prohibiting it. This probably is because they do not realize the cost of ventilating in this manner. This practice, however, results in more than the loss of power to supply the air. It springs primarily from using compressed air to blow out powder smoke, but gradually grows to ventilating chambers day and night, until together with the leaks it overloads the compressor plant until the pressure gets so low that nothing will operate effectively. When this occurs the miners who are saving themselves trouble with brattice cloth by the use of air are the first to go home because the pressure is low.

To cite one instance of this, I once investigated a mine where trouble was being experienced in maintaining pressure. A 400-cu.ft. compressor had operated a few small air hoists and managed to maintain a reasonable pressure. These hoists were electrified and some air drills installed. It was soon necessary to procure a larger compressor and a 600-cu.ft. machine was put in place. In spite of this the pressure continued low. An investigation showed that leaks and the use of compressed air for ventilation was responsible for this condition. In extending the piping into the chambers many leaks had resulted and the practice of ventilating with compressed air had started. The 600-cu.ft. compressor could maintain only 75-lb. pressure even though no machines were operating. Air-flow measurements showed that the compressor worked properly but was overloaded.

Electrification Is Often Disappointing

Leakage and valve cracking have been the cause of much disappointment when air hoists and similar apparatus have been electrified. Estimates have been made showing that large economies should be realizable from the electrification of air-actuated equipment. After electrifying the hoists and other machines it frequently has been found that the compressors consumed as much power as before.

As a case in point, one mine operated two 1,000-cu.ft. steam-driven compressors. These machines were rather old, not in the best of repair and consumed about 60 lb. of steam per horsepower-hour. From these two compressors a number of hoists and pumps were operated. It was estimated that by the expenditure of $50,000 an economy of $18,000 per year could be obtained. After electrification one compressor was shut down and the other operated slowly to supply a few air drills. After a few months the operation of the compressors increased and in a relatively short time both were pounding away at full speed during the day and one at night and on Sundays. Apparently not only was the $18,000 economy not obtained but the power costs were actually increased $12,000 per year.

Careless Pipe Laying Causes Many Leaks

Called to investigate this condition, I found the original estimates conservative and the installations properly executed. What had actually happened was that a number of air drills had been added and in running the connections to the chambers extremely careless piping had been done and old cast-off valves had been used. In addition compressed-air ventilation had gotten a foothold to such an extent that the only reason for operating the compressors other than during working hours was for the purpose of ventilation.

The pipes accordingly were put in proper shape, one compressor was dismantled and the engineer was required to operate the other only during working periods. Later, however, this ruling had to be modified in order to provide for development work. To prevent waste valves were installed on each main distribution pipe, so that all sections other than the one in the territory in which work was going forward were shut off when the "all-over" whistle blew.

In electrification of air-actuated apparatus on the basis of economy it should be realized that for the reasons stated the power actually used to operate the mechanical apparatus may be, and frequently is, a minor portion of the energy consumed in compressing air. If compressed air is to be entirely eliminated this can be disregarded, but if it is to be supplied for any purpose after the electrification of pumps and hoists it should be considered a part of the electrical program

to overhaul and put in good condition the air pipes that are to remain in service and to dismantle all piping not absolutely necessary.

Another common practice in the utilization of steam-driven compressors which is highly wasteful is to regulate their operation by hand. The regulators that automatically maintain the desired pressure either are overlooked when installing the compressors or are allowed to get out of repair to such a point that the compressors are operated by hand. Theoretically, when no governor is used the engineer adjusts the speed of the compressor to meet changing load conditions. Actually he sets the hand throttle to meet the maximum requirements and allows the safety valve to regulate the pressure. I know no easier method of wasting money.

Efficient compressors of course are essential to economical operation. Many machines are in use which, though sturdy and rugged, are of inefficient design. They were purchased when the low price of fuel at the mines did not appear to justify the expenditure necessary for more efficient types. They have, in the majority of cases, served long and well and under prevailing fuel prices can be profitably retired from active service.

POWER COSTS PER YEAR

Simple steam-driven compressor	$13,950
Compound condensing steam-driven compressor	6,440
Electrically-driven machine current costing ¾c. per kw.-hr.	4,985
Electric machine current costing 1c. per kw.-hr.	6,640

In choosing between steam and electricity as a motive power for compressors consideration should be given to a number of factors other than the price of steam or electric energy. No hard and fast rules govern, for what may be the more economical drive in one case may easily be the more expensive one in another. Some idea of the operating power costs of simple steam, compound non-condensing steam and electrically-driven compressors can be obtained from the accompanying figures, taken from actual installations and corrected to a common basis of operating conditions. This base is as follows: The machine is assumed to furnish 900 cu.ft. of air per minute for 275 working days of 8 hours each per year and 400 cu.ft. per minute during the rest of the year; the cost of steam is taken as being 30c. per 1,000 lb., whereas electricity is assumed to cost ¾c. per kilowatt-hour in one case and 1c. per kilowatt-hour in the other.

Coal Flotation and Briquetting of Float Make Rapid Strides in Many Countries

AT THE annual meeting of the Minerals Separation, Ltd., of London, England, the chairman, Francis L. Gibbs, reported that the company was compressing coal with 50 per cent of water and about a third the usual quantity of binding material and producing a briquet containing only 4 or 5 per cent of water, the water expressed coming out in clear jets without a particle of coal in it. The coal being thus briquetted is that of the Powell Duffryn Steam Coal Co., of Wales.

The statements that follow are taken from a recent annual report of the chairman. The briquets made by the process, which will be known as "Minseps," come out in a compact shape with a more or less hard surface and become in a few hours so strong that they can be thrown about without breaking. The briquets as marketed "can be made to contain only about 3 per cent of ash and 3 per cent of moisture." Thus by this process the cost of drying and driers is said to be saved as well as the cost of pugmills, and the product, having an unusually small quantity of binder, causes less smoke than other briquets. Furthermore, the fuel does not open up in the fire. It is purposed to manufacture 2,000 tons of this fuel daily at the Powell Duffryn plant. Some of the fuel already has been tried on a railroad in Wales having steep gradients, and it has given great satisfaction.

Another briquetting plant is to be installed at Ashington, to be run in connection with the flotation plant in operation at the mines of the Ashington Coal Co. Here tests will be made on the flotation of coal and the briquetting of coals and "brasses."

The work at the Skinningrove Iron Co.'s plant has been delayed by the depression in the iron and steel industry; nevertheless progress has been made in the construction of a plant which will treat 600 tons every 24 hours.

A plant of like size has been erected and operated at the Oughterside Collieries in Cumberland and is said to give a coke far superior to that produced before. At Low Laithes Colliery, in Yorkshire, a plant with a daily capacity of 250 tons is in course of erection and another will be built by the Team Byproducts Coke Co.

Much work has been done in an attempt to coke coals which are rated as semi-coking, and several large-scale tests have been made. This problem is not yet solved completely, for, although part of the charge of coal after treatment produces excellent coke, part does not. The solution of the problem of coking the more resistant material appears likely to be found either in the adjustment of the temperature or in the substitution of a different form of coke oven from that which is generally used, one that will suit the particular product which has to be coked.

At Noeux-les-Mines, in France, a plant is being installed with a capacity of 1,000 tons. This plant should be in operation early next year. A briquetting plant also will be erected, owned partly by the coal company and partly by the Minérals et Métaux, the representatives in France of the Minerals Separation, Ltd.

In Spain the Aprovechamiento Residuous Minerales Sociedad Anónima, a subsidiary of the Minerals Separation Co., purchased the coal plants Mariana, La Modesta, Maria Luisa and Baltasara, the Mariana plant being put into commercial operation early in April. The high ash content of the coal gave some difficulty, but this has been overcome and the product now meets requirements. This plant, in common with all other coal plants in Asturiana, except the Ujo plant, has been shut down since May 16 on account of a general strike. However, construction work has continued.

The Pena Rubia plant continued its production until shut down by the strike, producing a product of good coking quality. At Ujo, after considerable delay a 600-ton plant was put into commercial operation at the mines of Hullera Española and the latest advices indicate that from the current washery slimes a minimum production of 200 tons a day of clean coal may be expected. The product has an ash content below the expected figure. Within a short time this plant will be running at its full capacity.

In China a plant is to be erected for the Chinese Engineering & Mining Co., Ltd. It will have a capacity to treat 250 tons every 24 hours. The plants in Belgium, Germany, Australia, South Africa, India and Chili have not arrived at stages of development which would justify reference to them in these columns.

Reports and Investigations State Geological Surveys and Mining Bureaus

Coal Reserves in Somerset County, Pa.

By John F. Reese

SOMERSET COUNTY, Pennsylvania, contains nine coal beds now of economic interest. In order of present importance as shipping coals these are the Upper Kittanning, Lower Kittanning, Upper Freeport, Redstone, Pittsburgh, Lower Freeport, Clarion, Sewickley and Brookville.

The extensive mining development and outcrop of the Upper Kittanning bed and a fair number of core-drill records have furnished many measurements of its thickness and evidence of its persistency. This makes possible a fairly accurate estimate of the quantity of coal in this bed. In the Wellersburg field and south of Meyersdale, where data are meagre, an average thickness of 30 in. has been assumed. This bed is thickest in Jenner and Conemaugh townships, where it ranges from 58 to 87 in. The Upper Kittanning is the most persistent bed, contains the greatest coal reserve, and is the largest producer within the county, yielding more than 4,100,000 tons annually.

A fair amount of information as to the thickness and persistency of the Lower Kittanning bed throughout the northern half of the county is available. In the southern part data are meagre except where coal is mined. Little is known as to the extent and thickness of the beds over large areas, and a general average based on thicknesses in surrounding areas was used in computing the quantity present.

The extensive outcrop of the Upper Freeport bed throughout the county and the mines in various localities furnish enough measurements to make possible a fairly accurate estimate of quantity. This coal attains its best development in Jenner, Conemaugh, Lincoln, Somerset and Quemahoning townships with a thickness range of 54 to 71 in. As no information is available as to the extent and thickness of the Upper Freeport coal under large areas in the townships south of Somerset, a general average based on thicknesses in surrounding areas was used. The percentage of this bed that can be recovered is governed by the sequence in which the Upper and Lower Freeport coals are mined. If the Lower Freeport bed is worked first and pillars are drawn, the overlying rocks will cave and break the Upper Freeport bed, thereby causing a partial and in many places complete loss of that coal.

An accurate estimate of the quantity of coal in the Redstone bed is made possible by many measurements at mines and outcrop. The mines are in Summit and Elk Lick townships. The Platt coal of the Berlin area has been correlated as the Redstone coal, but as little is known of its extent and thickness it is not included in these reserves. A conservative percentage of recovery has been used in computing the recoverable tonnage, because most of the underlying Pittsburgh coal has been mined and the pillars drawn, causing the intervening rocks to cave and break this bed, making it difficult and costly to mine.

The extensive development and outcrop of the Pittsburgh bed furnish much information as to its extent and thickness. Pittsburgh coal has been mined so many years in Summit and Elk Lick townships that it is practically exhausted. In Southampton, Brothers Valley and Jenner townships this coal has been developed in recent years. Brothers Valley township contains the largest reserve.

The No. 2 Price coal of the Berlin area in Brothers Valley township has been correlated as the Pittsburgh coal and is here computed as such. From drill-hole records and outcrop it has been possible to define fairly accurately the extent of this bed. The area as defined will be subject to correction when more information is available from future prospecting and development.

A fair amount of information is available as to the extent and thickness of the Lower Freeport coal. It is thickest in Somerset and Quemahoning townships, and because of its exceptionally fine quality in the vicinity of Friedens it is in great demand as a smithing coal. As this bed is extremely variable in thickness and persistency, it has been considered as a reserve only in areas contiguous to mines or to drillholes that prove it to be of workable thickness. A low percentage of recovery has been assumed also because the bed is so irregular.

The Clarion coal has been computed as of economic interest in six townships, namely, Addison, Black, Milford, Paint, Somerset, and Upper Turkey Foot. Little is known of its thickness and extent, and only areas surrounding developed or proven ground have been computed. Future prospecting may enlarge these areas, but information is meager at the present time. The Clarion coal is thickest in Black township, ranging from 40 to 58 in. This coal is extremely variable and is broken by partings. Therefore a low recoverable percentage was used in these computations.

The No. 1 Berlin coal in Brothers Valley township has been correlated as the Sewickley coal, and no quantity has been computed as such here. From drill-hole records and outcrop it has been possible to define with fair accuracy the extent of this bed. The area as defined is subject to correction when future prospecting and developments furnish more information. The Sewickley coal is mined only in Brothers Valley township in the vicinity of Pine Hill, where it averages 44 in. thick.

Brookville coal is considered of economic interest in six townships, namely, Black, Brothers Valley, Elk Lick, Milford, Somerset and Summit. Data are meager as to its thickness and extent, and it has been considered as existing only in areas contiguous to localities where mined. This bed is 30 to 36 in. thick in Black and Somerset townships.

The result of computing the coal reserves within this area, based on the latest maps, engineering data and methods, is shown in the accompanying table.

COAL RESERVES IN SOMERSET COUNTY*

Coal Beds	(In Net Tons) Original Deposit	Mined Out	Recoverable
[illegible]	8,700,000	3,600,000	3,400,000
[illegible]	15,400,000	7,400,000	5,400,000
[illegible]burgh	51,000,000	29,504,000	16,100,000
[illegible] Freeport	866,600,000	7,380,000	525,700,000
[illegible] Freeport	370,100,000	1,540,000	210,600,000
[illegible] Kittanning	3,086,500,000	84,050,000	2,188,500,000
[illegible] Kittanning	1,500,200,000	52,400,000	910,700,000
Clarion	89,800,000	750,000	54,600,000
[illegible]ville	103,500,000	760,000	62,900,000
[illegible]	6,091,800,000	187,384,000	3,986,900,000

*The area of Somerset County is 949.4 square miles.

Shaking Chutes, Swung from Roof or Resting on Rollers Meet Loading and Gathering Problems in Low Coal

Chutes Made of Heavy Galvanized Iron in Ten-Foot Sections and Often Over Three Hundred Feet Long Receive Impulse from a Machine Sixty to Ninety Times per Minute—Troughs Deliver Timber

By A. Gerke
Waldenburg, Silesia, Germany

MANY considerations influence the choice of a method of mining coal—economy, protection of the workman, preservation of the surface and neighboring seams and, among the others, the provision for conveying the coal when mined. No difficulty is experienced in the conveyance of the coal when the seams to be excavated are of such thickness and of such a moderate gradient that cars can be taken readily to the working faces. Nor is the problem difficult where the coal will readily slide to the gangway, as, for instance, when the gradient is 30 deg. or more. The problem is found where the inclination is oversteep for cars and not steep enough to move the coal by gravity. In such cases to avoid unnecessary shoveling of the coal the length of the "bords" should not exceed 33 to 40 ft.*

It follows, therefore, that in the development of the mine an unusual number of gangways will have to be driven, and in all of these rock will have to be shot down or lifted if the seam is not thick enough to provide headway for the mine equipment. Moreover, the driving of such a multitude of gangways would not only be expensive but the maintenance also, and, furthermore, their many roof falls would interfere with operating efficiency. Such gangways would have to be kept standing for a long time.

It is also true that their ventilation would be both difficult and expensive. In mines generating firedamp

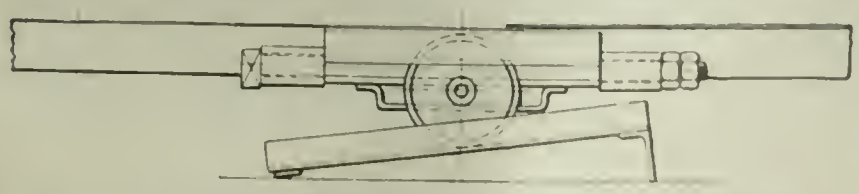


FIG. 1—ROLLER UNDER JOINT AT TROUGH SECTIONS
The roller runs on an incline, so that after it has gone forward under the impulse of the motor or engine it runs backward and so provides for the return of the trough. Note the bolt passing through the rams-horn curls of the attachment plates of the trough sections.

another objection would be that it would be no easy matter to keep these many roadways free of gas. Supervision would require several men because of the lack of concentration of the operating faces. Above all, the work would be excessively prodigal of labor, because the work would be done under many disadvantages.

As these many drawbacks are even more troublesome where the coal is thin, and as low seams of coal are becoming ever increasingly operated, no efforts have been spared to devise some method of replacing such a system by another more effective.

That this difficulty has been recognized in America is evident from an article published in *Coal Age* in 1916, Vol. IX p. 1,044, entitled "Scraper Mining for Low Veins," which describes an installation in the mines of the Lehigh Valley Coal Co. This, it is true, is used with the room-and-pillar system of mining. It provides for the use of a scraper pulled to and fro by a hoist located in the gangway. The width of the working



FIG. 2—SINGLE SECTION OF THE TROUGH CHUTE
The rams-horn curls may be seen at either end of the section. These provide for the retention of the end of one section against the end of the next despite the pushes and tugs caused by the frequent forward and backward movements of the trough.

places usually is 24 ft. and their length about 50 yd. Successful use of this method has been made at the Seneca and Maltby mines, not to mention others.

In Europe troughs of galvanized iron are used to bring coal from the working faces to the gangway, these being either hung from the timbers in the bord or supported on rollers. The trough, which has an ultimate length of from 200 to 330 ft., is pushed to and fro 60 to 90 times per minute by an electric motor or one driven by compressed air. The impulses cause the coal to slide down the trough.

When the trough, suspended by hangers or sustained by rollers, is pushed forward the particles and lumps of coal go with it. When the motion of the trough is arrested at the end of its stroke the coal, not being attached to it, continues to go forward, retarded slightly by the friction of the trough, which trough is now traveling backward. When this movement ends the trough again begins to go forward, aiding in the advance of the coal. The trough, having gone to full range of its motion, again starts forward, causing the coal to continue on its way. In this manner the coal is moved toward the loading point, to which it may be borne with speed, receiving as it does 60 to 90 impulses per minute.

Fig. 1 shows a part of the trough on rollers and Fig. 2 a single unmounted trough. It will be seen that it

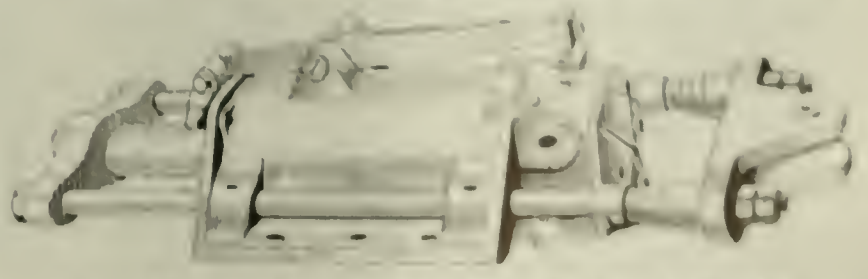


FIG. 3—ISOMETRIC DRAWING OF THE ENGINE
The trough may be reciprocated by an engine as shown. This compressed-air engine uses the air expansively and in both directions—backward. Note the valve reading and the stroke of the forward crosshead.

*Herr Gerke overlooks the many schemes of driving on a line between pitch and strike, of using a room hoist or two tracks with a retarding "gravity hoist," of loading the coal into a small "buggy" which is run on a grade nearly level and dumping the coal from the buggy into a full-sized mine car, and of using a trough and "bucking" the coal in the trough. He refers, later however, to another method, that of the scraper shovel. The English word "bord" is used here to express a roadway driven like a room for the obtaining of coal but unlike the room in that it is narrow and without a neck and so resembles a gangway or crosscut in plan rather than a room. See Figs. 6 and 7 in this article.—Editor.

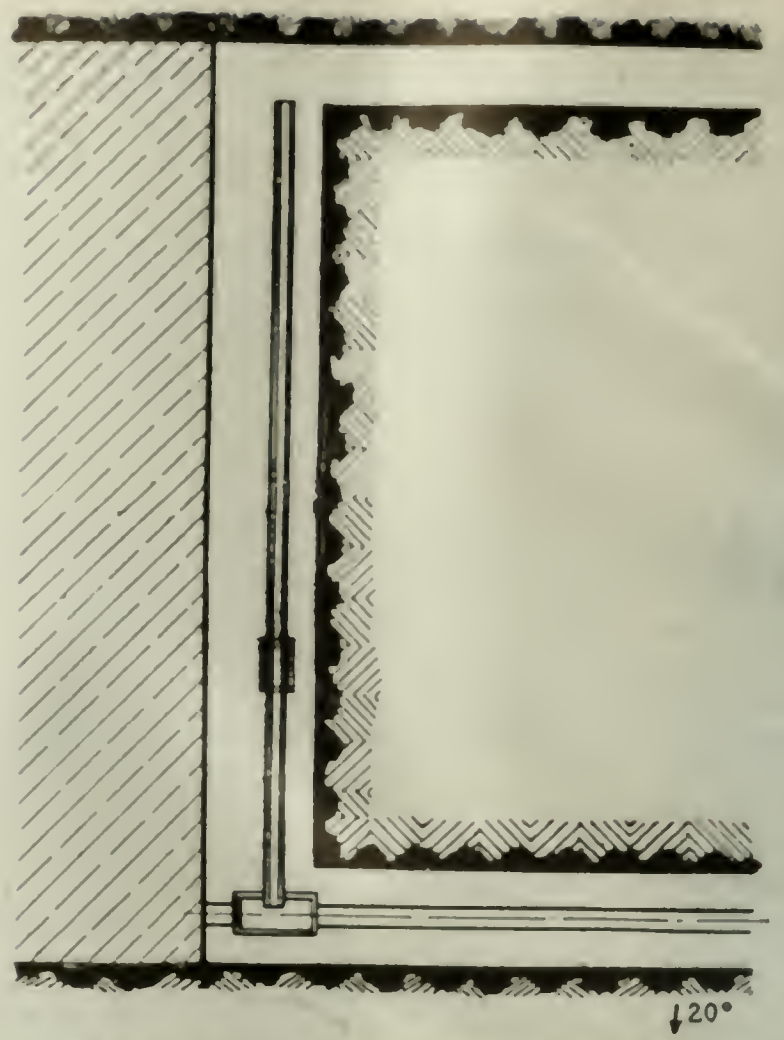


FIG. 5—WORKING A PILLAR OFF THE END

If the roof admits of this arrangement on a long pillar face this gives maximum concentration of forces. Men can be placed 11 ft. apart. The method requires speedy excavation for safety, so the concentration while of advantage is also obligatory.

that a flat bottom with flaring sides. The iron usually is ⅜ in. thick, and the depth of the trough is 4½ in. At the top the trough is, as a rule, 15 in. wide and at the bottom 11½ in. Its weight is about 12½ lb. per ft. Unit lengths of the trough are from 10 to 15 ft. long, but, as stated, when joined up these units may constitute a trough 250 ft. long, and sometimes the length is made even greater.

For transmitting the motion throughout the length of the chute a so-called "driving trough" is used which rests against brackets bolted to ends of adjacent trough sections, which brackets are curved into a sort of ram horn at their ends. These cutting edges are fitted for the reception of bolts. The brackets therefore keep the troughs snugly in position.

Each 10- or 15-ft. length must be firmly joined to its neighbors on either end, as the reliability of the trough as a whole depends on this characteristic. Only a good joint can successfully sustain *such* severe and continuous concussions as those to which these joints are subjected. Yet it must be a joint that can be disconnected readily, and simple also, for it must not have too many parts that are likely to get loose.

Underneath the bearing trough two rollers are fitted, joined by an axle as in Fig. 1. To prevent them from cutting into the bottom a frame has been devised for them to run on. This frame is so built that the runway for the rollers is on a steep inclination, as shown in the same illustration.

The motion of the trough, as stated, is obtained from a motor, driven by compressed air or electricity or even by steam. The former source of power is preferred and for this reason is here described. The motor can either be placed under the trough and be attached to it directly through an iron rod or it can be located at the side and be propelled by a transmission, as illustrated in Fig. 4. In Fig. 3 the cylinder has a piston rod which bears a crosshead with rods which pass outside the cylinder on either side and are connected on the opposite side by another crosshead. An iron rod or rope is connected to the front crosshead at one end and through a three-piece motion is connected with the trough (see Fig. 4). When compressed air from the pipe lines enters the cylinder of the motor, the piston and through it the three-piece motion is moved back, thus setting the trough in forward motion. When, however, the piston has advanced a prescribed distance the compressed air is shut off by a valve, but the piston continues to move forward by the expansion of the compressed air and by the inertia of the parts. Thus the trough is brought slowly to a standstill. The trough then falls back by gravity to its original position, but the coal still glides along and it is still moving when the trough makes its next forward movement.

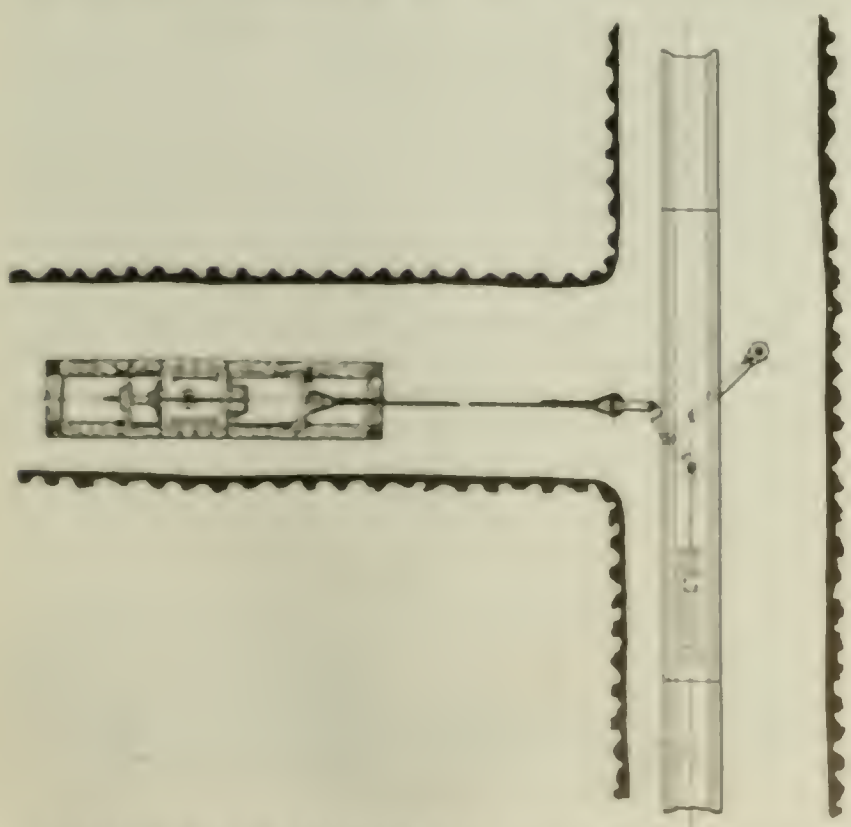


FIG. 4—PLAN OF ENGINE AND TROUGH CONNECTION

How the engine is put on the side and not under the trough. The connection of this rope is made through a [illegible] which reverses the direction of motion of [illegible]

The motor is screwed solidly to a block of timber or a piece of channel iron and this is held immovably in place by pieces of wood or iron which are braced holes excavated in the bottom of the seam.

So much for the mechanism; now for the methods by which advantage may be taken of it. If the roof in the bord is strong and the seam not too thick, the troughway can be driven a length of perhaps 165 or 200 ft. It is carried, of course, in a straight line, the coal being removed either by working on the pillar or by driving cross bords.

Fig. 5 illustrates the former method of working, one which can be kept open only if the coal is removed with sufficient rapidity. If this precaution is observed the roof will then come down evenly as the work progresses. But if the face remains stationary for some time too much will be demanded of the roof. It will bear down on the face of the coal, thus breaking it off. To avoid this a large force of miners must be employed on the coal face. In fact there should be a hewer in every 14 ft. of face length. As the trough will carry 40 tons an hour it can remove the coal from more men than are thus indicated. This method concentrates the working

force much more effectively than is possible with room-and-pillar methods. Among the advantages are fewer haulageways to be maintained, fewer workmen to be employed, more efficiency from those employed, and fewer haulage plants and appliances needed.

Besides this method of working, which can, it is true, be employed only where the roof permits, others have been devised which may be used with advantage where the seams are thin. Fig. 6 shows pillar workings completely furnished with shaking chutes. In these cases the main bord is driven as far as the gallery above, whereupon cross bords are driven at 33- to 65-ft. distances on either side of the central bord. From these the pillars are removed by slabbing them on the ends, slabbing commencing in the upper cross bords before it is started in those lower down.

Fig. 7 shows another method of working. Here a single bord is driven between the bottom level and the top gangway so as to establish an air connection. In this bord a main trough is placed. The pillars on either side may be arranged 65 to 265 ft. wide, depending on the slope. In front of each of the pillars a trough is placed discharging into the trough in the main bord. In this method the coal is worked from the top downward following down the slope of the coal. This method is more simple than that in Fig. 6, and there are only two gangs of miners to be accommodated on the main trough. Supervision is also better than in the type of working shown in Fig. 6.

Timber may readily be transported where the troughs are installed provided the bord is driven through to the highest gallery, for it can be introduced in the trough at that point and the trough will move it down to the point desired. A man stationed at that point can take it off. Where, for any reason, this may be impossible a small windlass operated by compressed air or electricity may be placed in the highest point in the bord, and the timber then can be "snaked up" by this means. Another advantage of troughs is that they can be used where the coal is so thin that it would be necessary otherwise to shoot top or bottom to drive the bords. This saves much expenditure of money but also

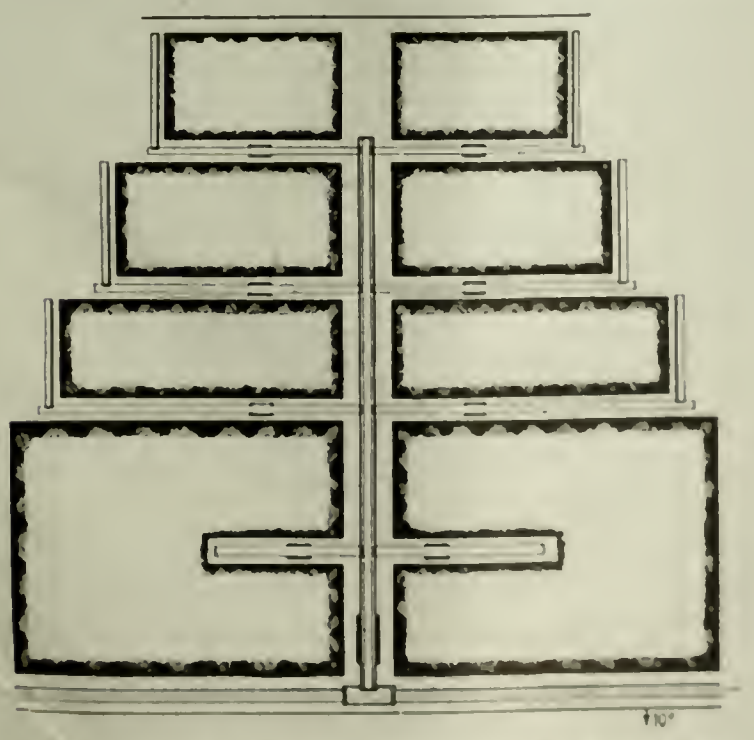


FIG. 6—MINING METHOD WITH CROSS BORDS AND TROUGHS AT PILLAR ENDS

The upper and further cross bords are driven first, and the pillars thus formed are drawn first. The bords nearest the main gangway are only just started. The one main trough receives coal from the troughs in the cross bords and these troughs in turn are fed by those at the pillar ends

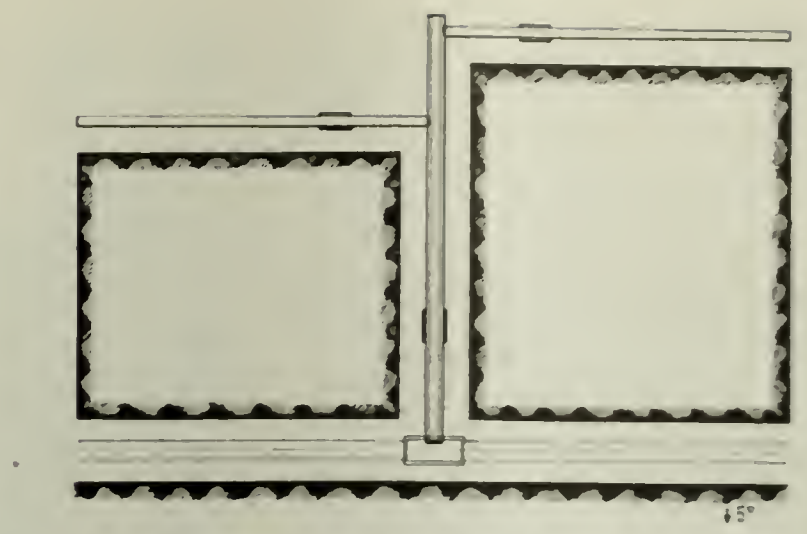


FIG. 7—A METHOD OF LONGWALL RETREATING

Here the trough is but lightly loaded as compared with the loading when the system shown in Fig. 6 is adopted.

reduces the time otherwise needed for development.

The advantages of reciprocating chutes in the working of a coal mine are first of all that the work can be expedited to a greater extent than by any other method. Few bords are needed and what there are need be driven only in coal, thereby saving much rock work. As the coal is carefully transported in the chutes its conveyance is marked by an absence of dust. As the troughs are strong and offer much resistance to wear and breakage, the plant deteriorates more slowly than almost any other form of equipment.

Other advantages are that the plants are quickly installed at little cost both for installation and operation. Such troughs can be used for the conveyance of rock, coal, ore and salt—in brief for all materials not disposed to adhere to the chutes. The troughs may be used where the ground is irregular and in surface workings as well as underground. The conveyance of coal by these means has today passed the experimental stage. The troughs have proved their value as a cheap medium of conveyance in a multitude of instances both below and above ground.

Small Steam Turbine for High-Temperature And High-Pressure Steam

SMALL steam turbines, normally used for driving power-plant auxiliaries, such as exciters, circulating, hot-well and boiler-feed pumps, coal crushers, fans, stokers, etc., ordinarily receive, and should require, but little attention. They also should be able to use steam at high pressure and superheat, and for their size, should develop from the steam consumed the greatest possible quantity of work even though arrangements are made so that some of this steam subsequently may be utilized in feed-water heaters or for industrial purposes.

The velocity-stage turbine shown in the accompanying illustrations has been designed to meet these requirements. It is built in sizes up to 1,200 hp., and can be directly connected to high-head centrifugal pumps, blowers and compressors, to alternators and to small direct-current generators, or by means of speed-reducing gears, to alternators and direct-current generators of medium size, to large centrifugal pumps and blowers, to belt pulleys and rope sheaves, and in general to machinery operated at slow or moderate speed.

To adapt it for operation with steam of high pressure and superheat, the steam chest and nozzles are located

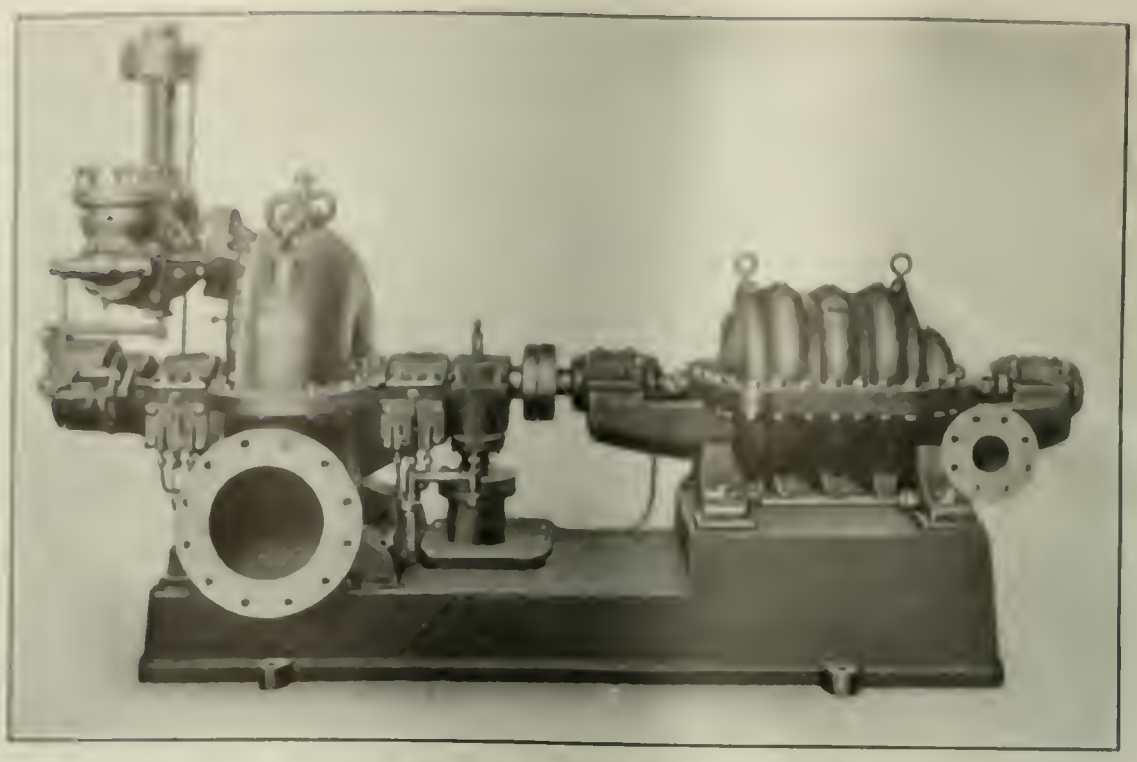
is the casing cover, so that the bearings are not subjected to high temperatures. As the steam is completely expanded in the nozzles, the turbine case contains steam at exhaust pressure only. For all steam temperatures above 450 deg. F. and for steam pressures above 210 lb. gage, the steam chest, governor valves and the casings of both the emergency governor valve and the strainer are made of steel.

From the steam chest the steam expands through removable nozzles, which are accurately reamed so as to provide the ratio of expansion desired. Some of these nozzles are fitted with hand valves so that certain of them may be shut off or opened, as required by the load or steam conditions, thus permitting those remaining in service to work at the highest efficiency. The nozzle ring is easily removable.

The turbine wheel carries two or more rows of buckets, depending upon the speed and steam conditions prevailing. The buckets are drop-forged and are attached to the rim of the wheel by bulb shaped shanks in such a way that individual buckets can be removed without disturbing others. The steam discharged from the first row of buckets passes through guide vanes which direct it into the succeeding row. These guide vanes are held in removable steel segments attached to the nozzle plates, so that it is a comparatively simple matter to replace them should they become damaged or worn by long use with wet steam.

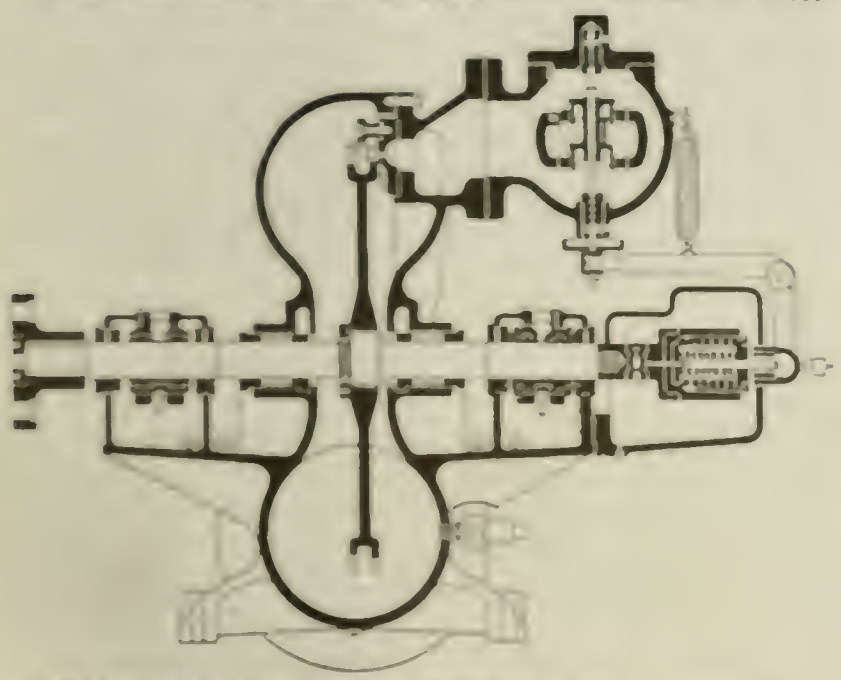
Admission of steam to the steam chest is controlled by a speed governor, which acts upon a double-seated valve. Where much steam must be handled, or the speed is high or where close regulation is desired, the governor is of the Jahns type, mounted on a vertical spindle. This is driven by the turbine shaft through a worm gear. A more simple type of governor, mounted directly upon the turbine shaft, can be used on turbines of small or medium size running at moderate speeds, or where a speed-reducing gear is used the governor may be mounted upon the slow-speed shaft.

This turbine is also equipped with a safety or emergency governor consisting of a small plunger set radially in the shaft which acts against a spiral spring. When a predetermined speed is exceeded, this plunger moves away from the shaft centre and strikes a small lever, thus tripping a mechanism which immediately closes the emergency valve. This emergency trip, or overspeed governor, is always mounted on the turbine shaft, and its action is entirely independent of the main speed governor. The valve trip is also independent of, and separate from, the one used for governing purposes.



TURBINE CONNECTED DIRECTLY TO A PUMP

The simple high-speed rotary motion of both turbine and centrifugal pump naturally adapts them to direct connection to each other. The boiler-feeding unit of this type because of its reliability and freedom from water hammer and other ills is steadily gaining in favor.



CROSS-SECTION OF THE TURBINE AND GOVERNOR

A centrifugal governor on the turbine shaft actuates a balanced throttle valve that effectually controls the turbine speed.

As the turbine case is split horizontally its top half may be removed, giving access to the rotating elements. Upon removing the cover, the revolving parts can be lifted out.

As the steam is completely expanded in the nozzles, the turbine case must resist exhaust pressure only. An automatic sentinel valve, however, is provided to give warning of the excessive pressure to which the casing would be subjected in case a valve in the exhaust line were closed. There are no stuffing boxes or packings within the wheel case, and economy is not dependent in any way upon the maintenance of small clearances. To prevent leakage along the shaft where it penetrates the casing, metallic ring packing normally is used. For high speed under certain conditions of service, carbon-ring packing is employed.

The wheel itself is a steel forging mounted on the shaft with a taper fit. The shaft is of hammer-forged steel, sufficiently short and stiff to place its critical speed far above its running speed.

This machine is being manufactured by the De Laval Steam Turbine Co., of Trenton, N. J. It is intended primarily to meet the demand for a reliable and efficient auxiliary turbine where high steam pressures and superheats are used. It is, of course, equally satisfactory for less severe steam conditions.

THE SAFETY AND HEALTH CAMPAIGN conducted in the mining camps of Utah by Dr. A. L. Murray and C. A. Allen of the U. S. Bureau of Mines yielded such satisfactory results that they are being extended to other sections. Dr. Murray and Mr. Allen are at present conducting a similar campaign in the Coeur d'Alene district. This work is done in conjunction with the training in first aid.

Proper Handling, Care and Testing of Insulating Oils*

Special Mineral Oils of High Insulating Value, Free From Acid, Alkali and Moisture, Used—Danger from Absorption of Moisture and Formation of Sludge—Test Transformer-Oil Samples Twice a Year

NEARLY all transformers, compensators and oil switches that are used for lighting, power, etc., employ an insulating oil of some grade or other. In transformers the oil is used for insulating the windings and for the purpose of readily conveying the heat generated in the coils to the outside, where it may be radiated to the air.

In compensators and switches the oil is not only used for insulating purposes but to extinguish the arc formed on the opening or closing of contacts. It is important, therefore, that a proper grade of oil be used for each purpose. It is considered the best practice to purchase this oil from some standard electrical company that makes a specialty of handling and preparing such liquids.

Oils for this purpose must be of mineral origin, of high insulating value, free from acid, alkali and moisture. They also must be of relatively high flash and fire points, low congealing or freezing temperatures and must make a minimum quantity of sludge at the temperatures experienced when operating at full load for long periods. To obtain these properties great care must be taken during the manufacture of the oil to filter and dry it. The employment of an unprepared oil may cause serious damage to the apparatus in which it is used.

In storing and putting into service insulating oils, much care should be exercised. Oil of this kind generally is shipped to the purchaser in sealed tins or steel drums. Sometimes it is transported in the apparatus in which it is to be used. On receipt, if it is not to be put into immediate use, it should be stored in a dry wareroom. When steel drums are set on end moisture is likely to collect on their heads and this may be drawn into the drum by the breathing action induced by changes of temperature if even minute holes are present in the head. Consequently steel drums should always be laid on their sides with the bung down.

Oil for Replenishment May Be Bought in Tins

Oil for spare transformers or to make up for leakage therefrom should be purchased in tin cans, as these are more nearly airtight than barrels. The cost of holding a steel drum for a long period would more than offset the expense of the tin cans.

In transferring oil from container to apparatus care should be taken to prevent the entrance of moisture or foreign matter. Before opening a steel drum or tin all dirt should be wiped away from the mouth of the container, then the oil should be strained through several layers of clean dry cloth (to remove any foreign matter) into clean previously dried receptacles.

Oil cans or drums should not be opened in a temperature that is materially warmer than the oil. The temperature of room and oil should be nearly equal in order to prevent the inside of the drum from sweating.

Oil should never be transferred in damp or rainy weather without taking every precaution to exclude moisture. If the oil is received in good condition and is immediately placed in the apparatus it is reasonably certain that it is safe, but if it has been stored for some time the only sure way to ascertain its quality is by a dielectric test. This will be explained later.

In transferring oil the drums should not be opened until everything has been made ready for its transference, and no rubber hose should be used as the oil will decompose the rubber and the sulphur thus set free will attack the copper of the apparatus. When the equipment container has been filled to the proper height it should be sealed up as tightly as possible, making sure that all felt and other seals are properly in place.

Moisture and Sludge Spoil Insulating Oil

Apparatus containing oil seldom gives trouble, and for this reason it is likely to be neglected. It is a well-known fact that after oil has been in service for a long period it begins to change quality. Moisture will find its way in, sludge will begin to form, impairing the insulating qualities and stopping up the oil ducts. This in turn will either cause the insulation to break down or stop the oil passages, so that the transformer winding will run warmer than it should. It is therefore necessary to give such apparatus systematic inspection and to sample and test the oil regularly.

Apparatus of large capacity where the load is fluctuating through wide ranges should be inspected at least twice a year and samples of the oil taken and tested. A record of each inspection and the results of the test should be carefully kept. In this way it can be determined whether tests should be made more frequently.

In equipment other than transformers where the quantity of oil is small it is not necessary to test so often unless it is known that the apparatus is running overloaded. This may cause the oil to become too warm and result in deterioration. In switches and circuit breakers the oil deteriorates from a carbonizing effect rather than from the introduction of moisture. Lightning arresters usually will contain more moisture than other pieces of equipment because they are in contact with the electrolyte. This does not materially injure the oil for this purpose but when cleaning or restacking the arrester the oil should be passed through a filter or else new oil should be substituted.

It is desirable when taking a sample of oil for testing to obtain the poorest part of the contents of the container. This usually is located at the bottom as water. Sludge also being heavier than oil, will settle to this point. If this sample proves acceptable it is reasonable to assume that the rest of the oil is safe. If a bottom sample cannot be obtained the next best expedient is to obtain a test quantity from the top after the apparatus has been working and the oil has been thoroughly stirred. When drawing a sample from a test valve at the bottom of a container, caution should be observed not to include any of the oil that has been standing in

*Report of committee on "Proper Handling and Care of Insulating Oils" presented at meeting of West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers, Sept. 22, held at Huntington, W. Va. The committee consists of R. R. Webster (chairman), T. C. Harmon, T. W. Blake and M. A. Maxwell.

the drain tube, as this will not be an average sample of the bottom liquid.

When only a few samples of oil are to be tested each year it will be preferable to let some company that possesses the requisite facilities do the testing. Should the user be connected with the lines of a power company, this firm will usually test the oil free of charge. The Pittsburgh Transformer Co. makes dielectric tests of oil for its customers without charge. The General Electric Co. will make similar tests for dielectric strength, alkali and free sulphur for $1.50 per sample; for its customers, however, it will test three samples for dielectric strength free of charge, and over that number at $1 per sample. Any company that has a large quantity of oil and makes periodic tests should obtain a tester of its own, as it is much more convenient and soon pays for itself in the satisfaction of knowing that the oil used is safe at all times.

Precautions to Prevent Water Entering Sample

When oil is tested by a company making a business of such work the matter of preparing samples and shipping them must be given careful attention. Bottles for receiving samples must be thoroughly cleaned and dried. They should have a wide mouth and be sealed with cork rather than rubber, the cork first being coated with paraffin. The final closure is made with a sealing compound. This will avoid any possible chance of moisture getting in. After the oil has been placed in the bottle it should be immediately sealed and not allowed to stand even for a few minutes, as this might possibly make the test unreliable.

When the dielectric strength only is to be determined, 16 oz. will be sufficient, but if other tests are to be made not less than one quart should be sent. Each sample should be tagged, stating what part of the apparatus or drum it was taken from, the name of the apparatus and the serial number. The samples should be packed carefully to avoid any chance of breakage in shipment.

Companies desiring to make oil tests of their own might be interested in a few words concerning the apparatus used and its cost. The tester usually employed ascertains only dielectric strength and consists of a transformer, step-up switch and a cup that holds the oil and a standard spark gap. The cost of this outfit is about $125. The standard spark gap used for all oil testing consists of two terminals 1 in. in diameter and ½ in. apart.

Raise Voltage Until It Breaks Down Oil Gap

This apparatus may be connected to an ordinary 110-volt alternating current. The voltage is raised by degrees until final breakdown occurs. In testing oil with this equipment the cup containing the gap should be carefully cleaned and dried and then filled with the sample of oil. It should then be allowed to stand for a few minutes to permit the air bubbles to escape. This is especially necessary if the oil is cold. The voltage can then be applied in steps as fast as the voltmeter can be read. Five breakdowns should be given to each filling and then the receptacle should be emptied and refilled from the original oil and again tested. This procedure should continue until at least three fillings are consistent within 10 per cent.

Oil in service, except in electrolyte lightning arresters, is graded as follows: If the oil fails between 25,000 and 30,000 volts it is considered excellent; if between 25,000 and 22,000 it is regarded as good; if between 22,000 and 16,000 it is said to be fair and below 16,000 it is considered bad and should be renewed or filtered immediately.

If only a small quantity of oil is involved it would be preferable to renew it outright. For firms having large quantities of oil to keep in condition the filtering process is much more satisfactory and economical. Filtering can be done while the apparatus is in service, the process being continued until the oil proves by test to be entirely safe. When oil is simply renewed it is a difficult matter to remove all of the old inferior liquid. That which remains may lower the dielectric strength of the new oil.

The filtering process consists of forcing the liquid under pressure through several thicknesses of dried filter paper. This removes all moisture and foreign matter. The filtering machine is connected to the top and bottom of the container, and the oil is circulated through the filter press until tests prove it to be safe. Several machines are on the market using this principle. The cost of the smaller sizes ranges between $275 and $300.

The cost of filtering 870 gallons of oil with one of these machines by an outside company that already had its apparatus on the job was approximately 12c per gallon. Another company filtering oil with its own machine filters 1,000 gallons during a period of three days, allowing one day to move the machine from place to place. This would make the cost of actual labor about 2c. per gallon. Where the machine has

TESTS ON OIL SAMPLES FROM SEVERAL TRANSFORMERS

Record No. of Transformer	K.V.A.	Date Sample	Years Oil Has Been Used	Bottom or Top of Transformer	Volts at Breakdown	Remarks
E-373	65	5-1-20	2 3	Bottom	7,000	As the result of this test the power company advised filtering. This work took a man 2 weeks, charge $104 50 including filtering. 3 bbl spare oil at warehouse.
E-372	65	5-1-20	2 3	Bottom	13,500	
E-371	65	5-1-20	2 3	Bottom	35,000	
E-368	65	5-1-20	1 4	Bottom	15,000	
E-369	65	5-1-20	1 4	Bottom	16,000	
E-370	65	5-1-20	2 3	Bottom	11,000	
E-256	65	1-3-21	2 9	Top	0	
E-256	65	2-16-21	3 0	Top	21,000	
E-257	65	1-3-21	2 9	Top	0	
E-257	65	2-16-21	3 0	Top	10,000	
E-258	65	1-3-21	2 9	Top	40,000	
E-258	65	2-16-21	3 0	Top	33,600	
E-47	100	2-8-21	3 2	Top	36,000	
E-48	100	10-20-20	3 0	Top	0	
E-48	100	2-8-21	3 2	Top	35,600	10-29-19, 135 deg. F.
E-49	100	10-20-20	3 0	Top	23,000	
E-61	100	2-8-21	3 2	Top	30,800	
E-62	100	10-20-20	3 0	Top	27,800	
E-63	100	10-20-20	3 0	Top	32,000	
E-43	100	2-8-21	1 2	Top	40,400	
E-44	100	10-20-20	1 0	Top	32,800	
E-45	100	10-20-20	1 0	Top	9,000	
E-46	100	10-20-20	1 0	Top	0	
E-46	100	2-8-21	1 2	Top	39,200	
E-624*	100	11-18-20	2 8	Top	8,500	Dark color
E-625*	100	11-18-20	2 8	Top	7,625	Dark color
E-626*	100	11-18-20	2 8	Top	9,000	Dark color
E-665	100	11-18-20	2 8	Top	19,500	
E-666	100	11-18-20	2 8	Top	22,000	7-25-18, 133 deg. F.
E-667	100	11-18-20	2 8	Top	15,000	
E-668	50	11-18-20	2 8	Top	18,000	
E-664	50	11-18-20	2 8	Top	14,250	
E-936	65	9-25-20	3 0	Bottom	14,250	29% of top 7-15-20, 114 deg. F.
E-936	65	9-25-20	3 0	Top	18,000	
E-937	65	9-25-20	3 0	Bottom	19,000	
E-938	65	9-25-20	3 0	Top	10,500	
E-933	65	9-25-20	4 0	Bottom	19,500	87% of top 7-15-20, 109 deg. F.
E-933	65	9-25-20	4 0	Bottom	22,500	
E-934	65	9-25-20	4 0	Top	18,500	
E-935	65	9-25-20	4 0	Bottom	16,500	
E-935	65	9-25-20	4 0	Top	20,000	

* New oil put in 9-8-1921, 360 gal. at 28 cents = $101. Frt. not included.
Temperature tests were taken on dates shown because transformers were reported to be running "too hot."

to be shipped from one location to another the expense, of course, is much higher. It is a rather difficult matter to determine the exact cost of filtering on account of differences in the oil treated. Some oils would require much more time to filter and dehydrate than others.

In one instance, in 1921, 363 gallons of oil were renewed for 38.6c. per gallon, the cost including the freight and being reduced by the credit for empty steel drums. This shows that it is much cheaper to filter the oil than to renew it.

Another type of filtering and dehydrating machine utilizes the principle of centrifugal force and employs no filter paper. It appears to be highly satisfactory but actual data as to how thoroughly it dewaters the oil or what it costs per gallon to operate are lacking.

A copy of the record sheet of a test conducted on the oil from several transformers owned by a certain mining company is presented in the table herewith. It might be well to note on this sheet that in some tests the breakdown voltage was zero, but on a second trial proved good. This probably was due to moisture getting into the sample at some point. In other samples the dielectric strength of which proved to be low, the oil was dark in color and the low breakdown voltage probably was the result of sludge rather than of water. It will be well also to note the difference in the breakdown voltage of the top and bottom samples from the same transformer, showing in all cases that the bottom is the place where the poorest quality of oil is to be found.

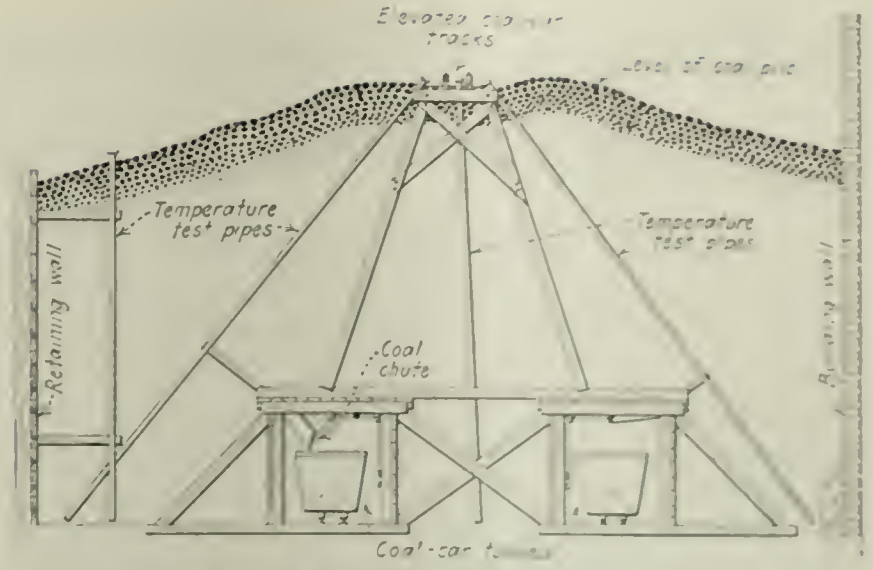
Storing Bituminous Coal in a 40-Ft. Pile

STORAGE of coal is one of the big problems of the day. The following hint by F. W. Randall, assistant to the general manager of the Rockingham County Light & Power Co., of Portsmouth, N. H., published in the *Electrical World*, is intended for central-station storage but may appeal to any kind of consumer. If operators could recommend to consumers a method of storage that would be reasonably safe and economical it would be possible to approach strikes of mines and railroads with coal on hand convenient to the point where it has to be used. Some features of this plan with trifling modifications should be available also for use in storage of coal around the mines.

It will be noted that pipes are put in place before the coal is deposited. These pipes are used as runways for thermometers lowered and raised by strong cords marked at regular intervals by knots which enable the depth at which readings are made to be noted. Then, by reference to an appropriate drawing the behavior of the coal in any section of the pile can be studied.

When a new cargo of coal is placed in the pocket, tests of the temperature are made daily in each pipe until the exact conditions in all parts of the pile are determined. The pipes are 2 in. in diameter and are placed at frequent intervals and permanently clamped into position. The tunnels from which the coal is drawn for station use are numbered, and chutes 5 ft. apart are installed. If any spot shows signs of overheating, coal is drawn from the nearest chute until the hot spot is removed. The thermometers are inclosed in wooden frames to prevent breakage.

The arrangement was inexpensive to install and has permitted the storage of large stocks of coal to a maximum depth of 40 ft. with a substantial degree of security from fire. The pocket installation was designed by W. H. Allen, of the company's engineering department, and has given excellent service.



COAL PILE WITH CHUTEWAYS FOR COAL CARS AND WITH PIPES FOR TESTING HEAT OF PILE

Temperatures are taken by lowering thermometers inclosed in a wooden frame down the pipes, knotted lines showing the point at which the temperatures are taken. Any coal that heats prematurely is withdrawn by the chutes

Chain Curtain Saves Coal on Long Chutes

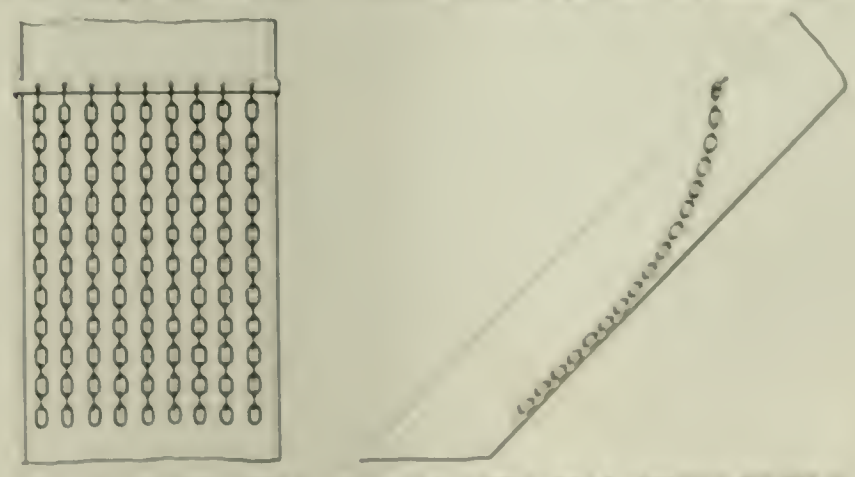
By John S. Watts
New Glasgow, N. S.

COAL or other material traveling down a long chute will attain a destructive velocity, and as it is not always possible to avoid using such a long incline and the excessive velocity thus engendered the retarding curtain shown in the accompanying sketch was devised.*

The curtain is made of several lengths of chain salvaged from the scrap pile and connected to a bar which is bolted to the chute sides as shown in the sketch. When the material to be handled is in large lumps a heavy chain spaced 6 to 9 in. apart gives the best results. For smaller pieces a large number of small chains is most effective. The best size and length of chains can be quickly determined by trial.

When the chute is delivering onto a picking table it is most desirable to have the stream of coal delivered in a thin, steady sheet, and to effect this the chain should be fairly long.

This curtain has proved an effective retarder and at trifling cost will keep the speed of the coal within reasonable limits on the steepest and longest chutes. For long chutes two or more curtains may be needed.



CHAIN HUNG OVER CHUTES LETS COAL DRAW EASILY

Should the chute be long more curtains of chain may be used with advantage. They will keep the speed of the coal within reasonable limits

*Chain curtains are being used in the collieries mines for the same purpose. The device which Mr. Watts has thought out for his own needs is doubtless one which has been in use for many years. It is reprinted here because it might be of value to some who have never seen it in operation.—Editor.

By Measurement of Current Used and Extended Records Large Savings Can Be Made in Power Cost*

Importance of Cost Records Grows as Power Use Increases — Need for More Recording Devices — Contracts Should Be Based on Peaks Longer Than Five Minutes — Keep Power Factor Near Unity

IN A business as highly competitive as that of bituminous-coal mining it is essential that accurate production costs be kept covering, by separate classification of items, every step in the operations performed from coal face to railway car. In the earlier years of the industry the investment was so moderate and the operating expense so low that the item of power cost was almost negligible as a factor in production. As a result recording, measuring or weighing apparatus was omitted from the original equipment and consequently it was impossible to calculate how much was expended in power. Rough approximations were used in the cost sheets of the mine.

Of late years the general introduction of purchased power, with the necessity of comparing costs between energy purchased and that generated, has brought about entirely different conditions. Another reason for proper cost keeping is the fact that the expense of both classes of power has risen so much that the original paltry item of power expense now represents a substantial percentage of total costs. Records show a variation of from 2 or 3c. up to as much as 25c. per ton over a fairly large output. It is now therefore necessary to give this item close attention.

The checking of power costs falls naturally into two divisions: (1) Where a power plant is installed and operated by the mining company and (2) where power is purchased from a central station.

Totalizing Watt-Hour Meters Needed

In the first case, in order to proceed intelligently, installing plant watt-hour meters must be installed. Accurate account should be kept of all items of expense such as oil, waste, repairs, upkeep and the like, and provision must be made for either weighing or closely estimating the fuel consumption. The man responsible for power-house operation should be furnished with monthly detailed cost sheets for his department, just as the superintendent of mines is furnished with a mine cost sheet, because it is only by scrutiny of these various items and by comparisons of the results that improvements can be effected.

Determination of the proper charge for fuel consumed presents a problem of real difficulty, the solution of which depends both on the point of view of the accountants and the varying mine costs. Obviously under conditions of high market and ample car supply fuel should be charged at the market price, whereas when the market is weak and the car supply is limited a different value is represented. This holds true also when the car supply is insufficient. This item, therefore, must be left to individual judgment, and on account of its variable nature it is the source of much dispute between mine owner and central-station power salesman.

Assuming that proper measuring devices are installed and accurate cost accounts are kept, power production may be tabulated under the following headings:

Total Kw.-Hr. Generated	Total Cost	Cost per Kw.-Hr.	Kw.-Hr. per Ton Mined	Tons Mined Total	Tons Burned Total	Power Cost per Ton Mined

Other tabulations may of course be used if the completeness of the records make such cost keeping possible. A column headed "Pounds of coal per kilowatt-hour" indicates the generating efficiency from boiler furnace to switchboard. Naturally a wide variation will be obtained in these entries on account of the market, car supply, and similar items that influence the mine output, but after such records have been compiled for months or years, comparisons are obtainable which will cover a wide range in operating conditions. Monthly or even daily study of these records will enable the power superintendent to discover either a falling off or improvement in results and to locate the cause.

In the case of purchased current, which has been largely adopted where available, power superintendents find themselves called upon merely to check the accuracy of the monthly power bills. Some territories are served by several power companies, all with different rate schedules. All, however, first impose a "demand charge" or "capacity charge" at a fixed rate per kilowatt of the "highest integrated demand" over a stated time interval. This period may be one, three, five, ten or fifteen minutes. In fact it may be any period, but the list given covers those that are commonly used. The energy charge is made up by computing the cost of the kilowatt-hours through application of a sliding rate scale.

Demand or Readiness-to-Serve Charge

A word as to the origin and meaning of the "demand charge" may be in order. Many years ago, when the power companies, on account of the great growth of this part of their business, began to pay scientific attention to their rate schedules, it was observed that one consumer might require heavy installation investment on the part of the power company amounting to many horsepower, but through intermittent use might yield only a small monthly return in the shape of a power bill. Another consumer with an installation requiring a similar investment but calling for steady service might afford a highly satisfactory return.

Little-used storage warehouses, for example, equipped with freight elevators might require 25 kw. in line and transformer service though they would return to the power company such insignificant sums monthly as would be in many cases insufficient to pay even the interest on the installation equipment.

Accordingly a charge was established known in the earlier days as a "readiness-to-serve" charge. It was

*Report of Committee on Methods of Checking Power Costs at meeting of West Virginia-Kentucky Association of Mine Mechanical and Electrical Engineers to be held on Sept. 14, 1922, at [illegible], W. Va. M. A. Mayer, chairman, C. E. Rogers, Hunter Lee and L. C. McAllister, members of the committee.

held that inasmuch as a consumer of large demand but small consumption expected to take from the lines his maximum requirements at any hour of the day, the power company must hold this amount of energy subject to his call—that is, would be prohibited from contracting for it to another. The public service company therefore expected him to pay at least $1 per connected horsepower per month as a "readiness-to-serve" charge.

For some years this was considered in the light of a minimum payment, but later a distinct separation of charges was made based on the following process of reasoning. At that time the cost of one horsepower installed in a steam generating station was considered to be about $100. Figuring 6 per cent interest and 6 per cent annual depreciation, a yearly "demand charge" of $12 per horsepower was indicated. Soon the power companies were basing their rates on, first, a "demand" or "capacity" charge of $1 per horsepower per month, and, second, an "energy" charge of so much per kilowatt-hour consumed. This was done in order to guarantee a return from each horsepower of installed station capacity sufficient to carry interest and depreciation, regardless of the energy the consumer actually used.

One Dollar per Month Found Insufficient

With the development of large steam turbo-generators, which, because of their large capacity, cannot reach out over a sufficiently large territory to absorb their enormous output without both extensive and expensive transmission systems, this charge of $1 per horsepower per month was found insufficient to meet the charges on the heavy unit investments. A change accordingly was made to the "kilowatt-per-month" basis with a substantial increase in the rate.

It must be borne in mind that this charge is in no sense intended to cover the energy delivered but is made solely in order that the consumer may bear the "stand-by" charges of interest and depreciation on the capacity reserved for his use. It takes effect regardless of whether he consumes any energy or not. Obviously, this being the case, this "demand charge" should yield no profit whatever to the power company, which must look to the sale of energy for dividends. The suspicion on the part of consumers that the power companies are really making profits out of these demand charges through overlapping has been the cause of much litigation before the public service commissions and has resulted in most cases in the commissions prescribing the charges for this part of the total billing.

Demand Charges in Huntington District

In the territory adjacent to Huntington, W. Va., three large power systems have been installed. One of these charges $1.80 per kilowatt of highest integrated 5-minute demand per month, another $1.92 per kilowatt of highest integrated 3-minute demand, and the third charges $1.65 per kilowatt on a 15-minute demand, the two last named using an alternative method known as "agreed standard capacity" or demand calculated from connected load. All have energy rate schedules with little in common.

Through the courtesy of J. H. Edwards, who has compared the demand made by the same load over several months, based on these different time periods, the following table is presented. This gives an idea of the effect of these different peak-period specifications on the total demand charges.

CONSUMPTION PEAKS OF DIFFERENT DURATIONS AS OBSERVED IN OPERATION OF TWO PLANTS

	Kilowatts Consumed 1-min. Peak	Kilowatts Consumed 5-min. Peak	Kilowatts Consumed 15 min. Peak
Plant No. 1:			
March	490	440	400
April	560	510	440
May	520	480	440
Plant No. 2:			
One month only	318	285	230

Consideration of this table shows the importance to the mine owner of having a peak period of at least 5 minutes and longer if obtainable.

Other companies in the northern part of West Virginia include in their contracts a clause providing penalties for bad power factor. Inductive load, such as that resulting from the application of induction motors to fans, pumps tipples, etc., causes the current to lag behind the impressed voltage, with which it is therefore out of step to a certain extent. The cosine of the angle of such lag is expressed as a decimal, or percentage, and is used to indicate the power factor or P.F. That portion of the current flowing through the receiving apparatus which is out of step with or is lagging behind the impressed voltage represents no energy, and is therefore known as "wattless current," while that in step is called "energy current."

Without discussing the technical features of this phenomenon it may be stated that the use of induction motors tends to increase this lag and results in low power factor, while synchronous motors possess the inherent capacity of not only correcting the inductive effect of their own windings but of compensating for a certain quantity of other inductive load. This is accomplished by overexciting the field circuit of the synchronous machines, and if the proportion of these units to the total load is large enough, the current may even be made to precede or lead the impressed voltage. Under these circumstances a leading power factor is secured which is fully as undesirable as a lagging power factor.

Combine Synchronous and Inductive Load

As unity power factor is most advantageous a judicious combination of synchronous and inductive load is desirable. The rotary converter may be designed with sufficient field capacity to bring about unity power factor and even to compensate for a limited amount of induction-motor load. The synchronous motor, however, has a wider latitude in this respect and may compensate for an appreciable quantity of inductive load.

Central-station companies object to low power factor because the presence of any considerable quantity of lagging or wattless current in their circuits results in poor transformer and line regulation, making necessary an inordinately high generating voltage if a given receiver voltage is to be attained. This also necessitates greater carrying capacity in the generator windings. The line losses arising from this cause may be appreciable.

The consumer, with his short distribution lines and generally ample motor capacity, is not greatly concerned over low power factor so long as it does not affect his pocketbook. In view of the tendency of the power companies toward penalty clauses and with due regard to the betterment of over-all efficiency, modern design should provide for reasonably good power factor on all receiving circuits. It is unfortunate that the

limitations of the synchronous motor prohibit its more general adoption. A range varying from 52 to 100 per cent in power factor at mine loads has been observed.

In keeping records of mine power bills the following tabulation has been found convenient:

[illegible]	Kilowatt-Hours Used	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]	Net Bill	Cents per Kilowatt-Hour	[illegible]	Cost per Ton	Tons Mined
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

The figures above tabulated have been taken from records of a mine located in the Winding Gulf field. By keeping a sheet for each operation and placing the results for the whole twelve months of the year on each sheet, any bill that is "out of line" may be spotted at a glance. By keeping these sheets in a loose-leaf binder, records covering years of operation are made easily available. As new entries are made comparisons with similar outputs in previous months show whether the bill is normal or needs investigation.

Such companies use meters rather freely about the works, differentiating the power consumed into "Used for machine cutting, tipples, fans, town lighting, haulage" and the like. This is of value, however, only where the company is sufficiently large and prosperous to maintain a superintendent of power distribution, as the average mine electrician usually is too busy with pressing repair work to inspect and analyze such records.

Daily and Monthly Load-Factor Calculations

Careful consideration of the method above outlined of making a total charge based on a combination of the highest peak multiplied by a fixed rate plus a scale rate for the energy (kilowatt-hours) consumed shows that the lowest net rate per kilowatt-hour on the total billing will accrue if the peak is kept down to as small a fraction of the total power used as possible. The daily load factor of a given receiving installation is the ratio of the number of kilowatt-hours actually used to the maximum number of kilowatt-hours that would have been used had the maximum demand been maintained throughout the entire 24 hours. Thus expressed mathematically the daily load factor becomes

$$\frac{\textit{Kilowatt-Hours Used}}{\textit{Maximum Demand} \times 24}$$

and the monthly load factor then is:

$$\frac{\textit{Kilowatt-Hours Used}}{\textit{Maximum Demand} \times 24 \times \textit{days in month}}$$

As showing actual load factors at various plants the following may be of interest. These are taken on a monthly basis assuming an average of 730 hours per month:

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

To illustrate how basing the maximum demand on different time intervals over which the load is integrated affects the load factor the following figures taken from actual operating records are given:

Load Factors Using Different Time Intervals for One Plant No. 1

(a) [illegible]	142,730 / 475 × 730	41 per cent
(b) Five-minute peak	142,730 / 433 × 730	45 per cent
(c) Fifteen-minute peak	142,730 / 384 × 730	52.4 per cent

Another term frequently heard among power solicitors is "diversity factor." This is the ratio of the actual peak obtainable by combination of several separate loads to the sum total of the individual peaks. For example, assume a certain coal acreage, with a number of developments, each supplied by its own power plant. The instantaneous peaks at plants Nos. 1, 2, 3 and 4 may be 200, 250, 300 and 150 kw. respectively. The sum of these peaks is 900 kw.

Now if lines are run to a central point, and the total power requirements are either generated at one central plant or purchased from a power company, the peak will not amount to 900 kw. because of the improbability of all four plants taking their maximum peaks at the same instant. On the contrary, the actual peak obtained may amount to only 700 kw., in which case the diversity factor is $\frac{700}{900}$ or 77.7 per cent.

Why Five-Minute Interval Seems Fair

In mine work, however, because average hauls up tramway grades last but one or two minutes, if 5 minutes or more is the time period over which the load is integrated, it will be found that the combined peaks approach the total of the individual peaks quite closely, so that consideration of the diversity factor assumes less importance except where few units are thus combined.

In reference to town lighting, inspection of available records made by companies that have installed house meters warrants the conclusion that a charge of 1c. per watt per lamp per month will amply protect the power company from loss on this business. All large power users should install curve-drawing meters. Aside from their absolute check on the power company's demand meters, these instruments afford opportunity for study of the load.

Of all the suggestions here made none is more valuable than that advocating monthly tabulation sheets of power costs. It would be a busy electrician indeed who could not find the time necessary to jot down these data and compare results with previous entries. When this is done any power bill that is "out of line" will be spotted instantly.

A Lignite Fuel has been produced by the Bureau of Mines in the course of its North Dakota experiments at a cost comparable with that of the domestic sizes of anthracite in Pennsylvania. No small portion of the credit for this successful outcome of these experiments is given by the Bureau of Mines to Dean E. E. Babcock, of the University of North Dakota. The beneficiation of the lignite was accomplished in a new type of shaft furnace which was built after careful preliminary study. The results show a greater efficiency than had been expected. Two carloads of lignite were recently carbonized at the rate of ten tons per day. A satisfactory residue was obtained at an approximate cost of $5.50 per ton, as against a cost of approximate'y $6.25 a ton for the residue produced in the oven used in the experiments conducted during the summer of 1921. The costs are low enough to demonstrate conclusively the practicability of establishing commercial plants. It is understood that North Dakota officials have plans under way which insure manufacture on a commercial scale.



Problems of Operating Men

Edited by James T. Beard



Humidifying Air Currents by Means of Steam

Sprinkling by Water Cars and Pipe Spraying Systems Not Reliable—Humidifying by Means of Steam Gives Better Results—Plan Adopted in a Western Mine

WHAT appears to be an effective method of laying dust in coal mines is described, in an interesting manner, by F. C. Cornet, *Coal Age*, Aug. 3, p. 169. The article draws particular attention to the need often presented of treating each air split separately, because of the practical impossibility of suitably humidifying large air volumes with steam.

In reference to other methods of dampening the dust to prevent its suspension in the air current, it is commonly known by those acquainted with the dust problem, in coal mining, that too much reliance cannot be placed on the use of water cars and pipe spraying systems for that purpose. These methods only reach such places as are easily accessible and a wider distribution of the water is required in order to be effective.

In his "Mining Engineer's Handbook," page 1439, Robert Peele gives four ways of wetting dust in coal mines, namely: "1. Liberal hosing. 2. Thorough wetting by force-pump sprinkling cars. 3. High-pressure, fixed sprinklers, at close intervals, on continuous pipe lines, so that when turned on all surfaces will be wetted. 4. Humidifying the intake air current with exhaust steam from the fan or other engine, both to prevent drying out the mine and, by supersaturating, to carry in moisture that will be deposited on the dust on ribs and roof."

Plan of Humidification Adopted by Colorado Fuel & Iron Co.

As previously stated, the first three methods here given are ineffectual. The method last named has been successfully employed by the Colorado Fuel & Iron Co., at several of their operations in the West. The plan adopted there has been described by B. J. Matteson, of that company, and is the following:

Steam radiators are placed on both sides of the intake heading where the entire volume of air is passing into the mine. Live steam is supplied to these radiators, by which means the temperature of the entering air is raised and its capacity to absorb moisture correspondingly increased.

The waste steam from the radiators, passing through a one-inch gate valve, is conducted by a perforated pipe to a point a short distance inby on the airway, where is arranged a curtain of burlap or brattice cloth, the purpose of which is to bring the moisture or condensed steam more intimately in contact with the passing air.

By these means, the saturation of the air current is rendered well nigh complete at its increased temperature, which is practically 70 deg. F. It is clear that in its passage through the mines, the temperature of the air will be lowered and much of its moisture will be deposited in the workings.

Suffice it to say that this arrangement has proved eminently successful in every mine where it has been installed. The result has been that all parts of the workings have been kept in a moist condition. In Colorado, the relative humidity of the atmosphere, in the winter time, does not average above 15 per cent. At such times much water must be furnished to the air current, or it will dry out the mine in a short time.

Charles M. Schloss.

Denver, Colo.

ANOTHER LETTER

Information asked regarding data that will assist study of the problem—The Mt. Mulligan explosion—What it demonstrated—The Monongah explosion.

AS an old student of watering problems and designs intended to increase the safety of mines through the application of water, I have been much interested in reading the article by F. C. Cornet regarding the humidifying of mine workings by steam, *Coal Age*, Aug. 3, p. 169.

For the purpose of studying the matter more closely, I would like to ask, through *Coal Age*, if Mr. Cornet will not kindly furnish interested readers with the following data, calculated to throw much light on the actual results obtained in the application of the method of humidifying a mine in the manner described. The points on which information is asked are the following:

Information Desired

1. Are all the main haulage roads in the mine return airways? 2. Is any reversal of the air current contemplated in the mine? 3. What is the temperature of the exhaust steam, at the point where it issues from the pipe? 4. What is the water gage in the airway, at this point? 5. What are the readings of the wet- and dry-bulb thermometers, at the same point; also, at various distances from the fan, say at the first working face; again, at the farthest point inby in the mine; and then at the last working place, say 100 ft. or so from the shaft or slope bottom or the discharge portal of the mine; also, similar readings taken outside of the mine at the same time? 6. Is the mine naturally wet or dry?

The Mt. Mulligan Mine Explosion Queensland

Mr. Cornet may have noticed the report of a disastrous explosion that occurred at the Mt. Mulligan colliery in Queensland. The report of the explosion gave the outside temperature as between 80 and 90 deg. F., and the temperature in the mine about 85 deg., compelling the miners to work in light attire and minus their shirts.

The Mt. Mulligan mine was a dry one. The roof and floor of the seam were of a fireclay nature that disintegrated on the application of water. The packwalls in the mine being built of this material, it was necessary to keep the ventilating current as dry as possible; and, owing to the high temperature of the mine, the mine air must be as dry as possible, in order to enable the men to work with more comfort.

Under these conditions, humidity readings, in the mine, varied from 84 to 88 for the dry-bulb and from 73 to 79 deg. for the wet-bulb thermometer. These readings showed that the air contained from 6.7 to 9.0 grains of water, per cubic foot of air. While it would have been possible to have saturated the 88-deg. temperature with 14 grains of water, per cubic foot, the miners would not then have been able to work in such an atmosphere.

What the Explosion Proved

The Mt. Mulligan explosion demonstrated that, in a mine totally devoid of firedamp and where the road dust consisted of about 33 per cent of noninflammable dust, and the moisture content was probably in excess of that in Mr. Cornet's proposition, the conditions did not prevent the flame of the explosion from spreading throughout the mine and killing every person therein to the number of 75 men.

There was, however, evidence of some retarding influence present, as the explosion did not extend throughout the mine at what we might call the usual speed. For example, the force of the explosion was not demonstrated at the

same time at both mine openings. There was a difference of about one or two seconds between the issuing of the blast from the fan tunnel and that from the haulage tunnel.

THE MONONGAH MINE EXPLOSION, WEST VIRGINIA

Mr. Cottrell made reference, incidentally, to the Monongah mine explosion, which occurred several years ago (Dec. 6, 1907, 361 lives) though it is not clear what this reference proves.

I have always regarded that explosion as due to shotfiring in the easterly mine, this being largely proved by the time of the manifestation of the force of the explosion on the surface. It was generally concluded, however, that the explosion was the result of a runaway trip of cars in the westerly mine and the smashing of an electric lamp, which ignited the coal dust cloud that followed the wreck.

From all published accounts of the Monongah explosion, I have always been impressed with the idea that it could not have originated in the westerly mine as was the conclusion of those who investigated the disaster. However, I fail to see how this affair bears on the question of humidification of mine air.

Allow me to state, in closing, that damping the ventilating current of a mine can only exert one effect. It may, to some extent, cause the coal dust to fall to the ground or settle on the sides and timbers in roads and travelingways. It is my belief that such accumulations of dust will be more dangerous than if water, in any form, had never been applied. There may be something more to be said when the information asked is available. JAMES ASHWORTH.

Consulting Mining Engineer.

Livingstone, Alta., Canada.

Shooting Machine Mined Coal

Dependent shots unsafe—Law restricting blasts in Colorado mines—Firing a round of shots in machine mining—Snubbing holes in thick coal.

REFERRING to the interesting letter of Oscar H. Jones, *Coal Age*, June 15, p. 1005, permit me to say that, in writing on the subject of "Following or Dependent Shots," he has drawn attention to one of the most dangerous practices in the mining of coal. I agree with him that all such shots are shots on the solid.

That dependent shots are unsafe is emphatically true, and no argument is needed to convince a practical miner of this point. In my opinion, our mining laws should be more explicit in defining allowable practices in the shooting of coal and severe penalties should be imposed on violators of the acts.

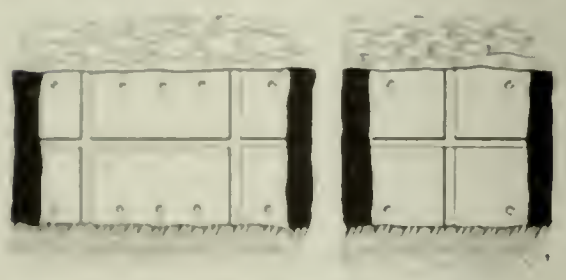
Among other things mentioned in the Colorado Coal Mining Law, in relation to blasting, dependent shots and shots that are overcharged are prohibited (Sec. 151). Even with these restrictions, the question is often disputed as to a shot being dependent as prepared by a miner.

It is a common thing for a miner to quarrel with the shotlighter on this point. Where the coal has been mined by machine the miner will often have arranged a round of shots that he wants fired at one time, claiming that they are not dependent one on the other. Controversy of this kind will continue as long as the law is not more specific.

With the ordinary type of coal-cutting machine that undermines the coal at the floor, particularly in the working of a hard coal, a complete round of shots, at or near the roof, necessarily presents a condition of dependent shots when fired by fuse.

In this connection, allow me to offer a sketch showing the plan I would suggest as to how the coal should be cut and the shots located and which I believe will prove safe practice. On the left of the figure is shown the face of the coal in a wide, double-track room, in a seam of coal varying from 8 to 10 ft. in thickness.

On the right of the figure, is shown a similar cutting of the coal and locating



MINING AND SHOOTING THE COAL

of shots when driving a narrow heading, in a thick seam. In each case the shots at the floor are fired first to mine the lower bench of coal, the shots at the roof being fired later. Likewise the rib shots, in the wide opening at the left, follow the firing of the center shots.

DANGER IN FIRING SEVERAL SHOTS IN QUICK SUCCESSION

The shooting of several holes at one time, in a working place, is always dangerous when the holes are fired by fuse or squib. In the use of that method one shot follows another in quick succession and, often, not in the order desired. In any case, succeeding shots discharge their flame into a disturbed atmosphere laden with dust and inflammable gases.

It is not anything strange that this often results in a local explosion of the gas and dust produced by the first shots, or at least a very windy shot. The miner is particularly fortunate if the disturbance is not propagated throughout the mine, which will depend alone on the conditions.

In order to avoid this danger, not only is it advisable to eliminate the use of black powder and examine the place for gas before shooting; but all shots should be fired with an electric battery, which will insure their simultaneous explosion, as a single shot.

Incidentally, firing shots by battery will no doubt tend to slow down the high-speed habit of many shotlighters, some of whom make a marathon runner look like an ice wagon, in their hurry to seek a place of safety after lighting a round of shots.

In a few words, let me say that the firing of shots in rapid succession, whether they are dependent or otherwise, has undoubtedly been the cause of a number of explosions in our mines. More time given to the firing of shots may slightly increase the cost of production; but this will fall far short of the cost of putting a mine again in shape following an explosion.

Allow me to remark, in closing, that where solid shooting is permitted in a mine the issue can only be met by the employment of highly skilled, conscientious and practical miners as shotlighters, and clothing them with authority to condemn and refuse to fire any shots that, in their opinion, are unsafe.

THOMAS ALLEN.

Mt. Harris, Colo.

Why Change the Colorado Law?

Colorado law requires the certification of mine foremen and other mine officials—The law makes any interference with the mine foreman a misdemeanor punishable by fine or imprisonment or both.

KINDLY permit me to offer a few comments, in reply to the letter of "Colorado Miner," *Coal Age*, July 6, p. 19, who thinks that the Colorado law should be changed so as to require all men in charge of operations underground to be certified.

In that letter, the writer repeats the argument so often made that the mine foreman is frequently overruled by the superintendent, who is his superior in office. He claims that for a mine foreman to dispute the authority of a superintendent will cost him his job. While that may be true in some few instances, I cannot think that it applies, in general, to foremen in Colorado where the law is very specific in this regard and makes the mine foreman supreme in the mine.

The letter strongly implies that the writer believes the mine superintendent, also, should be required to hold a certificate, the same as the mine foreman. In that case, we would have to include any mine owner, lessee, manager, operator or agent, all of which are placed in the same category, by Section 1 of the Colorado law.

PURPOSE OF CERTIFICATION

Now, without prolonging the argument, I want to ask: What is the purpose of the certification of mine officials and who is responsible for this requirement of the law? Evidently, the purpose is to secure the safety of all mine workers; and public opinion is responsible for this feature being incorporated in our laws.

As I read the Colorado statute, any person in charge of underground operations is obliged to hold a certificate, showing his competency to fill that position, as determined by examination and in the best judgment of the state board of examiners.

Allow me to quote briefly from two sections of the Colorado law. bearing on

the authority of the mine foreman in matters pertaining to the mine as regards its safe operation. Section 44 of the law reads, in part, as follows:

"The mine foreman shall have full charge of all inside workings and of all persons employed therein, in order that all the provisions of this act, so far as they relate to his duties, shall be complied with and the regulations described for each class of workman under his charge carried out in the strictest manner possible. Any superintendent or other person who interferes with the mine foreman in the discharge of his duties as described by this act shall be deemed guilty of a misdemeanor."

Again, in reference to penalties prescribed by the law, Section 172 reads as follows:

Colorado Provides Penalties for Violations of the Act

"Any violation of any provision of this act shall be deemed a misdemeanor and shall be punished by a fine of not more than one thousand dollars or by imprisonment of not more than one year in the county jail, or by both such fine and imprisonment."

How any law could be more specific in prescribing the authority of mine officials in charge of underground operations is hard to understand. Neither is it clear, to my mind how the certification of the mine superintendent would improve the situation in any respect whatsoever.

Take, for example, any of the large coal companies in this state, say the Colorado Fuel & Iron Co. Let us assume they have twenty-five mines in charge of twenty-five mine foremen. In addition, let us say, there will be fifty assistant foremen, fifty firebosses, and fifty shotfirers.

Here are 175 certified men in charge of underground operations in these twenty-five mines. Allow me to ask, if the certification of the twenty-five superintendents of these mines would make the operation of those mines any safer? In discussing these questions, let us use some common sense and view the matter from a practical standpoint.

In closing, I want to say that if a mine foreman is over-ruled by his superintendent, in matters pertaining to the safe operation of the mine, there is something wrong. If, in the judgment of the superintendent, the foreman is incompetent a more capable man should be secured at once and the sooner the better. Robert A. Marshall.

Walsenburg, Colo.

Peace and Harmony

Timely suggestions applying to the present situation in coal mining—The get-together spirit—Meetings of mine officials and men promote goodwill and harmony.

JUST now, nothing is of more interest and importance than suggestions looking to the promotion of peace and harmony, in the general rank and file of the coal-mining industry. Ever since reading the suggestion made by more than one writer, sometime since in *Coal Age*, I have been deeply impressed with the thought then expressed that great good would result if employers and employees would meet together at regular short intervals.

Weekly Meetings a Benefit

In my opinion, such weekly or biweekly meetings, at some convenient place, would be the means of avoiding much of the trouble that now arises between miners and mine officials. Questions relating to the health and safety of mine workers, the most improved methods of mining the coal, timbering of airways, ventilating the working places, and other matters of interest could be profitably discussed at these gatherings.

To my mind, it would be an excellent plan to hold one of these meetings the night before the regular meeting night of the miners' local organization. By so doing, it would give an opportunity to anticipate and discuss any grievances that might be arranged to come before the miners' meeting the following night.

My idea is that all mine officials, from the superintendent down, should be present at the meeting and, by showing a real concern for all that pertains to the welfare of the employees, establish an ever-growing confidence of the men in the good faith of their employers.

With much pleasure, I read the excellent letter of G. W. Breeden, *Coal Age*, Aug. 24, p. 290, entitled "Gaining the Confidence of Men," and I want to endorse what he has said in regard to the effect of kind treatment and a reasonable familiarity of mine officials with their men.

It is not too much to say that many suggestions would often be forthcoming from the men that would enable a reduction in the cost of producing coal and these would relate to every branch of mining, hauling, pumping, drainage, tracklaying and other work with which the men are most familiar.

There are mines where such meetings have been conducted with great success and profit to all concerned. At times, reading rooms and classes of instruction have been organized and it would be a pleasure to know that such a system is, or shortly will be established in every locality. Not the least result is a general reduction of accidents in all classes of work in the mine.

Nanty Glo, Pa. M. J. Facemeyer.

Inquiries Of General Interest

Estimating Equipment for Engine-Plane Haulage

Allowance Made for Unavoidable Delays and Changing Trips—Number of Hoists per Day—Speed of Hoisting—Size of Rope and Drum—Horsepower of Engine and Boiler

AS a subscriber of *Coal Age*, I take the liberty of asking its assistance in working out the solution of a proposition with which we are concerned. It relates to the necessary equipment for an engine-plane haulage that will give satisfactory results in its operation.

We desire to hoist prepared coal up a plane 400 ft. in length and having an inclination of 30 deg. It is required to hoist 200 tons of coal, per day of 8-hrs., in cars having a capacity of 2 tons each. Allowance should be made for changing trips, say one minute at the top and one minute at the bottom of the plane. The proper solution of this problem will be greatly appreciated.

Joliet, Pa. Edgar I. Artz.

The first step, in the solution of this problem, is to estimate the time occupied in actual hoisting of the loaded trips up the plane. In an 8-hr. day, there are $8 \times 60 = 480$ min., from which we will deduct, say 40 min. for unavoidable delays during the day. Hauling 200 tons, in 2-ton cars, will require 100 hoists per day. Then, allowing one minute lost in changing ropes at the top of the plane and the same at the bottom of the incline, makes a total of 200 minutes lost between trips. The time remaining and consumed in actual hoisting the loads and lowering the empty cars is, therefore, $480 - (40 + 200) = 240$ min.

Now, hoisting at a rate of, say 5-ft. per sec. gives $400 \div 5 = 80$ sec. for hoisting a single loaded car. For convenience in calculation, we will assume the time for hoisting a loaded car is 84 sec. and the time for lowering an empty car 60 sec., making a total of $84 + 60 = 144$ sec., for a single round trip. The total time consumed in making 100 round trips is, therefore $(100 \times 144) \div 60 = 240$ min., which agrees with our previous allowance.

The next step is to estimate the load on the rope when hoisting a loaded 2-ton car, adding 40 per cent of the load for the weight of the car, which makes the actual load hoisted $2 \times 1.40 = 2.8$ tons, exclusive of the weight of the rope itself, lying on the plane when the car is at the foot of the incline.

Hauling on a steep 30-deg. pitch, the load on the rope is the sum of the gravity pull and the friction pull. The weight of the loaded car is $2.8 \times 2,000 = 5,600$ lb. The gravity pull is $5,600 \times \sin 30° = 5,600 \times 0.5 = 2,800$ lb.

Again, taking the track resistance as 20 lb. per ton of normal pressure on the plane, the friction pull is 1.706 of the weight hoisted multiplied by the sine (0.866) of the angle of inclination, or 0.01 × 1,000 × 0.866 = say 10 lb., which makes the total pull on the rope 2,850 lb., or 1.425 tons.

Since the breaking strain of a 1-in. 7-wire, 6-strand, cast-steel, haulage rope is 31 tons, and using a factor of safety of five, the diameter of rope required, in this case, is 4 × 1.425 × 1.425 = 8.17, say 9 in. But, making due allowance for wear and tear, it will be advisable to use a 10-in. rope weighing 400 × 0.89 = 356 lb., which will add about 200 lb., including friction, to the load on the engine. This gives a total load of 3,050 lb. to be hoisted at a speed of, say 3 × 60 = 180 ft. per min.

In mine-haulage practice it is customary, in order to avoid an undue bending strain in the rope winding on the drum, to make the diameter of the drum not less than sixty times the diameter of the rope. In this case, therefore, the minimum allowable diameter of drum when using a ⅞-in., 7-wire, haulage rope, is 60 × ⅞ = 45 in. We would therefore suggest using a 4-ft. drum.

Finally, assuming an efficiency of the hoisting engine as 80 per cent, the indicated horsepower required for this hoist is

$$H = \frac{3{,}050 \times 300}{0.80 \times 33{,}000} = \text{say } 35 \text{ hp.}$$

It would be interesting, if space permitted, to go on and estimate the size and kind of boiler required. Suffice it to say that, in boiler practice, it is customary to estimate on an evaporation of 35 lb. of water, from and at 212 deg. F., per hp., per hour. Knowing the feed-water temperature and the gage pressure in the boiler, it is possible to calculate the corresponding heat value of this evaporation and, allowing 2,545 B.t.u. per hp., estimate the boiler horsepower required.

Approximately, it is customary to allow 8 sq.ft. of heating surface, for plain cylindrical boilers; 10 sq.ft. of heating surface, for horizontal flue boilers; and 16 sq. ft. of heating surface, for horizontal tubular boilers, per horsepower.

Examination Questions Answered

Illinois Mine Managers' Examination Springfield, July 17, 18, 1922

(Selected Questions)

QUESTION—(a) *What is the law in reference to persons seeking certificates of competency as mine managers?* (b) *By whom and how often should a passageway to the escapement shaft be examined?*

ANSWER—(a) Section 2 of the Illinois Coal Mining Laws specifies that each applicant for a certificate of competency as mine manager shall produce evidence that he is a citizen of the United States, at least 24 years of age, and has at least 4 years practical mining experience, a man of good repute and temperate habits. He must also pass the examination required by the board covering his experience in mines and handling of men and knowledge of mine machinery and appliances, surveying and other instruments used in mining, properties of mine gases, principles of ventilation, first-aid treatment of injured, mine-rescue methods and appliances, and the duties and responsibilities of mine managers.

(b) Section 30 (a, 10), requires the mine manager or his assistant to examine, at least once a week, the roadways leading to the escapement shaft, or other openings for the safe exit of men to the surface, and make a record of any obstructions or unsafe conditions existing therein and cause the same to be promptly removed.

QUESTION—(a) *What are the provisions of the mining law in reference to air currents and splits.* (b) *Trolley or other exposed electrical wires.* (c) *Runaround at shaft bottom?*

ANSWER—(a) Section 14 (b) requires the main air current to be so split or divided as to give a separate current of reasonably pure air to every 100 men at work, and authorizes the inspector to give a written order for separate air splits for a smaller number of men.

(b) Section 17 (b) requires all trolley and positive feed wires, crossing places where persons or animals are required to travel, to be safely guarded or protected, in a manner to prevent contact of persons or animals.

(c) Section 10 (i) requires the construction of a safe passageway, free from all obstruction and dry as possible, around the bottom of a shaft where men enter or leave the cage, or must pass from one side of the cage to the other. This passageway must be 3 ft. wide; and the law forbids animals or cars to be taken through it when men are using the passage.

QUESTION—*A return airway is 10 ft. wide and 5 ft. high, the velocity being 600 ft. per min. The air is controlled by volume as follows: Nitrogen 79 per cent; oxygen 20.96 per cent; carbon dioxide 0.04 per cent. What number of cubic feet of each gas is passing per minute?*

ANSWER—The sectional area of the airway is 5 × 10 = 50 sq.ft., and the volume of air passing, 600 × 50 = 30,000 cu.ft. per min. The volume of each of the constituent gases is, therefore: Nitrogen, 0.79 × 30,000 = 23,700 cu.ft. per min.; oxygen, 0.2096 × 30,000 = 6,288 cu.ft. per min.; carbon dioxide, 0.0004 × 30,000 = 12 cu.ft per min.

QUESTION—*A pillar of coal 450 ft. long and 132 ft. wide has been worked. The total weight of the coal is found to be 12,430 tons and its specific gravity is 1.25; what was the thickness of the seam?*

ANSWER—The area covered by this pillar is 450 × 132 = 59,400 sq.ft. The specific gravity of the coal being 1.25, its weight can be estimated as 1.25 × 62.5 = 78.125 lb. per cu.ft. The gross weight of coal mined being 12,430 × 2,000 = 24,860,000 lb., the cubic contents of the pillar worked out is 24,860,000 ÷ 78.125 = 318,208 cu.ft. Finally, the height of the seam is therefore 318,208 ÷ 59,400 = 5.35 ft.

QUESTION—*Find the length of a dumb drift, which is driven from a level 240 ft. from the shaft and enters the shaft at a point 100 ft. above the level.*

ANSWER—The dumb drift is the hypotenuse of a right triangle whose sides are 240 and 100 ft. respectively. Therefore, the length of the dumb drift is $\sqrt{100^2 + 240^2} = 260$ ft.

QUESTION—*What is the real object of artificial respiration?*

ANSWER—The object of performing artificial respiration on an unconscious person who has ceased to breathe is to re-establish breathing, by mechanically reproducing the action of the lungs, by alternate compression and extension of those muscles that control the breathing. Through this process, long continued, atmospheric air is drawn into the lungs, gradually inflating its vesicles and restoring life.

QUESTION—*What is meant by the terms* (a) *ventilating pressure,* (b) *water gage,* (c) *mine resistance?*

ANSWER—(a) The term "ventilating pressure" describes the pressure required to circulate the air in an airway or mine. The unit of ventilating pressure is this pressure expressed in pounds per square foot. The total ventilating pressure producing circulation is the total pressure exerted on the sectional area of the fan drift.

(b) The term "water gage" describes an instrument used to measure the unit of ventilating pressure, by showing the difference in height between the absolute pressure on the intake and that on the return airway by the height of water supported at the point where the gage reading is taken.

(c) The term "mine resistance" describes the work, in foot-pounds, absorbed in the circulation of air in a mine or airway. It is the total ventilating pressure multiplied by the velocity of the air current.

Number and Annual Output of Soft-Coal Mines Classified by Size of Mine, 1919 and 1920*

NUMBER OF MINES AND PRODUCTION DURING 1919

State	Class 1 Producing Over 200,000 Tons: No.	Per Cent Of Total Mines	Per Cent Of State Output	Class 2 Producing 100,000-200,000 Tons: No.	Per Cent Of Total Mines	Per Cent Of State Output	Class 3 Producing 50,000-100,000 Tons: No.	Per Cent Of Total Mines	Per Cent Of State Output	Class 4 Producing 10,000-50,000 Tons: No.	Per Cent Of Total Mines	Per Cent Of State Output	Class 5 Producing Less Than 10,000 Tons: No.	Per Cent Of Total Mines	Per Cent Of State Output	Total, All Classes: No. Of Mines	State Output
Alabama	15	5.0	30.2	30	10.0	27.1	43	14 4	18.8	129	43.3	21.9	81	27 3	2 0	298	15,536,721
Arkansas	...	....	....	2	1.8	16.9	4	3.6	17.2	34	30.6	51.0	71	64 0	14 9	111	1 429,020
California, Idaho and Alaska	...	....	....	...	...	...	...	...	...	1	7.0	60 0	13	93 0	40 0	14	67,228
Colorado	8	3.7	21.4	31	14 2	44.8	23	10 5	16 0	57	26 0	15 4	100	45 6	2 4	219	10,323,420
Georgia	...	....	....	...	....	....	1	100 0	100.0	...	...	...	...	...	...	1	53,337
Illinois	115	16.5	67.0	77	11.0	18.4	75	10.7	9.3	101	14.5	4 2	330	47 3	1 1	698	60,862,606
Indiana	23	5.0	34.0	52	11.4	34.9	54	11 7	18.3	85	18.6	10.5	244	53 3	2 3	458	20,912,288
Iowa	1	0.4	5.3	13	5.1	30.4	24	9.5	31.1	62	24.5	27.0	153	60 5	6 2	253	5,624,692
Kansas	...	....	....	8	3 7	19 6	31	14 2	43.9	48	22 1	29.1	130	60 0	7 4	217	5,224,724
Kentucky	15	1.0	15.6	69	4 5	30 7	116	7 6	27.7	253	16.5	21.6	1,079	70 4	4 4	1,532	30,036,061
Maryland	...	....	....	7	6 0	30.9	11	9 4	28 1	38	32 5	35 6	61	52 1	5 4	117	3,021,686
Michigan	...	....	....	3	17 6	42 2	5	29 4	39.3	5	29 4	17.8	4	23 6	0 7	17	996,545
Missouri	...	....	....	4	1.0	12 5	17	4.1	30 4	71	17 2	44 1	320	77.7	13 0	412	3,979,798
Montana	4	3.2	54.5	3	2 4	12 3	8	6.4	21 2	10	7 9	6 7	101	80 1	5 3	126	3,236,369
New Mexico	2	4.4	26.2	5	10.9	24 0	17	37.0	43.6	7	15 2	5 1	15	32 5	1 1	46	3,138,756
North Carolina	...	....	....	...	...	....	...	...	...	...	...	...	1	100 0	100 0	1	6,989
North Dakota	1	0.4	29.7	...	...	....	1	0 4	7 3	14	6 3	28.7	206	92 9	34 3	222	840,959
Ohio	33	2.0	26 2	83	5 0	33.3	86	5 2	17 5	254	15.2	17 2	1,213	72 6	5 8	1,669	35,876,682
Oklahoma	1	0.6	5.5	3	1.8	10 7	19	11 5	35.4	72	43.6	44 0	70	42 5	4 4	165	3,802,113
Oregon	...	....	....	...	...	...	...	...	...	1	25.0	76.1	3	75.0	23 9	4	18,739
Pennsylvania	229	6.8	46.9	224	6.6	21.6	319	9.4	14 8	827	24.5	13 6	1,778	52 7	3 1	3,377	150,759,154
South Dakota	...	....	....	...	...	...	...	...	...	...	...	...	17	100 0	100 0	17	14,417
Tennessee	3	1.8	12.5	9	5 4	24 5	21	12 7	30.0	68	41 2	28.3	64	38 9	4 7	165	5,213,205
Texas	...	....	....	2	3.9	16 9	9	17.6	30.4	30	58 9	50.7	10	19.6	2 0	51	1,680,656
Utah	11	20.8	76.6	6	11.3	18.3	1	1.9	1.7	4	7 5	2.6	31	58.5	0 8	53	4,631,323
Virginia	14	9.7	64.6	8	5.6	12.1	14	9.7	10.4	38	26 4	10 9	70	48 6	2 0	144	9,326,830
Washington	4	8.5	32.5	6	12.8	29.1	8	17.0	19.2	18	38 3	17 2	11	23.4	2.0	47	2,990,447
West Virginia	62	3.3	23.1	186	9.9	32.6	259	13 8	23 5	551	29.4	19 0	819	43.6	1 8	1,877	79,036,553
Wyoming	9	9.2	35.4	23	23.5	45.9	15	15 3	15 9	6	6.1	2.2	45	45.9	0 6	98	7,219,738
Grand total	550	4.4	37.5	854	7.0	26.0	1,181	9.5	18.1	2,784	22.4	15.3	7,040	56 7	3 1	12,409	465,860,058

NUMBER OF MINES AND PRODUCTION DURING 1920

State	Class 1 Producing Over 200,000 Tons: No.	Per Cent Of Total Mines	Per Cent Of State Output	Class 2 Producing 100,000-200,000 Tons: No.	Per Cent Of Total Mines	Per Cent Of State Output	Class 3 Producing 50,000-100,000 Tons: No.	Per Cent Of Total Mines	Per Cent Of State Output	Class 4 Producing 10,000-50,000 Tons: No.	Per Cent Of Total Mines	Per Cent Of State Output	Class 5 Producing Less Than 10,000 Tons: No.	Per Cent Of Total Mines	Per Cent Of State Output	Total, All Classes: No. Of Mines	State Output
Alabama	15	4.6	31.1	30	9.2	27.4	47	14.3	19.3	120	36.7	19.9	115	35 2	2 3	327	16,294,099
Arkansas	...	....	....	4	3.3	25.6	5	4.1	16.3	40	32.8	47.8	73	59.8	10 3	122	2,103,596
California, Idaho and Alaska	...	....	....	...	...	...	...	...	...	2	15.4	72.8	11	84 6	27 2	13	63,864
Colorado	15	7.4	35.7	31	15.4	33.6	28	13.9	16.7	52	25.7	12.5	76	37 6	1 5	202	12,278,225
Georgia	...	....	....	...	...	...	1	100.0	100.0	...	...	...	...	...	...	1	50,156
Illinois	166	25.4	77.8	87	13.4	13.9	53	8 1	4.7	90	13.7	3.0	258	39 4	0 6	654	88,724,893
Indiana	36	6.9	40.7	81	15.6	38.6	57	10.9	14.6	54	10.3	4.3	294	56.3	1 8	522	29,350,585
Iowa	4	1.8	15.9	23	10.5	41.2	25	11.4	22.2	56	25 6	17.2	111	50.7	3.5	219	7,813,916
Kansas	1	0.4	3.6	13	5.0	28.5	31	11.9	35.8	52	19.9	26.0	164	62 8	6 1	261	5,926,405
Kentucky	21	1.8	17.0	83	6.9	32 2	115	9.6	22.0	347	28.9	25.6	634	52 8	3 2	1,200	35,690,762
Maryland	...	....	....	9	4 7	29.0	27	14 1	43.1	36	18 7	23.6	120	62 5	4 3	192	4,065,239
Michigan	2	11.1	32.1	3	16.7	28.5	66	33.3	34.0	3	16.7	5 3	4	22 2	0 1	18	1,489,765
Missouri	2	0.6	7.6	10	2.9	23 9	21	6 1	25.8	69	20 1	33.7	242	70 3	9 0	344	5,369,565
Montana	7	6.6	65.9	5	4.7	13 3	6	5 7	10 5	13	12 3	7 7	75	70 7	2 6	106	4,413,866
New Mexico	3	7.0	30.0	16	37.2	52 5	5	11 6	11.1	9	20 9	5 6	10	23 3	0 8	43	1,683,440
North Carolina	...	....	....	...	....	....	...	...	...	1	100.0	100 0	...	...	...	1	11,340
North Dakota	1	0.6	25.8	...	....	....	2	1 2	12 9	15	9.6	34 6	138	88 6	26 7	156	948,625
Ohio	44	2.3	26.2	108	5 5	33.0	118	6 0	18 2	320	16 4	17 6	1,364	69 8	5 0	1,954	45,878,191
Oklahoma	...	....	....	8	4 9	17.9	40	24 9	43.3	56	34 8	35.2	57	35 4	3 6	161	4,849,288
Oregon	...	....	....	...	...	...	...	...	...	1	33.3	88 3	2	66 7	11 7	3	20,717
Pennsylvania	249	4.7	47.5	244	4.6	20.5	342	6.4	14.3	982	18.4	14.4	3,631	66 7	3 6	5,448	170,607,847
South Dakota	...	....	....	...	...	...	...	...	...	...	...	...	17	100 0	100 0	17	12,777
Tennessee	7	2.8	26.9	11	4.4	20 1	19	7 7	19 6	76	30 8	28 1	134	54 3	5 1	247	6,662,428
Texas	...	....	....	3	6.8	22.3	7	15 9	26 4	31	70 5	50 9	3	6 8	0 4	44	1,615,015
Utah	15	32.6	84.6	5	10.9	12.3	1	2 2	1.4	3	6 5	1 3	22	47 8	0 4	46	6,005,199
Virginia	14	6.1	54.1	16	6.9	18.9	21	9 1	13.3	50	21 6	10 9	130	56 3	2 8	231	11,378,606
Washington	5	10.2	39.8	8	16.3	35 0	6	12.2	10.8	20	40.9	13 1	10	20 4	1 3	49	3,757,093
West Virginia	74	3.5	23.3	213	10 1	31 7	289	13 8	23 6	651	31.0	19 7	875	41 6	1 7	2,102	89,970,707
Wyoming	20	24.1	62.4	20	24.1	29.6	7	8.3	5.3	11	13.4	52.4	25	30 1	0 3	83	9,630,271
Grand total	701	4.8	41.8	1,031	7 0	25 1	1,279	8 8	16 0	3,160	21.5	14 4	8,595	58 2	2 9	14,766	565,666,683

* Compiled by U. S Geological Survey.

80,761,604 Tons of Coal Mined in 1921 in West Virginia; Value, $375,541,458

Official figures covering the production of coal in West Virginia for the fiscal year ending June 30, 1921, given in the seventeenth annual report of the West Virginia Department of Mines, just issued, show that there was produced in the period mentioned 80,761,604 gross tons of coal as against 79,991,316 tons for the preceding fiscal year, the gain amounting to 770,288 tons or less than 1 per cent. In the same period coke production amounted to only 836,728 tons, as against 1,172,217 tons for 1920, a decrease of 335,489 tons or 28.62 per cent.

The Department of Mines estimates that the total value of all coal produced in the 1921 fiscal year was $375,541,458.60, that the value of coal used in operating was $5,074,400.85; that the value of coal sold local trade and tenants was $7,144,297.20; that the value of coal used in coke ovens was $5,845,352.25; that the value of coal shipped from the mines was $354,222,408.30 and that the value of coal mined by small country mines was $3,255,000. It is estimated that the value of coal sold was $364,611,705.50 and that the value of coke sold was $8,015,854.24. The increase in value as compared with the previous year is as follows: for coal, $113,733,853.50; for coke, $560,554.12.

The department estimates that the average price received by pick miners throughout the state for mining run-of-mine coal was 95c. per ton, as against 91c. in 1920. The average tonnage produced by each pick miner was 1,227, a decrease of 368 tons from the fiscal year 1920. The average annual wage of pick miners was $1,165.65, that being a decrease of $285.80 from that of 1920. The average selling price of coal shipped from the mines of the state was $4.65 per gross ton, run-of-mine coal, which was an increase of $1.25 per ton over the price received in the preceding year. Coke was sold f.o.b. at the ovens during the year at an average price of $9.58 per net ton, which is an increase over the previous year of $3.22 per ton.

In the fiscal year ended June 30, 1921, there were 116,720 people employed in connection with the production of coal and coke. Of that number 17,140 were employed as pick miners, 39,522 as machine miners, 6,052 as machine miners and helpers, 32,778 as inside laborers, 20,184 as outside laborers and 1,050 as coke workers.

Local Explosion in England Takes Toll of Thirty-Nine Lives

A local gas explosion at the Haig Pit of the Whitehaven Colliery Co., Whitehaven, Cumberland, England, near the entrance to the Solway Firth at about 8:45 a.m. on Tuesday, Sept. 9, caused the death of 39 men. This pit was sunk almost nine years ago, the shaft reaching the Six-quarter coal, a 5-ft. bed, at about 1,000 ft. Workings in this bed extended under the sea, and the point where the explosion was initiated was about ½ mile out from the shore line. The explosion affected only one split of ventilation district and the balance of the 112 men employed in the mine at the time of the explosion had not worked on the split affected escaped without injury.

One phase of this disaster worthy of notice was the promptness with which rescue operations were started. The general manager was within the mine directing the work of rescue within 25 minutes after evidence of the explosion (a puff of air) was noticed on the surface. He was preceded by an assistant official who was overcome by gas and had to be rescued. The manager was later gassed and had to be carried out. Both these officials, however, recovered without sustaining permanent injury.

So rapidly did rescue work progress that some of the victims of the explosion were still breathing when reached, according to reports so far received. None of these survived or even regained consciousness. Of the 39 men killed about half met death through the violence of the explosion and the remainder succumbed to the irrespirable gases. Most of these died quickly, but some few crawled for short distances.



PARTY OF RESCUERS DESCENDING HAIG PIT AFTER EXPLOSION

This photograph was taken on Sept. 9 or about 12 hours after a local explosion of gas had resulted in the loss of 39 men. The bodies of about two-thirds of the victims were recovered within a day. Neighboring mines proffered all possible assistance and all the apparatus needed, but the victims of this disaster all met their death quickly and not a single man working on the split affected escaped.

Midwest Coal Trade Associations Dissolve

The coal trade associations of Illinois operators have dissolved and in their stead commercial statistical services have been set up to collect, digest and disseminate data on production, distribution, cost and realization but omitting the troublous item of prices. By this means the various coal trade bureaus clear themselves of any suggestion of illegality such as had been raised more or less vaguely against them. In the 5th and 6th Districts of Illinois, the association centering in St. Louis formally dissolved Sept. 1, though F. J. Greenlee, former secretary, is retained by the operators to compile statistics, covering employees' hours and earnings, mine tonnage and other operating data, but with no reference to sales records. The Central Illinois Coal Bureau, at Springfield, disbanded a few days later, the members subscribing to Scott's Statistical Coal Service, conducted by O. G. Scott, former secretary. The Indiana associations have made no definite changes. The labor-handling associations of operators in both states are unaffected by these developments.

British Empire Steel Corporation and Coal Miners to Sign Agreement Soon

The new wage agreement between the British Empire Steel Corporation and the miners of District 26, U. M. W. of A., will not be signed for a week or ten days, according to a statement issued Sept. 18 by J. B. McLachlan, secretary-treasurer, when, after a week's negotiation, he signed the Inverness miners to the new contract, the same as that entered into with the British Empire Steel Corporation.

The new contract is practically the McKinnon award, which is considerably less than that paid under the Montreal agreement, under which contract the miners of Inverness have been working for the past month, but is somewhat higher than the rate of wages awarded the Inverness miners by the Osborne conciliation board. Under the conciliation board award the minimum day rate was $3.10, while under the new contract it is $3.25.

There is considerable work to be done in the matter of straightening out local contracts as well as getting the new rates that the men employed in the machine shops will work under. When this is done, Mr. McLachlan stated, the agreement will be signed.

Underground employees of the Western Fuel Corporation, Ltd., Nanaimo, B.C., are preparing the basis for a new agreement with their employers which, it is intended, shall subsist for three years on and from Oct. 1. Their desires have been placed in the form of a report which will be submitted to representatives of the management. The report is interesting not alone because of the several demands made but as illustrating the amicable relations that exist between the men and the company.

Provision is made for the permanent establishment of an agreement committee which, it is proposed, shall hold monthly meetings with a similar body delegated by the management. Before this joint agreement committee will come for settlement everything of a contentious nature.

At a mass meeting of the employees of the corporation held Sept. 16 it was agreed to accept the increase in bonus to the underground workers from the old rate of 88c. to $1. It was decided to reorganize a miners' union, the district having been without a union during the last two years. A committee was appointed with that object in view. A resolution was passed and a copy of it has been forwarded to the Minister of Mines, requesting that the Coal Mining Act be amended and made to exclude Oriental labor in and around the coal mines of the province. A large proportion of the employees of some of the companies working mines on Vancouver Island are Orientals. Another resolution was passed and a copy of it forwarded to John Oliver, Premier of the province, requesting that a system of state insurance be inaugurated.

Plan $50,000,000 Merger of Coal Retailers

Consolidation of retail coal companies in various cities into a national organization with a capital of about $50,000,000 is under way, according to a report current in financial circles. The nucleus of the organization will be the Burns Brothers Coal Co. which recently took over the William Farrell Coal Co. in New York City.

Negotiations already are under way, it is said, to take over the business of the Consumers' company of Chicago, the largest retail distributor of coal in that city. Other properties which are to be included in the consolidated company, according to the reports, include the Polar Wave Company, of St. Louis; the Metropolitan Coal Co., of Boston, and the Newton Coal Co., of Philadelphia.

The Burns Brothers company, according to an officer of the company, has approximately 3,000,000 tons of unfilled orders on hand.

Bill Creating U. S. Coal Commission Becomes a Law; Compromise Measure Provides for Seven Members

Appearing as a compromise from the conference committee of the two houses of Congress, after pressure had been exerted from high administrative quarters to break an apparent deadlock among the conferees, the bill to create the United States Coal Commission, which is to investigate the industry broadly, was enacted into law speedily on Friday, Sept. 22. The conference report was adopted by both houses on the same day and with very little debate.

In its final form the legislation provides for a commission of seven members, instead of the five proposed by the Senate bill and not more than nine provided by the House bill. Restrictions as to the personnel of the commission were removed in conference excepting that no member of the House or Senate may serve. An appropriation of $200,000 is provided, this sum being half way between the $300,000 of the House bill and $100,000 of the Senate bill.

The point which nearly wrecked the conference, that of inclusion in the Senate bill of instructions to the commission to report on "the advisability or wisdom of nationalizing the coal industry" and "the feasibility or necessity of governmental regulation and control of the coal industry," was compromised by rewriting these two subsections into one, reading "the advisability of any legislation having to do with government or private ownership, regulation or control in the coal industry."

This rewriting of the two subsections into milder form represents a considerable concession on the part of Senator Borah, author of the Senate bill, which was compensated to a large degree, however, by acceptance by the House conferees of the terms of the Senate bill instructing an inquiry and report on various forms of standardization, of wages, production, etc.

The act provides that the first report of the commission shall be presented to the President and to Congress not later than Jan. 15. It provides for a separate investigation of the anthracite industry, with a separate report on this field to be submitted on or before July 1. The life of the act is limited to one year. The salary of the commissioners is fixed at $7,500 annually and no employee of the commission is to be paid a salary in excess of this sum.

There was no record vote in either House on the adoption of the conference report. A motion to recommit to the House managers, with instructions to provide specifically for inclusion on the commission of representatives of the miners and of operators, which was made by Representative London, socialist, was defeated, 106 to 156.

Text of Fact-Finding Commission Bill

To establish a commission to be known as the United States Coal Commission, for the purpose of securing information in connection with questions relative to interstate commerce in coal, and for other purposes.

That for the purpose of securing information in connection with questions relative to interstate commerce in coal and all questions and problems arising out of and connected with the coal industry, there is hereby established a governmental agency to be known and designated as the United States Coal Commission, to be composed of not more than seven members appointed by the President of the United States by and with the advice and consent of the Senate. No member of the United States Senate or of the House of Representatives shall be eligible to serve on said commission. Said commission shall elect a chairman by majority vote of its members, shall maintain central offices in the District of Columbia, but may, whenever it deems it necessary, meet at such other places as it may determine. A member of the commission may be removed by the President for neglect of duty or malfeasance in office but for no other cause. Each member of said commission shall receive a salary of $7,500 a year. Any vacancy on the commission shall be filled in the same manner as the original appointment. Said commission shall cease to exist one year after the taking effect of this act.

The term "person" as used in this act means any individual, partnership, corporation, or association; the term "coal" means anthracite, bituminous, and other coal, lignite, coke, and culm, whether in place extracted, or banked.

It shall be the duty of said commission to investigate and ascertain fully the facts and conditions and study the problems and questions relative to the coal industry, with a view to and for the purpose of aiding, assisting, and advising Congress in matters of legislation which will insure a supply of this commodity to the industries and the people generally throughout the country and maintain the uninterrupted flow of commerce among the states, or any legislation which Congress may after said investigation deem wise and which under the Constitution Congress has the power to enact.

To this end said commission shall ascertain and report to the President and Congress: As to the ownership and titles of the mines; prices of coal; the organizations and persons connected with the coal industry; cost of production; profits realized by the operators or owners of said mines during the last 10 years; profits of other persons or corporations having to do with production, distribution, or sale of coal; labor costs; wages paid; wage contracts; irregular production; waste of coal; and suggestions as to the remedy for the same; the conditions generally under which coal is produced; distribution; the causes which from time to time induce strikes, thereby depriving interstate carriers of their fuel supply and otherwise interrupting the flow of interstate commerce; and all facts, circumstances, or conditions which would be deemed helpful in determining and establishing a wise and efficient policy by the government relative to said industry.

Said commission shall, under the provisions of this act, make a separate investigation and report for the anthracite industry, which investigation and report shall cover all of the matters specified in the last preceding paragraph, and shall cover also every other phase of the anthracite industry, including the production, transportation and distribution of anthracite, and the organized or other relationships, if any, among the mine operators or the mine workers, or among any persons engaged in the production, transportation, or distribution of coal.

Said commission shall also submit recommendations relative to:

(a) Standardizing the mines upon the basis of their economic productive capacity and regarding the closing down of mines which, by reason of their natural limitations, or other conditions, fall below the standard.

(b) Ascertaining and standardizing the cost of living for mine workers and the living conditions which must be supplied or afforded in order to surround the workmen with reasonable comforts, and standardizing also as far as practicable the amount of work a man shall perform for a reasonable wage, recognizing the value and effect of such surroundings in respect to their efficiency.

(c) Standardizing a basis of arriving at the overhead cost of producing and distributing the coal, including delivery at the door of the consumer, recognizing in this compilation that the standardized cost of living to the miners should be the first and irreducible item of expense.

(d) The advisability of any legislation having to do with government or private ownership, regulation, or control in the coal industry.

Said commission shall render its first report and recommendations to the Congress and to the President not later than Jan. 15, 1923. Said commission shall render its separate report on the anthracite industry on or before July 1, 1923, and shall endeavor, in said separate report and in the recommendations contained therein regarding wages in the anthra-

That any officer or employee of the commission who shall make public any information obtained by the commission without its authority, unless directed by a court, shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be punished by a fine not exceeding $5,000 or by imprisonment not exceeding one year or by both such fine and imprisonment in the discretion of the court.

That any member of said commission shall have power to administer oaths, to subpœna and examine witnesses, and to compel the production of any book, paper, document, or other evidence from any place in the United States at any designated place of hearing, and to take or authorize the taking of the deposition of any person before any person having power to administer oaths. In the case of a deposition the testimony shall be reduced to writing by the person taking the deposition or under his direction and be subscribed to by the deponent. The same fees and mileage as are paid in the courts of the United States shall be paid in the case of witnesses subpœnaed or depositions taken under this act.

No person shall be excused from so attending and testifying and deposing, or from so producing any book, paper, document, or other evidence on the ground that the testimony or evidence, documentary or otherwise, may tend to incriminate him or subject him to a penalty or forfeiture; but no natural person shall be prosecuted or subjected to any penalty or forfeiture for or on account of any transaction, matter, or thing as to which, in obedience to a subpœna and under oath, he may be compelled to testify or produce in evidence; except that no person shall be exempt from prosecution and punishment for perjury committed in so testifying.

Any member of the commission, officer or employee thereof, duly authorized in writing by the commission, shall, at all reasonable times for the purpose of examination, have access to and the right to copy any book, account, record, paper, or correspondence relating to any matter which the commission is authorized by this act to investigate.

That every officer or employee of the United States whenever requested by the commission shall supply it with any data or information pertaining to any investigation by the commission which may be contained in the records of the office of such officer or employee.

That any person who shall willfully neglect or refuse to attend and testify or depose, or to produce or permit access to any book, account, record, document, correspondence, or paper, as herein provided for, shall be guilty of an offense and upon conviction thereof be punished by a fine of not more than $5,000 or by imprisonment for not more than one year, or by both such fine and imprisonment.

That the commission may appoint and remove such officers, employees, and agents; and make such expenditures for rent, printing, telegrams, telephone, law books, books of reference, periodicals, furniture, stationery, office equipment, and other supplies and expenses, including salaries, traveling expenses of its members, secretary, officers, employees, and agents, and witness fees as are necessary for the efficient execution of the functions vested in the commission by this act and as may be provided for by Congress from time to time, and make such rules and regulations as may be necessary for the efficient administration of this act. All of the expenditures of the commission shall be allowed and paid upon the presentation of itemized vouchers therefor approved by the chairman of the commission. No salary or compensation of any employee shall exceed $7,500 per year.

That there is hereby authorized to be appropriated, out of any money in the Treasury not otherwise appropriated, the sum of $200,000, or so much thereof as may be necessary, to be available until expended, for carrying out the provisions of this act.

Preliminary Statistics of Production of Coal in 1921

(Exclusive of product of wagon mines)

ALABAMA

County	Shipped or Taken by Railroad at Mines (Net Tons)	Sold to Local Trade and Used by Employees (Net Tons)	Used at Mines for Steam and Heat (Net Tons)	Made into Coke at Mines (Net Tons)	Total Quantity (Net Tons)	Total Value	Average Value per Ton	Number of Employees — Underground: Miners, Loaders, etc., (a)	Underground: All Others	Surface	Total	Average Number of Days Worked
[illegible]	616,709	6,112	21,171	. .	643,992	$2,277,000	$3.54	1,009	426	280	1,715	150
[illegible]	298,712	1,878	1,800	. .	302,390	1,073,000	3.55	437	62	136	635	177
[illegible]	72,869	765	1,473	. .	75,107	233,000	3.10	147	35	44	226	172
[illegible]	5,585,362	91,138	167,338	20,637	5,864,475	17,385,000	2.96	6,468	3,067	1,757	11,292	173
[illegible]	622,355	5,029	18,828	. .	646,212	2,123,000	3.28	509	202	124	835	203
[illegible]	429,614	7,670	23,212	. .	460,496	1,903,000	4.13	681	227	181	1,089	192
[illegible]	411,514	7,209	11,958	107,721	538,402	1,624,000	3.02	1,053	340	229	1,622	129
[illegible]	3,695,128	191,487	43,269	. .	3,919,884	11,670,000	2.98	4,816	1,450	1,827	8,093	158
[illegible]	33,150	. .	. .	. .	33,150	86,000	2.59	89	32	25	146	181
[illegible]	79,196	1,837	3,758	. .	84,791	339,000	4.00	95	28	33	156	142
Totals	11,834,609	313,125	292,807	128,358	12,568,899	$38,713,000	$3.08	15,304	5,869	4,636	25,809	166
ARKANSAS												
[illegible]	157,876	1,139	5,031	. .	164,046	$610,000	$3.72	245	95	57	397	108
[illegible]	57,576	318	898	. .	58,792	253,000	4.30	250	96	82	428	48
[illegible]	64,495	9,429	1,038	. .	74,962	422,000	5.63	185	68	29	282	139
[illegible]	801,506	2,218	23,097	. .	826,821	3,334,000	4.03	1,470	485	217	2,172	117
[illegible]	93,131	6,373	3,652	. .	103,156	741,000	7.18	165	104	68	337	149
Totals	1,174,584	19,477	33,716	. .	1,227,777	$5,360,000	$4.37	2,315	848	453	3,616	112
COLORADO												
[illegible]	758,376	46,610	46,706	. .	851,686	$2,573,000	$3.02	615	325	178	1,118	166
[illegible]	69,735	20,200	. .	. .	89,935	259,000	2.88	58	14	25	97	147
[illegible]	167,417	4,829	8,301	. .	181,027	563,000	3.11	136	57	42	235	177
[illegible]	159,900	122,232	6,349	. .	288,531	847,000	2.93	192	68	67	327	155
[illegible]	535,489	47,991	6,932	. .	590,821	2,695,000	4.56	803	302	201	1,306	165
[illegible]	6,962	9,833	. .	. .	16,795	68,000	4 05	14	3	3	20	168
[illegible]	445,993	4,704	28,310	. .	497,007	1,728,000	3.61	378	170	174	722	154
[illegible]	1,718,620	16,331	20,799	. .	1,755,750	7,174,000	4.09	1,634	725	629	2,985	192
[illegible]	75,879	12,568	704	10,502	99,653	316,000	3.17	99	43	28	170	157
[illegible]	2,593,329	35,342	48,940	50,111	2,727,713	9,179,000	3.36	3,050	1,166	796	5,012	157
[illegible]	98,461	14,700	2,600	. .	113,761	407,000	3.58	110	39	41	190	158
[illegible]	. .	10,992	. .	. .	10,992	42,000	3 82	18	4	3	25	182
[illegible]	820,247	8,968	53,840	. .	889,015	3,718,000	4 18	728	233	260	1,221	104
[illegible]	951,321	44,516	30,237	. .	1,028,074	2,808,000	2 73	621	301	176	1,098	184
Totals	8,408,613	399,816 (b)	253,718	60,613	9,122,760(d)	$32,377,000	$3 55	8,456	3,450	2,623	14,529	164

(a) Includes also shotfirers. (b) Calhoun and Marion. (c) Pope and Washington.

(d) In addition to the above, 14,869 tons were produced by small mines and sold to local trade. The total production of the state was, therefore, 9,137,629 tons and the total sold to local trade and used by employees was 414,685 tons.

Statistics compiled by L. Mann, U. S. Geological Survey, Sept 16, 1922.

Harding Signs Coal Distribution Bill and Names C. E. Spens as Federal Fuel Distributor

President Harding signed the Coal Distribution Act and appointed Conrad E. Spens Fuel Distributor, Sept. 22. The selection of Mr. Spens meets with general approval among representatives of operators, wholesalers and railroad executives. Mr. Spens is regarded as one of the outstanding traffic men of the country. He has been given leave of absence by the Chicago, Burlington & Quincy Railroad Co., of which he is vice-president. The appointment was made by the President on the recommendation of Herbert Hoover, Secretary of Commerce. Mr. Hoover had ample opportunity, while serving as food administrator, to become familiar with Mr. Spens' ability. Mr. Spens was chief of the traffic division of the Food Administration throughout its existence.

The new Fuel Distributor will have as his chief assistants Donald Conn, who is a specialist in the Lake trade and the requirements of the Northwest, and F. R. Wadleigh, chief of the coal commodity division of the Department of Commerce. Mr. Spens expects to expand the organization which was maintained during the period of voluntary distribution. For the present the Fuel Distributor will occupy the same quarters as were occupied by the voluntary distributor, but Secretary Hoover states that the organization soon will outgrow the floor space available at 718 Eighteenth Street.

Says States Have Principal Control Over Price

One of the first acts of the new distributor was to telegraph the governors to emphasize the fact that the principal control over price must be exercised by the state authorities and that federal control can be applied only to coal which moves in interstate commerce. The text of Mr. Spens' telegram is as follows:

"The federal act signed by the President the 22nd instant provides that it shall be the duty of the Federal Fuel Distributor, among other things, to ascertain in which parts of the United States there shall be a shortage of coal and the extent of such shortage; the fields of production and principal markets to which such production is to be transported and distributed; the prices normally and usually charged for such coal and whether current prices, considering the costs of production and distribution, are just and reasonable; the nature and location of consumers, and what persons, regions or community should receive priority in transportation and distribution, and the degree thereof.

"The federal government can exert its influence on distribution and restrain extortion only so far as concerns coal that may be transported from one state to another.

"It has no jurisdiction as to: (1) Coal produced and sold within the state of its production. (2) Retail or wholesale margins or handling coal within these states.

"Responsibility as to these features must rest with the state authorities and if profiteering in coal is to be prevented, except as to coal that may be moved across state lines at extortionate prices, the proper remedy must be applied by state authorities.

"Coal production capacity exceeds transportation capacity. The problem of adequate supplies and diminished prices is therefore primarily a problem of transportation. The federal authorities, in co-operation with the carriers, are making every possible effort to expedite movements. Coal today enjoys the same priority in transportation as food and feed. Transportation of coal is ample to meet current necessities, but is not sufficient to permit stocking either by household or commercial consumers and possibly will not be ample for that purpose for another sixty to ninety days.

"It appears necessary that state organizations or agencies be created in states where they do not now exist that will invite co-operation, that will prevent stocking of coal beyond current necessities and that will establish reasonable margin for retailers and wholesalers.

"As above stated, the constitutional authority of the federal government is limited, but it will gladly co-operate with these state governments as far as it can properly do so. The major responsibility, however, for the price at which the coal is sold to the consumers by the wholesalers or retailers within the state must rest with the state authorities.

"The federal act is, of course, nationwide in its scope and I am, therefore, addressing this communication to the governors of all states and to the State Fuel Administrations, where such agencies now exist, although I understand there is considerable territory in the United States where there is no imminent coal shortage nor complaint as to the cost of this commodity. We shall depend upon the judgment of the state authorities in each state as to whether or not the aid of the federal government is desired or necessary as to interstate coal.

"I would appreciate early advices from you as to the situation in your state and the measures taken or contemplated to meet the emergency."

Donald D. Conn, of Minneapolis, who has been named as Assistant Federal Fuel Distributor, has been stationed in Washington for some time as chairman of a special committee appointed by the governors of seven Northwestern States to represent them in connection with the coal-supply situation.

C. P. White, of St. Paul, Minn., has been designated as assistant to the Fuel Distributor in handling the fuel situation in the Northwest. Mr. White acted in a similar capacity in the later days of the President's Fuel Committee.

C. J. Hepburn, of Philadelphia, has been retained as general counsel to the Federal Fuel Distributor.

F. R. Wadleigh, chief of the coal division of the Department of Commerce, will act as an assistant to Mr. Spens.

E. M. Durham, of the American Railway Association, was directed to Philadelphia Monday to represent Fuel Distributor Spens at the sessions of the Committee of Anthracite operators and Pennsylvania state officials who are considering the problem of the distribution of anthracite.

H. M. Griggs, of the Cleveland Ore & Coal Exchange, who has been handling the movement of lake coal, will continue in this capacity.

It is planned by Fuel Distributor Spens to name special



MADE NEW FUEL DICTATOR

Conrad E. Spens of Chicago, Ill., vice-president of the Chicago, Burlington & Quincy R.R., who has been appointed Federal Fuel Distributor by President Harding under the provisions of the new coal distribution act just passed by the

advisory committee, representing the general business and transportation interests of the country.

The following statement, outlining his tentative policies, has been issued by the Fuel Distributor:

"In view of the fact that I have only today assumed the duties of Federal Fuel Distributor, I am not prepared to announce definite plans for execution of the provisions of the recent act of Congress. I do, however, at this time invite, and hope to secure, the co-operation of the entire public in the solution of the coal situation.

"The coal production capacity of the country is ample to meet all demands. The immediate problem is transportation, and this devolves on the railroads for abnormal transportation of coal due to the miners' strike comes at a time when for well-known reasons the physical capacity of the railroads is abnormal, and at a time when the offerings of tonnage of all character are great. We understand, however, that the railroad situation is daily improving, and feel confident that the carriers are exerting and will continue to exert extraordinary efforts so that what otherwise might become a serious situation will be avoided. The result of concerted action during the next thirty days on part of all carriers—not only the carriers that originate the coal but also carriers that participate in the haul of loads and empties—will, we feel sure, serve to ameliorate the present apprehensions of the administration as well as of the public.

Consumer as Well as Carrier Must Co-operate

"The co-operation of the consumer is practically as important as that of the carrier. At the request of the administration, Julius H. Barnes, president of the Chamber of Commerce of the United States, has addressed American industrial, commercial and trade organizations urging that purchases of coal under present conditions be confined closely to current needs and that there be no accumulation of stocks of coal moving under contract or otherwise. I would like to add my appeal to that of Mr. Barnes', but will direct my appeal not only to the 'industrial' consumer but also to the 'domestic' consumer.

"Sufficient coal can be moved for current consumption, but sufficient coal cannot be moved within the immediate future to equalize the defect that obtains and provide a surplus above immediate needs. The inconvenience of frequent purchases is small compared with the distress that might be suffered by an unequal distribution due to exaggerated anxiety or lack of neighborly consideration.

"If all consumers of coal, whether domestic or industrial, will calmly consider this appeal and will co-operate as suggested, not only will their current needs be taken care of but the result will be reflected quickly in the price of coal, which today in many sections of the country manifestly exceeds a fair-profit basis.

"The administration is not suggesting that the operator in coal shall sell his coal at cost. Nor is it suggesting that he shall sell his coal at less than cost. The administration is, however, indicating, and the present act of Congress contemplates, that he shall sell his coal on a basis that will not yield an abnormal profit; in other words that he shall not take an undue advantage of the present unfortunate economic situation.

"Many coal operators are co-operating in a splendid manner. Regretfully I must add that there are some who are not. Is it asking too much that, during these critical times, profiteering in an important necessity to comfort—to life itself—must cease, and that there be only legitimate merchandising, based on American standards of fair play?"

In announcing Mr. Spens' appointment the President made public a letter which he had written to the new distributor. It reads:

"I am appointing you to the responsible position of Federal Fuel Distributor under the act just passed by Congress, and I earnestly express the hope that you will direct your first attention to the further extension of the co-operative arrangements with the railways, the coal-producing and coal-consuming communities and the state authorities which have been initiated by the Secretary of Commerce and Mr. Spencer, the temporary Fuel Distributor. These arrangements, of voluntary origin, are already having a large effect in mitigating the situation.

"The arrangements set up for the distribution and control of price at last year's levels in the anthracite industry have been satisfactorily established in co-operation with the state authorities and the coal operators.

"The producing capacity of our bituminous mines is far beyond the public need; but the limiting factor in the supply is solely transportation. The Interstate Commerce Commission has given complete priority on the movement of coal, equal only with agricultural produce and some other necessities. But beyond these provisions I have the feeling that if we could stimulate the enthusiastic and organized personal attention not only of our railway executives but of the entire operating personnel of the railways, to a concentrated drive for a period of thirty days, on the movement of coal and the handling of 'empties,' we could solve the coal situation, not only as to ample supply but prices would be quickly readjusted.

"The authority of the federal government under the act is limited to coal moving in interstate commerce, and, therefore, can only be effective in control of distribution and prevention of extortion as a supplement to the activities of the state authorities. The governors of the various states already have, at the request of the federal administration, created state coal commissions, and I trust, therefore, you will take up definitely with them plans for co-operating under the new act.

"The federal government is loath to undertake to fix definite prices for coal, because of the objectionable character of such intervention in peace times, because of the difficulty in arriving at fair prices without giving undue favor to some and loss to others, and also because of the incompleteness of an authority which is only supplementary to state action. On the other hand, I wish you to set up such agencies as will vigorously follow up individuals using facilities of interstate commerce who are exacting extortion, as defined in the act, in order that we may have relief from such practices at the earliest moment.

"I trust that the measures initiated to secure co-operation of the responsible coal operators and dealers can be made effective in prevention of such profiteering. Likewise the organization started among the consuming community to co-operate by delayed purchasing of reserves until transportation increases will aid in restoration of normal prices and distribution.

"It would be far more agreeable to our national sense to solve these matters by co-operation rather than by regulation, and I trust you will find that all elements in the community will join with you in this purpose."

The President addressed the following letter to A. B. Spencer:

"I regret that you are not able to longer continue as Federal Fuel Distributor. I recognize of course that you have already overserved the period which it was hoped would be necessary when you undertook the work and I appreciate that your responsibilities in other service cannot longer be avoided.

"I wish to express to you the appreciation I feel and that the public must feel for the service you have performed in tiding over a critical situation. The fact that on a small fraction of our coal production you have secured its distribution so as to maintain the performance of all of our railways and public utilities is in itself evidence of great service."

Frisco Railroad Buys Contract Mine-Run At $2.225 Per Ton

The Frisco R.R., it is understood, has contracted with the St. Louis & O'Fallon Coal Co. for 700 tons per day of standard mine-run coal at $2.22½ per ton, and also for a small tonnage of 1½ x 2½ nut coal at $2.55 per ton. This is the cheapest contract made in that section and operators generally cannot understand how such a low price could be made on a contract that will expire next March.

Service Order 25, Issued Sept. 19, Allows Broader Priority in Coal Movement

Shifting its policy from priorities on coal cars to a broader priority on coal transportation, the Interstate Commerce Commission on Sept. 19 amended Service Orders 23 and 24 and supplanted them with Service Order 25, which removes classifications 1 to 5 for coal-car loading and directs the carriers to observe a priority in movement of open-top cars in which coal ranks with road and building materials, ore, mine supplies and fluxing stone when the movement is in the direction of coal mines. The way is left open, however, for the commission to direct special car priorities if occasion arise.

The Interstate Commerce Commission explains the need of the order and outlines the purposes which it intends to accomplish as follows:

"By reason of certain embargoes issued by carriers, complaints have been made that various commodities, which in the public interest should be handled currently and promptly, have not been so handled. In addition to the commodities specified under Service Order No. 23 this order adds mine supplies, medicines, fertilizers, seeds, newsprint paper and petroleum and its products in tank cars to the list of commodities to be given preference and priority in movement, when carriers are currently unable promptly to transport all freight traffic offered to them for movement. The words 'fuel oil' as used in Service Order No. 23 are changed to read 'other fuels.'

"Service Order No. 23 directed all carriers to discontinue the use of open-top cars suitable for the transportation of coal for the transportation of commodities other than coal so long as any coal mine remained to be served with such cars. There are extensive road-building projects with uncompleted gaps, which, in the public interest, should be completed before cold weather sets in and for which appropriations have been made by the states and by the federal government. There are large building programs under way which must be completed without undue delay to avoid serious loss.

"Service Order No. 25 permits the use of open-top cars suitable for the loading and transportation of coal, after the discharge of the coal lading thereof, for the transportation of road and building-construction materials, ore, mine supplies for current operation and fluxing stone for furnaces when the destination of such commodities is in direction of but not beyond the mine or mines to which such open-top cars are destined for coal-loading, and when such use will not materially delay or minimize the production and transportation of coal. Carriers are directed to place an embargo against the further placement of open-top cars for loading with such commodities for any shipper who shall fail or refuse to load the open-top cars within 24 hours after placement for such loading thereof and are directed to place an embargo against any consignee who shall fail or refuse to unload such cars within 24 hours after placement.

"The order further cancels the priority afforded consumers now embraced in class 2 in paragraph 7 of Service Order No. 23. The production of bituminous coal has increased to approximately nine and one-half million tons per week, and should, with reasonable use, take care of current needs, if panic, undue storage and waste of fuel and equipment are carefully avoided. The commission therefore feels that it can now relax its previous order by omitting general priorities by classes of consumers, reserving, however, the right in special cases of great emergency to direct carriers to furnish any coal mine with such open-top cars as may, in the public interest, from time to time be designated by it or its agent therefor. By virtue of the general priority which is given both to movement and use of open-top cars for coal, the effect of the change now made is to advance all coal into the priority class, instead of only those classes of consumers formerly embraced in the priority designations. While it was necessary during the period of extremely limited production to give priority in use to certain highly essential classes, this necessarily involved deferring others. Under existing circumstances, it is believed that the course now taken will tend to a considerable improvement in the production of coal by facilitating its movement and general distribution. It will be necessary, however, to avoid a return to priority classifications, for continued efforts looking to the avoidance of overstocking, of delay to equipment, and to the curtailment of demand to meet bare daily necessities until the reserve of coal in circulation can once more be built up.

"Service Order No. 24, which now requires carriers west of the Mississsippi River to afford priority in movement to certain commodities, and for the return movement of empty cars for such loading, has been amended to correspond with Service Order No. 25, applicable in eastern United States. Service Order No. 22, as to routing of freight to avoid congestion, remains in effect."

Service Order No. 24, which provides for the priority in movement of certain commodities in the territory west of the Mississippi River, has been amended so as to enlarge the list of commodities. Paragraph 1 of that order, as amended, reads as follows:

"That each such common carrier by railroad, to the extent that it is currently unable promptly to transport all freight traffic offered to it for movement, or to be moved over its line or lines of railway shall give preference and priority to the movement of each of the following commodities: Food for human consumption, feed for live stock, live stock, perishable products, mine supplies, medicines, fertilizers, seeds, newsprint paper, coal, coke and other fuel and petroleum and its products in tank cars."

C. J. Neal Named Ohio Fuel Administrator: Fair Coal Prices to Be Established

Governor Harry L. Davis has named Clarence J. Neal of Cleveland as state fuel administrator following the passage of the price control law by a special session of the Ohio General Assembly. At the same time the Governor announced that "fair coal prices" will be established under the new law as soon as the necessary machinery can be set up. Mr. Neal is a business man and during Governor Davis' administration as Mayor of Cleveland served as city director of finance. During the war and the attending coal shortage he was placed in charge of distribution direct to the public in the City of Cleveland.

The first act of the new administrator was the naming of Clifford Gilversleeve, of Cleveland, as assistant and Frank H. Bear, also of Cleveland, as transportation director.

Illinois May Send Delegation to Lewis' Cleveland Conference

Though they did not agree to do so in their Aug. 22 contract with the miners, operators of Illinois are figuring on sending men to the Cleveland conference, Oct. 2, called by John L. Lewis, president of the United Mine Workers of America. At that conference Lewis hopes to start the machinery of wage-making for the period after April 1, 1923. The operators of the 5th and 9th Districts of Illinois have already decided they will be represented. The other two Illinois operators' associations will meet in Chicago Friday, Sept. 28, to decide their course. It is generally expected, among operators, that a delegation will go. The delegation may point to the creation of a fact-finding commission by President Harding, contending that no parallel commission such as Lewis wants should be set up.

Colonel L. E. Tierney Dies Suddenly

Colonel L. E. Tierney died last week at his home in Powhatan, W. Va., after an illness of two days. Colonel Tierney was prominent in politics in West Virginia and at one time was on the Governor's staff in that state, which accounts for his military title. He was a director of the Crozer Pocahontas Coal Co., vice-president and general manager of the Powhatan Coal & Coke Co., the Clinchburg Coal & Coke Co., the Eureka Coal & Coke Co., and general manager of the Elk Ridge Coal & Coke Co. The product of the four latter companies was sold by the Crozer Pocahontas Coal Co.



Anglers May Tell Their Fish Stories, but Can Anybody in the Coal Industry Beat These Illinois Whales?

Two full 8-hour shifts from Zeigler No. 1 mine had its troubles. First it was undercut eight feet wide and seven feet deep with a short-wall machine. A heavy wooden skid was placed under it and all three sides sheared by hand. Then the whole piece was wedged down from the face onto the skid. When it was pulled from the room the lump of coal measured 6 x 7 x 44 ft., but in loading nearly half of it broke off, leaving the piece pictured here, a cube measuring 4½ ft. and weighing 6,000 pounds. It was shipped to the Peoples Coal Co. of Omaha, Neb. In the picture, left to right, are: Joseph Curtis, superintendent of Zeigler No. 1; E. L. Doyle, superintendent, and William Colwell, manager, of No. 2; Paul Weir, chief engineer (front) and Mr. Epsworth.

"Biggest chunk ever mined" is the claim made for this neat little pellet by the Peabody Coal Co., whose men took it from the Peabody No. 3 mine near Marion, Ill. It measures 5½ x 5½ x 8 ft. and weighs 28,322 pounds. It was undercut by machine, handcut all around and drawn out of the seam on skids. Then it was turned over on its side on heavier skids and trussed up in planks and steel strap. Rails were greased, a block and tackle employed and the chunk was slid laboriously to the bottom and hoisted in a cage from which all rigging had been taken. The chunk was shown at last fall's American Mining Congress in Chicago. Nobody ever figured how much it cost. Another chunk of the same size was broken in the mine before this one was taken out whole.

This pillar of potential fire cost the Taylor Coal Co. $2,000 to remove from its No. 5 mine in Franklin County, Illinois, and put in a display at the 1921 Chicago Pageant of Progress. A crew of experienced old miners picked it out of a seam 11 ft. 8 in. thick, packed it in planks and baled hay, sk'dded it along greased track to the mine bottom, with power from a single locomotive, de-rigged the cage to handle it, hoisted it, loaded it in a car of screenings and lost hardly a pound. After safe movers in Chicago had charged $600 for moving it half a mile and placing it, the p'llar measured 4 x 4 x 11 ft. and weighed 7½ tons. After the Pageant somebody stole it—but not in one piece.

Vancouver Island Mine Safety Association Has Mine-Rescue and First-Aid Contests

The Vancouver Island Mine Safety Association held its seventh annual field day of mine-rescue and first-aid competitions on the Central Sports Grounds, Nanaimo, B.C., Sept. 4. Twenty teams competed—five in mine-rescue work, eight in senior first-aid work, four in ladies' competitions, and three in junior first-aid work.

In the mine-rescue work the problems were drawn from sealed envelopes, and the teams were allowed twenty minutes to study them before commencing work. The mine had been laid out so that a full view could be had from the grandstand.

The results of the mine-rescue competitions for the V. I. M. S. A. shield were: Newbury's team (Western Fuel Corporation), Nanaimo, first; No. 3 team, Canadian Collieries (Hunter, captain), Ladysmith, second; No. 2 team, Western Fuel Corporation (Barton, captain), Nanaimo, third. The third prize, donated by the Kelsey Manufacturing Co., of Vancouver, consisted of six handsome aluminum safety lamps.

Owing to a heavy downpour of rain it was necessary to hold the first-aid competitions in Odd Fellows' Hall, the first event being for the British Columbia Department of Mines Cup (first and second prizes). Barton's team (Western Fuel Corporation), Nanaimo, won first prize and R. Shields' team (Ladysmith Collieries) won second.

After lunch the W. L. Coulson Cup was competed for. Barton's team won the first prize, and No. 1 team of the Canadian Collieries, Ladysmith, with J. Delaney as captain, was second. There was keen competition for second place between the South Wellington team and Delaney's team and it took the judges considerable time to arrive at a decision in favor of Delaney's team.

The ladies' first-aid event for the V. I. M. S. A. shield (first and second prizes) was next, and after a hard struggle was won by Mrs. Scott's team, of Nanaimo. Mrs. Covert's team, of Cumberland, was second.

The one-man event was won by Calvert Beck and Evan James (patient), of Nanaimo, Brown and Ferguson (patient) being second.

In the junior competition for the V. I. M. S. A. Cup, the Ladysmith team of the Canadian Collieries came first, and Nanaimo team (Gard, captain) second.

The two-man event was won by Barton, Stobbart and Brown (patient), of the Western Fuel Corporation. McDonald, Aman and Delaney (patient), of the Canadian Collieries, Ladysmith, came in second.

The judges for mine-rescue work were Robert Stracham, of Fernie, of the inspection staff of the British Columbia Mines Department, and Inspector J. Biggs of Merritt, B.C. The judges of first-aid work were Drs. D. McLellan, Sutherland, Carson, Lees, Kennedy, Perry, Wilkes, Mrs. Wilson, president of St. Johns Ambulance Brigade, and Miss Prideaux, a graduate nurse, all of Vancouver, B.C.; also Drs. Ingham, Hall, Moore and McPhee, of Nanaimo; Mr. Schofield, first-aid expert and lecturer, of Vancouver, and Mr. Cairnes, of Nanaimo.

In the absence of William Sloan, who was ill, John Hunt, general manager of the Western Fuel Corporation, distributed the prizes. He congratulated the teams on the splendid work done. After the presentations a large crowd adjourned to the dance hall, where a big crowd enjoyed themselves into the wee sma' hours.

The recent accident at Cumberland prevented participation in the contests of any teams from there, some of the members being in the hospital.

"Is this wire live? I'll touch and see." They wrote on his gravestone: R.I.P.

Just think, this time last summer our chief anxiety was, would the pressure of the coal burst out the side wall of the bin!—*New York Evening Post.*

Grand Jury Indicts 214 for Herrin Horror and Reports To the Court Without Fear or Partiality

The activity of the law in the Herrin case is a "private persecution by a political boss and a labor-hating organization," according to a public statement issued from Marion, Ill., by A. W. Kerr, chief counsel for the United Mine Workers of America. He charges Attorney General Brundage with trying the case in the press and influencing the grand jury by that means and suggests that the grand jury's report was written by the Illinois Chamber of Commerce, which is raising money to finance the investigation. Kerr injects a play for the sympathy of Governor Len Small and his political machine by stating that Brundage conducted a "political trial" in the courts against Small last spring that "resulted in the death of the first lady of the state."

The special grand jury which for a month has been investigating massacre of nineteen non-union miners and the wounding of thirty others near Herrin, Ill., on June 22, last Saturday reported back to the judge. It brought in enough indictments that day to swell the total in the case to 214—forty-four of them for murder, fifty-eight for conspiracy to commit murder, fifty-four for assault to murder and fifty-eight for conspiracy and rioting—and rendered a report notable for its impartial and fearless tone. Among those indicted for murder are Hugh Willis, state executive board member of the union in Illinois, and Will Davis, secretary-treasurer of the Herrin local.

Thirty-five of the defendants were arraigned and pleaded not guilty Monday. Eight charged with murder and considered ringleaders were refused bail. Six were bonded for $20,000 each, twenty for $10,000 each and eighteen for $5,000 each. Several charged with rioting are already out under $1,000 bonds. The eight men refused bail are Otis Clark, Bert Grace, James Brown, Leva Mann, Philip Fontanetta, Pete Miller, Oscar Howard and Jess Childers. Howard and Childers have not been apprehended. Eighty-six men, from bankers to small storekeepers, provided the bail. These included most of the prominent men of Herrin, encouraged by Mayor Pace of that town, who marshalled them by saying this would be a good way of showing who was for and who against the miners' union.

The jury blames the Southern Illinois Coal Co. for its "foolhardy" efforts to operate a non-union mine under armed guard in the midst of such intense union sympathies as prevail in Williamson County. It blames President Lewis and officers of the miners' union for the broadcasted and inflaming Lewis message saying the strip miners were "strike breakers and should be treated as such." It blames the county sheriff, Melville Thaxton, a union member and candidate for county treasurer, for being derelict in his duty for his own political benefit. It charges Adjutant-General Carlos Black, of the Illinois National Guard, with equal dereliction of duty for failure to rush state troops into the county when it was plain that violence was about to be done. It condemns the local police for laxity and makes several other findings indicating the desire of the jury to lay a solid foundation for the enforcement of justice in the prosecutions that may now begin.

The text of the grand jury report follows:

We the special grand jury of Williamson County empaneled to make an investigation of the crimes committed in and about the strip mine near and in Herrin on Wednesday and Thursday, June 21 and 22, 1922, and heedful of the instructions given by your honor to make a thorough investigation of the facts and circumstances, with a view of fixing the responsibility for the killing of some twenty-four persons and the wounding of many others, beg to report that we have examined approximately 300 witnesses and from their testimony learned these conditions:

About the middle of June of this year, after suspension of the coal industry as the result of a strike of the United Mine Workers of America, the Southern Illinois Coal Co. decided to operate a strip mine owned by it and located about midway between Marion and Herrin.

The miners' union apparently raised no objections to the uncovering of the coal by the use of steamshovels, but when the company began to ship coal there was bitter resentment on the part of the union miners.

The coal company aggravated this resentment by employing armed guards and closing for the public use certain established highways traversing the mine property and treating as trespassers citizens attempting to use the accustomed highway.

The flaunting of arms in a community devoted almost exclusively to mining was conducive to strife; it was a challenge certain to be accepted, and for four or five days preceding the tragedy it was known by the authorities that a conflict was inevitable.

The state administration undoubtedly realized the acute situation by sending to Williamson County Colonel Hunter of the adjutant general's staff. This representative of the state government testified that he recognized upon his arrival in Marion the imminence of a conflict and immediately asked the adjutant general to send state troops to protect the property and conserve the peace.

This request Colonel Hunter renewed several times before the actual conflict, and was invariably asked by the adjutant general of Illinois if the sheriff of Williamson County had asked for troops. The adjutant general denied his authority to order them into Williamson County except upon the sheriff's request, which, as your honor knows, is not the law.

Melvin Thaxton, the sheriff of Williamson County, is the holder of a card in the miners' union and a candidate for County Treasurer at the forthcoming election.

Either because of loyalty to the union or from fear of injuring his candidacy the sheriff would make no demand for troops nor did he take adequate measures to preserve the peace.

From the evidence heard, the attack of June 21 upon the men employed at the strip mine was the result of a conspiracy which had several days in the perfecting, the object of which was the closing of the strip mine.

Sheriff Thaxton could not have been unaware of the development of this plan.

On Monday, June 19, State Senator W. A. Sneed, district president of the United Mine Workers of this district, received from John L. Lewis, president of the United Mine Workers of America, a telegram as follows:

"William Sneed, President, Sub-District 10, District 13, United Mine Workers of America, Herrin, Ill.: Your wire 18th Steam Shovel Men's union was suspended from affiliation with American Federation of Labor some years ago. It was ordered suspended from the mining department of the A. F. of L. at the Atlantic City convention.

"We now find that this outlaw organization is permitting its members to act as strikebreakers at numerous pits in Ohio. This organization is furnishing steam shovel engineers to work under armed guards under no agreement which exists by and between this organization and the mining department or any branch of the A. F. of L. permitting them to work under such circumstances.

"We have through representatives officially taken this question up with the officers of the steam shovel men's union and have failed to secure any satisfaction.

"Representatives of our organization are justified in treating this crowd as an outlaw organization and in viewing its members in the same light as they do any other common strikebreaker.

JOHN L. LEWIS"

A copy of this telegram was posted and read in various places. Following the publication of the telegram from President Lewis preparations for an attack upon the mine were made. The hardware stores in all the cities of Williamson county were searched for firearms. The weapons were either taken by force or upon a verbal assurance that the local would pay for them.

The men working at the strip mine were evidently ignorant of being strikebreakers. The men operating the steam shovels were affiliated with a union, even though unrecognized by the A. F. of L.

The guards were told they were to protect the valuable machinery and did not awake to the real danger until noon time of June 21, when bullets began to fly into the mine in such volume as to compel them to take refuge in the office, and later to seek safety under the steel railroad cars on the strip mine property.

Superintendent McDowell telephoned a number of times to Colonel Hunter for protection and was invariably informed by the latter that the sheriff could not be found. Finally Colonel Hunter suggested a flag of truce, which, while displayed by the mine defenders, caused no abatement of the fire.

In the evening of June 21, upon the return to Marion of Sheriff Thaxton, a conference was held between the sheriff, Colonel Hunter, and officers of the miners' union, at which it was stated that the officials of the coal company were willing to discontinue the operation of the strip mine and the union officials were willing that the workmen employed therein should be permitted to depart in safety. The substance of this agreement was transmitted over the telephone to Superintendent McDowell at the strip pits.

Nevertheless, at the break of day the following morning firing began in a heavy volume from close proximity. The attacking party having crept up under cover of darkness they were sufficiently close to permit of a parley and after a time a spokesman for the strip mine workers asked to speak to the leader.

A long range conversation was held and it was agreed by a spokesman from the attacking party that safe conduct would be accorded the men if they laid down their guns and would march out with hands up.

This was done and from behind the earth embankments erected by the steam shovel operators came a great number of armed men and more from the surrounding hills until the force of surrendering men were surrounded by many hundreds of men, mostly armed.

The captive men were marched down the road toward Herrin in double file. After they had marched about one mile, Superintendent McDowell, being crippled and unable to keep up with the procession, was taken aside by members of the mob and shot to death.

The remainder of the captives were guarded on the public road



SPECIAL GRAND JURY THAT INDICTED 214 FOR HERRIN MASSACRE

universal criticism upon the people of Williamson County, Illinois.

Without discrimination, we feel keenly the horror of the tragedy. We protest, however, against the intimation that all the people of Williamson County are lawless and un-American. The development of the mining industry in Williamson County and the surrounding counties has tremendously increased the population within the last decade.

All of the adjoining counties contributed their quota of marauders, and the entire shame of the inhuman murders should not rest upon Williamson County alone.

It is true the electorate of the county is responsible for those of its supine, weak and cowardly officials who permitted the disorders to grow from desultory rioting into a hideous massacre. Those evils can be corrected by the great majority of the population who believe in law and order asserting themselves and longer refusing to be intimidated by a disorderly minority.

The adjutant general's office and the sheriff's office alternated in passing responsibility, with neither taking decisive action to prevent disorders and protect property.

The ease with which firearms were obtained causes the grand jury to believe that legislation should be enacted to regulate or prohibit the manufacture or indiscriminate sale of firearms.

We condemn the laxity of the local police in the various cities wherein stores were looted for firearms without interference by them.

We commend the state's attorney of Williamson County, Delos Duty, for his courage and fidelity to his oath of office, and we express our gratitude to the Attorney General of Illinois and his efficient assistants whose aid has greatly facilitated the tremendous tasks confronting the grand jury.

In concluding this report the grand jury begs leave to state that it has indicted some forty persons for murder, fifty-eight for conspiracy to commit murder, fifty-eight for rioting, and five for assault to murder, and your jury asks leave for a recess of thirty days for the purpose of completing its labors. The grand jury is deeply grateful to the many representative, law-abiding citizens of Williamson County, for their assistance and encouragement in its efforts to enforce the law fearlessly and impartially.

Electrical Engineers at Huntington, W. Va., Present Reports on Mine Practice

cast grids." The article on "the manner in which mechanical and electrical men can increase their usefulness" was read by R. D. Hall; W. C. Shunk, the author, being absent.

On Friday M. W. Crenshaw read a paper on the wireless telephone with illustrations and display of apparatus. The committee on the proper handling and care of insulating oils reported, and the following were elected to office for the ensuing year:

Roscoe Woltz, electrical engineer, Stonega Coal & Coke Co., Big Stone Gap, Va., president; R. R. Webster, Elkhorn Piney Coal Mining Co., Weeksbury, Ky., vice president; Herbert Smith, Elkhorn Piney Coal Mining Co., secretary and treasurer. The executive committee consists of J. H. Edwards, the retiring president; F. M. Reigher, George Suiter, J. J. Fluck and H. Maxwell.

John G. Smyth Killed by Fall of Slate

John G. Smyth, general manager of the Consolidation Coal Co., Jenkins, Ky., was instantly killed Sept. 21 by a fall of slate. The accident did not happen in a Consolidation mine but in a small operation on Shelby Creek, in which Mr. Smyth was part owner.

Mr. Smyth was 43 years of age, a son of the late William P. Smyth, Wilkes-Barre, Pa., who at one time was general superintendent of the Lehigh & Wilkes-Barre Coal Co. and the Parrish Coal Co. After leaving school he became connected with the Lehigh & Wilkes-Barre Coal Co., as well as the Parrish Coal Co., but later he left for the Virginia coal fields. Later he became affiliated with the Consolidation Coal Co. and was made general manager of the Kentucky fields, his residence being in Jenkins, Ky.

Production of Anthracite Rapidly Nears Normal Basis; New Price Circulars Include Pennsylvania Tax

Production of anthracite has been brought up to normal more quickly than had been expected. From 1,064,000 net tons the first week after the strike the output rose to between 1,800,000 and 1,900,000 tons in the week of Sept. 23. This remarkable and unexpected acceleration in production brings the output to a figure comparable with that following the "miners' vacation" in the autumn of 1920.

Fully two weeks elapsed after anthracite mining was resumed before all the old-line producing companies announced their new price circulars. Tonnage held at terminals pending price determination has now been released by the publishing of temporary prices which range $7.75@$8.35 on the large sizes. The increases of from 15c. to 30c. as compared with the last pre-strike quotations presumably are made to cover the Pennsylvania state production tax. Quotations on steam sizes have been increased in line with soft-coal prices. Following are the ruling quotations per gross ton f.o.b. mine as quoted on the New York market:

Lehigh Valley—Broken, $7.90; egg, $8.10; stove, $8.15; chestnut, $8.15; pea, $6.15; buckwheat, $4; rice, $3; barley, $2.

Williams & Peters (Erie)—Broken, $7.75; egg, $7.75; stove, $8; chestnut, $8; pea, $6.15; buckwheat, $4; rice, $3; barley, $2.

Lackawanna—Broken, $7.75; egg $8; stove, $8; chestnut, $8; pea, $6.15.

Lehigh & Wilkes-Barre Coal Co.—Broken, $7.75; egg, $8; stove, $8; chestnut $8; pea, $6.15; buckwheat $4; rice, $3; barley, $2; boiler, $2.50.

Lehigh Coal & Navigation Co.—Broken, $8.10; egg, $8.35; stove, $8.35; chestnut, $8.35; pea, $6.20; buckwheat, $4; rice, $2.75.

Hudson—Broken, $8.15; egg, $8.15; stove, $8.15; range (new size) $8.15; buckwheat, $4; birdseye, $2.75.

Philadelphia & Reading—Broken, $7.90; egg, $8.10; stove, $8.20; chestnut, $8.20; pea, $6.20; buckwheat, $4; rice, $2.75; barley, $2.

Independent Producers Say Maximum Is Too Low

Despite the statement by the Pennsylvania Fair Practice Committee that $8.50 was considered the maximum price that independent operators could charge for their coal, quotations are now within a range of $9@$9.50. Immediately after mining was resumed some of this coal moved as high as $14 f.o.b. mines and high quotations are still rumored. Some independent producers say that they must receive a price in excess of that given by the committee and as an alternative may ship their product outside the state and beyond the jurisdiction of that body. The Pennsylvania state authorities, realizing that it is necessary to have the maximum production of anthracite to meet the needs of the country, have announced that any mines which cannot be operated at the $8.50 maximum shall be given a hearing and that after an analysis of their production figures by the Fair Practice Committee, a higher price may be granted to cover higher costs. These prices will be announced from time to time as examinations are made and the price determined by the Fair Practice Committee in the State of Pennsylvania.

William H. Woodin, State Fuel Administrator for New York, announced on Sept. 22 that the immediate supply of anthracite domestic coal for the several states would be between 50 and 60 per cent of normal. This necessitates, Mr. Woodin said, the strictest form of economy in the use of domestic sizes of anthracite and the full use of substitutes.

Some hard coal is beginning to trickle into the Northwest. Shipments are very small, however, and no Lake charters have been signed as yet. Consumers in this territory are being urged to use lignite and coke as well as bituminous coal substitutes as far as possible.

Burns Brothers, in New York City, are advertising British coal as a substitute for anthracite for certain limited uses, at prices about the same as for anthracite. In New Jersey the Governor has issued a proclamation setting the price of coal for householders at 15c. above last year's quotations. He did this through the New Jersey State Fuel Commission, after having refused to call a special session of the Legislature to pass on coal questions.

The Pennsylvania Fuel Commission on Sept. 7, 1922, adopted the following regulations fixing the maximum gross margin for retailers and setting rules for distribution and standard of preparation for anthracite:

(1) The maximum gross margin per ton on sales of anthracite by retailers shall not exceed the gross margin per ton realized during the month of March, 1922, without the authorization of the commission.

(2) Retailers shall limit delivery of anthracite to domestic consumers to 60 days' supply.

(3) To avoid hoarding and to insure equitable and supervised distribution, anthracite operators are prohibited from shipping domestic sizes for household use to any consignee other than an established retail coal merchant, unless authorized by the Pennsylvania Fuel Commission.

(4) All anthracite offered for sale or shipment shall be maintained at the standard of preparation existing in March, 1922.

Ford Plants Reopen; Idle Four Days

Plants of the Ford Motor Co. which were closed Sept. 16, throwing 70,000 to 80,000 people out of employment in Detroit, when the company was unable to obtain adequate coal supply, began reopening at midnight Sept. 21. Orders for the resumption of operations came within twenty-four hours after announcement of the action of the Interstate Commerce Commission in modifying Service Order No. 23 and substituting order No. 25, permitting distribution of coal to industrial concerns even though not included in the essential classification of priority group No. 1.

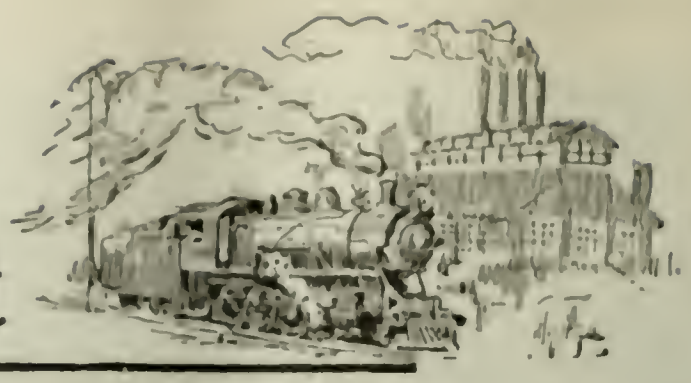
Under the operation of the order as it stood before the change the Ford company, though owning and operating mines in the Banner Fork district of Kentucky and owning and operating a railroad on which the coal was brought to Detroit, was denied the use of the coal and would be required to turn it over to railroads or public utilities. Modification of order No. 23 will enable the company to use coal produced by its own mines and moved on its own railroad.

Henry Ford made the prophecy last week that coal will soon be much cheaper. He advised the people of the whole country not to buy much now but to wait for the slump. He said in an interview that there is enough coal above ground now to last the country for some time and that even anthracite is going to reach the Middle West, though the motor king is in some doubt about any drop in the price of that coal. The exalted price levels on soft coal were attained, he said, because producers tried to hold coal back from the market, but the prices are tumbling now. He said his company had recently bought 500 cars in Toledo at $3 a ton including freight and arranged for a 60-day supply through Cincinnati from agencies at $3 at the mines. "Before spring coal will sell a good deal below $3 at the mines," he prophesied.

An attack upon coal prices is being made in the Chicago City Council, where an alderman who is a candidate for office has charged that an operators' ring and a retailers' ring are holding up the market with heavy penalties for those who undersell fixed price levels. The council's committee on the high cost of living is expected to make an investigation. The Chicago Retail Coal Merchants' Association denies all the charges and has filed suit against the alderman for $200,000.



Production and the Market



Weekly Review

DECLINING prices have been checked, temporarily at least, by the strong demand for domestic coal. While the household consumer is not buying heavily, retailers in some areas, especially the Middle West, are filling their yards with bituminous coal for winter distribution. Dealers are beginning to realize that anthracite will not be obtainable in sufficient quantity before Jan. 1. Steam grades are in no better position than at the beginning of September and in some markets distress lots can be obtained at bargain prices.

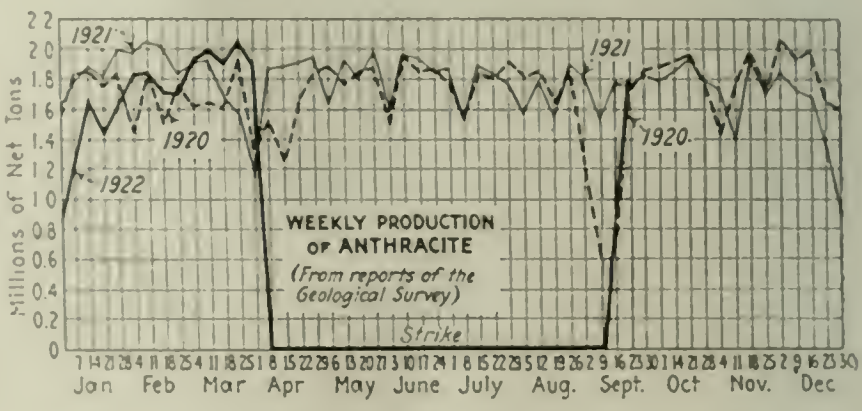
The aggregate result of the stronger domestic demand and poor industrial call is reflected in *Coal Age* Index of spot bituminous prices, which registers a rise of 6 points to 418 as of Sept. 25, from 412 the week before. This week's figure represents an average mine price of $5.06, as compared with $4.99 for the preceding week.

Transportation Conditions Badly Upset

Transportation conditions are deplorable, especially in the West. Coal is moving very slowly, gateways are congested and mines are everywhere short of cars. In some parts of Kentucky production has been limited to one day per week by the carriers' inability to furnish empties and haul loads. Lines furnishing the Hampton Roads piers are giving poor service. Resumption of anthracite mining has greatly reduced the car supply in the adjacent soft-coal fields. Surplus cars have been exhausted in the past two weeks for the first time since early in 1921, and until the railroads can increase the turn-around there will be no better car supply.

Despite these factors limiting the supply the buyer of industrial coal maintains his attitude of aloofness, to which the passage of the federal coal bills has added point. He believes that prices will not be allowed to ascend. State authorities are modeling similar measures—Ohio has already passed such a bill—and the buyer sees in these an argument for awaiting lower prices. Coal men are divided in their opinion on the future of the steam-coal market this winter. Some are of the very definite opinion that there is so little inherent strength in the industrial demand that prices cannot rise—in other words, the railroads will be able to haul as much coal as is urgently required. Others equally well informed and as thoroughly experienced in the trade look forward to a very definite shortage, a strong demand and high prices.

The Lake trade is very active. Dumpings passed the 1,000,000-ton mark last week and are still increasing. Record-breaking receipts and excellent rates of discharge are reported from the Head-of-the-Lakes, where an



easier feeling now prevails. This heavy flow of coal has blunted the edge of climbing dock prices and the lowered quotations have brought in many delayed orders. Coal is flowing off the docks as fast as it is unloaded, and boats are making one-day turn-arounds in a feverish attempt to transport as heavy a tonnage as possible during the remainder of the season.

With the announcement of new circular prices by the old-line producing companies much anthracite that had



Estimates of Production

(Net tons)

Week ended:	1921	1922
BITUMINOUS		
Sept. 2 (*b*)	7,606,000	9,359,000
Sept. 9 (*b*)	7,083,000	8,791,000
Sept. 16 (*a*)	8,187,000	9,661,000
Daily average	1,365,000	1,610,000
Calendar year	278,023,000	251,371,000
Daily av. cal. yr.	1,276,000	1,149,000
ANTHRACITE		
Sept. 2 (*b*)	1,770,000	36,000
Sept. 9 (*b*)	1,483,000	50,000
Sept. 16 (*a*)	1,749,000	1,064,000
Calendar year (*b*)	66,034,000	23,325,000
COKE		
Sept. 9 (*b*)	60,000	138,000
Sept. 16 (*a*)	64,000	139,000
Calendar year	3,964,000	4,505,000

(*a*) Subject to revision. (*b*) Revised from last report.

been held at destination has been released for retail distribution. The new domestic coal prices are 15c.@ 30c. higher than the latest pre-strike quotations, presumably to cover the Pennsylvania state tax. Distribution is being carefully watched by state authorities, that the meager supplies may se[illegible]ent needs only. The movement so far has been eastward, very little tonnage going west of the mines. No Lake charters have been made, although some coal is dribbling into the Northwest.

Independent coal is moving generally at a high of $9.50 compared with the maximum of $8.50 announced by the Pennsylvania Fair Practice Committee. Unless a modification of the committee ruling is made it is likely that most of the independent tonnage will be shipped out of Pennsylvania to enable producers to obtain what they insist is an adequate return for their commodity.

BITUMINOUS

"Production of bituminous coal in the last week (Sept. 18-23) is estimated at from 9,600,000 to 9,900,000 tons," says the Geological Survey, "a slight increase over the preceding week. Loadings on Monday, Sept. 18, were 37,330 cars, the highest since the close of the strike. On Tuesday, however, they dropped sharply to 29,496 cars.

"The present output is above that of the corresponding period of the year of depression, 1921, but is below that of the preceding four years. The present condition of the coal market resembles the three years 1918 to 1920 more than 1921. In those three years, as now, demand for soft coal was active enough to absorb all the coal that could be transported."

Movement of all-rail coal to New England increased to 3,009 cars during the week ended Sept. 16 from 2,722 cars in the preceding week. That market, however, is well stocked and prices are easy, movement being largely on contract. Cheaper coal by water tends to restrict the all-rail spot shipments. These water coals are being kept from lower price levels by the more active Western demand for low-volatiles.

SUMMARY OF NEW ENGLAND RECEIPTS, JANUARY TO AUGUST INCLUSIVE, 1916-1922 [a]

(In Net Tons)

	Anthracite			Bituminous		
	Tide	Rail	Total	Tide	Rail	Total
1916	3,462,000	3,616,000	7,078,000	9,831,000	6,654,000	16,485,000
1917	3,016,000	4,715,000	7,731,000	9,130,000	7,671,000	16,801,000
1918	2,896,000	6,716,000	9,612,000	10,902,000	7,997,000	18,899,000
1919	2,130,000	4,411,000	6,541,000	5,588,000	6,225,000	11,813,000
1920	2,298,300	4,853,000	7,151,000	6,628,000	7,629,000	14,257,000
1921	2,600,000	5,443,000	8,043,000	5,218,000	5,802,000	11,020,000
1922	1,025,000	2,320,000	3,345,000	7,733,000	3,072,000	10,805,000

[a] Data furnished by courtesy of the Massachusetts Fuel Administrator.

Hampton Roads dumpings for all accounts were 297,600 net tons during the week ended Sept. 21, as compared with 341,558 tons in the previous week. Some exporting has been

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Aug. 28, 1922	Sept. 11, 1922	Sept. 18, 1922	Sept. 25, 1922†
Smokeless lump	Columbus	$6.25	$6.40	$6.25	**$6.00@$7.25**
Smokeless mine run	Columbus	5.75	5.75	5.75	**5.75@6.25**
Smokeless screenings	Columbus	5.60	5.65	5.50	**5.50@6.00**
Smokeless lump	Chicago	6.00	6.10	6.25	**5.50@7.50**
Smokeless mine run	Chicago	5.75	6.00	5.85	5.00@6.75
Smokeless lump	Cincinnati	5.75	7.00	6.50	5.[illegible]@7.50
Smokeless mine run	Cincinnati	5.25	5.50	5.50	**4.90@6.50**
Smokeless screenings	Cincinnati	5.15	5.50	5.50	4.60@6.00
*Smokeless mine run	Boston	9.00	8.35	8.05	7.90@8.25
Clearfield mine run	Boston	5.85	5.00	4.35	**4.00@5.00**
Cambria mine run	Boston	6.25	5.50	5.25	4.50@5.[illegible]0
Somerset mine run	Boston	6.00	5.10	4.85	4.[illegible]50@5.[illegible]6
Pool 1 (Navy Standard)	New York	....	....	5.40	**5.50@6.00**
Pool 1 (Navy Standard)	Baltimore	....	....	5.50	**5.75@6.00**
Pool 9 (Super.Low Vol.)	New York	6.35	5.25	4.75	**4.75@5.25**
Pool 9 (Super.Low Vol.)	Philadelphia	7.25	5.60	5.60	5.00@5.75
Pool 9 (Super.Low Vol.)	Baltimore	6.25	6.10	5.10	**5.25@5.75**
Pool 10 (H.Gr.Low Vol)	New York	5.85	4.80	4.35	**4.50@4.75**
Pool 10 (H.Gr.Low Vol.)	Philadelphia	7.00	5.30	5.10	5.00@5.25
Pool 10 (H.Gr.Low Vol.)	Baltimore	5.85	5.75	4.85	4.75@5.00
Pool 11 (Low Vol.)	New York	5.35	4.35	4.10	4.00@4.25
Pool 11 (Low Vol.)	Philadelphia	6.50	4.85	4.85	4.00@4.75
Pool 11 (Low Vol.)	Baltimore	5.50	4.85	4.35	4.25@4.50
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	....	5.15	4.35	**4.35@5.00**
Pool 54-64 (Gas and St.)	Philadelphia	6.00	4.60	4.60	4.50@4.75
Pool 54-64 (Gas and St.)	Baltimore	5.60	4.60	4.60	**4.50@5.00**
Pittsburgh mine run (St.)	Pittsburgh	....	4.65	4.65	4.00@5.00
Kanawha lump	Columbus	6.00	6.40	5.75	**6.00@6.75**
Kanawha mine run	Columbus	5.60	6.00	5.50	**5.50@6.00**
Kanawha screenings	Columbus	5.50	5.75	5.30	**5.50@5.75**
W. Va. Splint lump	Cincinnati	5.35	7.00	6.85	6.00@7.00
W. Va. Gas lump	Cincinnati	5.35	7.00	6.85	6.00@7.00
W. Va. mine run	Cincinnati	5.00	5.65	5.35	5.00@5.75
W. Va. screenings	Cincinnati	4.85	5.40	5.25	5.00@5.75
Hocking lump	Columbus	6.00	6.25	5.75	**6.00@6.50**
Hocking mine run	Columbus	5.85	5.65	5.10	4.00@5.00
Hocking screenings	Columbus	5.60	5.40	5.25	4.00@4.50
Pitts. No. 8 lump	Cleveland	5.75	5.75	4.85	**4.75@5.25**
Pitts. No. 8 mine run	Cleveland	5.25	5.10	4.60	4.50@4.75
Pitts. No. 8 screenings	Cleveland	$5.25	$5.10	$4.60	$4.[illegible]@$4.[illegible]
Mid-West					
Franklin, Ill. lump	Chicago	5.05	5.40	5.40	5.25@5.50
Franklin, Ill. mine run	Chicago	4.65	4.75	4.75	4.50@5.00
Franklin, Ill. screenings	Chicago	4.25	4.90	4.45	4.[illegible]@4.[illegible]
Central, Ill. lump	Chicago	5.10	4.95	5.10	4.90@5.25
Central, Ill. mine run	Chicago	4.65	4.50	4.55	4.35@4.75
Central, Ill. screenings	Chicago	4.45	4.30	3.60	3.[illegible]@3.60
Ind. 4th Vein lump	Chicago	5.25	5.25	5.25	5.00@5.50
Ind. 4th Vein mine run	Chicago	4.85	4.85	4.85	4.65@5.00
Ind. 4th Vein screenings	Chicago	4.75	4.60	4.60	3.[illegible]@4.[illegible]
Ind. 5th Vein lump	Chicago	5.10	5.10	5.10	4.90@5.25
Ind. 5th Vein mine run	Chicago	4.65	4.65	4.65	4.50@4.75
Ind. 5th Vein screenings	Chicago	4.40	4.40	4.40	3.75@4.[illegible]
Standard lump	St. Louis	3.90	4.65	4.75	**4.25@5.50**
Standard mine run	St. Louis	3.40	2.85	3.90	3.75@4.00
Standard screenings	St. Louis	2.90	3.35	2.85	2.[illegible]@2.75
West Ky. lump	Louisville	5.00	4.75	4.75	**4.75@5.00**
West Ky. mine run	Louisville	5.00	4.25	4.25	4.00@4.50
West Ky. screenings	Louisville	5.00	4.00	4.00	3.75@4.25
West Ky. lump	Chicago	4.25	4.25	4.25	3.50@5.00
West Ky. mine run	Chicago	4.25	4.25	4.25	3.50@5.00
South and Southwest					
Big Seam lump	Birmingham	4.75	3.95	3.45	**3.45@4.00**
Big Seam mine run	Birmingham	4.50	3.30	2.60	**2.60@3.00**
Big Seam (washed)	Birmingham	4.50	3.80	3.10	**3.10@3.75**
S. E. Ky. lump	Chicago	4.75	4.25	4.25	**4.50@7.50**
S. E. Ky. mine run	Chicago	4.75	4.25	4.25	**4.50@5.00**
S. E. Ky. lump	Louisville	5.25	6.25	6.65	**5.75@8.00**
S. E. Ky. mine run	Louisville	5.10	5.65	5.65	5.[illegible]@6.25
S. E. Ky. screenings	Louisville	4.75	5.25	5.50	5.[illegible]@6.[illegible]
S. E. Ky. lump	Cincinnati	5.35	7.00	6.85	6.50@7.25
S. E. Ky. mine run	Cincinnati	5.25	5.50	5.35	**5.00@6.00**
S. E. Ky. screenings	Cincinnati	4.85	5.40	5.25	4.[illegible]@4.[illegible]
Kansas lump	Kansas City	6.00	6.00	6.25	6.00@6.50
Kansas mine run	Kansas City	5.00	5.00	5.[illegible]	5.00
Kansas screenings	Kansas City	2.85	2.75	2.60	2.[illegible]@3.25

*Gross tons, f.o.b. vessel, Hampton Roads.

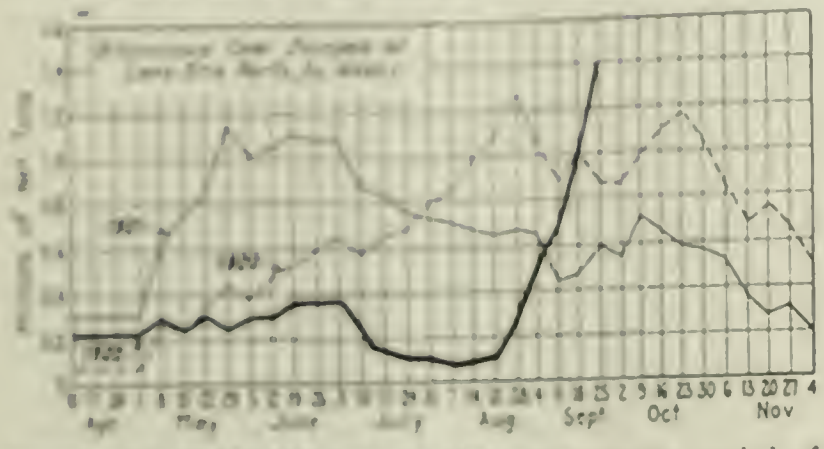
†Advances over previous week shown in heavy type, declines in italics.

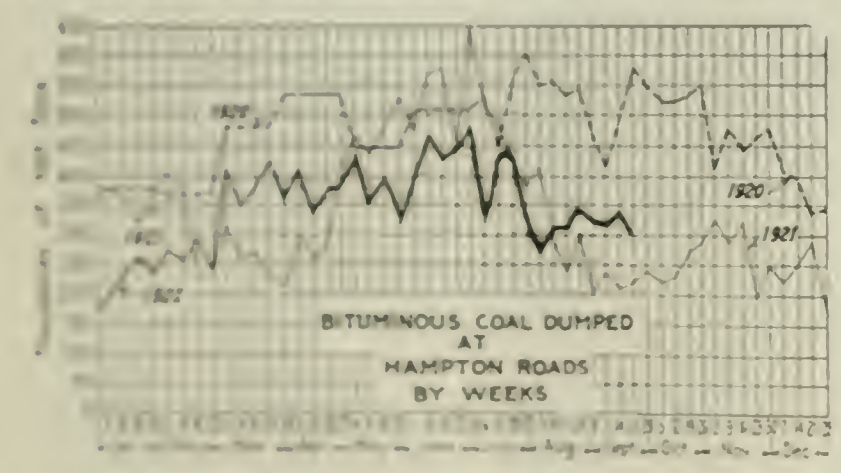
NOTE—Smokeless prices now include New River and Pocahontas.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

INCLUDES PENNSYLVANIA STATE TAX

	Market Quoted	Freight Rates	Latest Independent	Pre-Strike Company	Sept. 25, 1922† Independent	Sept. 25, 1922† Company
Broken	New York	$2.54		$7.60@$7.75	$[illegible]	$7.75@[illegible]
Broken	Philadelphia	2.19	$7.00@$7.50	7.75@7.85		7.90@8.10
Egg	New York	2.14	7.60@7.75	7.60@7.75	9.25@9.50	7.75@8.35
Egg	Philadelphia	2.19	7.25@7.75	7.75	9.25@9.50	8.10@8.35
Stove	New York	2.14	7.90@8.20	7.90@8.10	9.25@9.50	8.00@8.35
Stove	Philadelphia	2.19	7.85@8.15	8.05@8.25	9.25@9.50	8.15@8.35
Chestnut	New York	2.14	7.90@8.20	7.90@8.10	9.25@9.50	8.00@8.35
Chestnut	Philadelphia	2.19	7.85@8.15	8.05@8.25	9.25@9.50	8.15@8.35
Range	New York	2.14				8.15
Pea	New York	2.22	5.00@5.75	5.75@6.45	6.55@7.00	6.15@6.20
Pea	Philadelphia	2.14	5.50@6.00	6.15@6.25	6.75@7.00	
Buckwheat No. 1	New York	2.22	2.75@3.50	3.50	4.00@6.50	4.00@4.25
Buckwheat No. 1	Philadelphia	2.14	2.75@3.25	3.50	4.00@5.50	4.00
Rice	New York	2.22	2.00@2.50	2.50	2.75@4.00	2.75@3.00
Rice	Philadelphia	2.14	2.00@2.50	2.50		2.75@3.00
Barley	New York	2.22	1.50@1.85	1.50	2.00@3.00	2.00
Barley	Philadelphia	2.14	1.50@1.75	1.50		2.00
Birdseye	New York	2.22		[illegible]@2.10		2.75







Coal Age Index 418, Week of Sept. 25, 1922. Average spot price for same period $5.06. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S., weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. (Pittsburgh District prices not included in figures for last week.)

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan 1 to Apr 1, 1922 Inclusive	Week Ended Sept. 9
U. S. Total	45 6	55 7	
Alabama	63.5	64 6	88.0
Somerset County	55 5	74 9	41 6
Panhandle, W. Va.	55 3	51 3	68.6
Westmoreland	54 9	58 8	90.4
Virginia	54 8	59.9	48.6
Harlan	53 3	54.8	18 3
Hazard	51 7	58 4	14.4
Pocahontas	49 8	60.0	38 6
Tug River	48 1	63.7	28 5
Logan	47 6	61 1	24 2
Cumberland-Piedmont	46 6	50.6	34 9
Winding Gulf	45 7	64.3	38 1
Kenova-Thacker	38 2	54.3	48 5
N. E. Kentucky	32 9	47 7	27.0
New River	24.3	37 9	36.0
Oklahoma	63 9	59.6	58 2
Iowa	57 4	78 4	84.8
Ohio, Eastern	52 6	46.6	56 1
Missouri	50 7	66 8	65.0
Illinois	44 8	54 5	61.2
Kansas	42.0	54.9	78.3
Indiana	41.4	53 8	(a)
Pittsburgh†	41.2	39.8	(a)
Central Pennsylvania	39.1	50.2	80.1
Fairmont	35 3	44.0	53.8
Western Kentucky	32 5	37.7	38.9
Pittsburgh*	30 4	31.9	(a)
Kanawha	26.0	13 0	10.4
Ohio, southern	22.9	24 3	44.3

* Rail and river mines combined.
† Rail mines.
(a) No report.

Car Loadings and Surplusages

	All Cars	Coal Cars
	832 744	139,570
	931 598	149.487
	749 552	142.148
		195 142
	43 168	34,685
	70 455	54 566
	287 972	120.831

Foreign Market And Export News

British Market Further Depressed; Better Trade Conditions Aid French

Compared with the activities of the last few weeks the north of England coal market is in a weak state. There is plenty of coal to be had, especially in the gas and coking varieties. Port congestion is still acute and operators are pressing their claims for three shifts for coal transport workers. Steam coals are lower in price and 20,000 tons have been sold for shipment during Jan.-March at 23s. Coasting business is more active but foreign buying is disappointing especially in the American, Italian, French and Scandinavian markets. Few contracts are worth reporting other than 50,000 tons of good Durham coking coal at 20s. 6d. for delivery f.o.b., during Sept.-Dec., and 5,000 tons of Durham gas coals for Bordeaux at 20s. 2d. c.i.f. for shipment in October. Inquiries from Germany continue to be strong.

The South Wales market is in a similar position. Since the rapid falling off of American demands prices have declined and operators have an abundance of coal to sell. On the other hand home demands for Welsh coal are slightly stronger. The Scottish trade is very quiet except for certain shipments to the Continent, especially Germany. Output during the week ended Sept. 9, declined slightly, according to a cable to *Coal Age*, falling from the previous week's record of 5,204,000 gross tons to 5,161,000 tons.

French Output Steadily Increases

Under the beneficial influence of the diversion created by sales of British coals to North America and influenced also by the present revival in the metallurgical and textile trades and by the approach of winter, the market may be considered quite satisfactory. Northern mines are taking from their stocks, and contracts are easily renewed.

Production is being gradually increased by the heavier output from devastated mines in course of reconstruction and, as the principal cause of the present improvement—the American coal strike—is essentially a transient one, it is easy to understand why French coal owners were so insistent at the recent Douai conference upon an extension of the miners' working time. A bill which, if enacted, would give satisfaction on that point to the coal owners, is now pending before the French Parliament.

Deliveries of German coke to France amounted to 312,000 tons in August, as against 418,000 tons fixed by the Commission of Reparations.

Coal Paragraphs from Foreign Lands

GERMANY—Production of coal in the Ruhr region during the week ended Sept. 10 was 1,761,000 metric tons, according to a cable to *Coal Age*. The preceding week's output was 1,729,000 tons.

ITALY—The price of Cardiff steam first is now quoted at 39s. 3d., according to a cable to *Coal Age*, as compared with last week's figure of 40s.

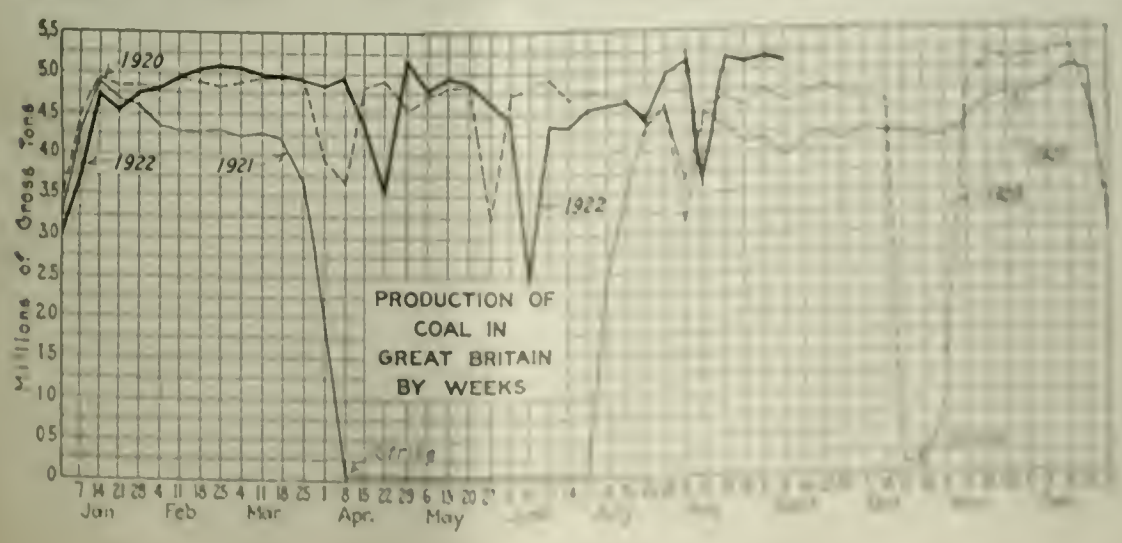
BELGIUM — A rising tendency is displayed by anthracite and some coals on the Belgian market in contrast to the weakness shown by industrial descriptions. Coke remains firm and active, while sales of briquets are good, even for export.

INDIA — The tone of the market is dull. Stocks are heavy. Mills and railways are not purchasing. Prices are: Bengal 1st, Rs. 30; Bengal good 2d, Rs. 27; English coal, Rs. 38; African coal, Rs. 27½.

PANAMA CANAL COAL PASSAGES were 404,389 gross tons during the fiscal year ended June 30, 1922. Of this tonnage the largest amount—236,749 tons—originated in the British Isles. The United States moved 156,122 tons. The West coast of South America took 153,639 tons of the total movement.

Canadian Imports Decline Sharply

Imports of anthracite by Canada during the first eight months of 1922 were 1,100,233 tons of domestic and 103,784 tons of steam sizes, as compared with average imports during the corresponding period for the last three years of 3,058,980 tons and 154,549 tons respectively. Imports of bituminous coal were 4,678,921 tons during 1922, while the three-year average imports for the same period were 8,368,264 tons.



Exports Clearances, Week Ended, Sept. 21, 1922

FROM HAMPTON ROADS

	Tons
For Atlantic Islands:	
Nor. S.S. Fram, for Port au Spain	2,344
For Cuba:	
Br. S.S. Berwindvale, for Havana	2,743
Nor. S.S. Helgoy, for Havana	2,344

Roads Prices Continue to Soften

The situation was more encouraging last week. For the first time since the coal strike the stocks on hand at the piers exceeded the vessel tonnage awaiting cargo, and export coal was moving for the first time in six weeks.

Movement from the mines continued to improve. Prices were weaker although no marked drop occurred during the week. The bulk of the coal shipped was being moved coastwise.

Hampton Roads Pier Situation

	Week Ended Sept. 14	Week Ended Sept. 21
N. & W. Piers, Lamberts Point		
Cars on hand	1,344	434
Tons on hand	73,663	72,896
Tons dumped	171,537	127,172
Tonnage waiting	71,850	61,450
Virginian Ry. Piers, Sewalls Point		
Cars on hand	1,183	906
Tons on hand	69,440	52,600
Tons dumped	61,565	93,974
Tonnage waiting	54,150	44,500
C. & O. Piers, Newport News		
Cars on hand	539	1,581
Tons on hand	26,000	85,400
Tons dumped	47,161	44,611
Tonnage waiting		1,400

Pier and Bunker Prices, Gross Tons

PIERS

	Sept. 16	Sept. 23†
Pool 10, Philadelphia	$5.50	$5.50
Pool 11, Philadelphia	5.00	5.00
Pool 10, New York	5.00	5.00
Pool 11, New York	7.75	7.75
Pool 1, Hamp. Roads	5.00	5.00
Pools 5-6-7 Hamp. Rds	5.00	5.00
Pool 2, Hamp. Rds	5.00	5.00

BUNKERS

	Sept. 16	Sept. 23†
Pool 10, Philadelphia	$5.75	$5.75
Pool 11, Philadelphia	5.25	5.25
Pool 10, New York	5.25	5.25
Pool 11, New York	5.25	5.25
Pool 1, Hamp. Rds	5.25	5.25
Pool 2, Hamp. Rds	5.25	5.25
Welsh, Gibraltar	40s.	40s.
Welsh, Rio de Janeiro	37s. 6d.	37s. 6d.
Welsh, Lisbon	40s.	40s.
Welsh, La Plata	40s.	40s.
Welsh, Genoa	40s.	40s.
Welsh, Algiers	40s. 6d.	40s. 6d.
Welsh, Pernambuco	40s.	40s.
Welsh, Bahia	40s.	40s.
Welsh, Madeira	40s. 6d.	40s. 6d.
Welsh, Teneriffe	40s. 6d.	40s. 6d.
Welsh, Malta	40s. 6d.	40s. 6d.
Welsh, Las Palmas	40s. 6d.	40s. 6d.
Welsh, Naples	40s.	40s.
Welsh, Bunkers	42s. 6d.	42s. 6d.
Welsh, Singapore	32s.	32s.
Welsh, Constantinople	35s.	35s.
Welsh, St. Michaels	37s. 6d.	37s. 6d.
Welsh, Alexandria	40s.	40s.
Welsh, Port Said	40s. 6d.	40s. 6d.
Welsh, Oran	40s.	40s.
Welsh, Fayal	40s.	40s.
Welsh, Dakar	40s. 6d.	40s. 6d.
Welsh, St. Vincent	40s.	40s.
Welsh, Montevideo	37s. 6d.	37s. 6d.

Current Quotations British Coal f.o.b. Port, Gross Tons

	Sept. 16	Sept. 23†
Cardiff		
Admiralty large	37s. 6d.	37s. 6d.
Steam smalls	25s.	25s.
Newcastle		
Best steams	24s. 6d. to 25s.	24s. 6d. to 25s.
Best gas	23s. 6d.	23s. 6d.
Best bunkers	25s. to 25s. 6d.	25s. to 25s. 6d.

† Subject to final confirmation next week. Allowance in heavy cargoes discretionary to owners.

North Atlantic

Slow Local Movement and Car Shortage Halt Price Drop

Large Buyers Most Active, Small Consumer Buying Mostly for Current Needs — Railroads Obtain Bargain Lots — Water Borne Coal, Including British, Prevent Soaring of Others.

Last week's price decline has been checked by the increasing car shortage and the slower movement of trade. The congestion is more noticeable at Western points than in the North Atlantic section, but demand appears to have caught up with the supply. Large buyers are the most active, the smaller consumer still taking but little tonnage other than for current needs. Railroad buying is increasing and the carriers have recently been able to obtain some bargain coal.

Receipts by water are holding other coals from higher levels. British domestic coal is a factor, much of this fuel being sold off for industrial purposes. Hampton Roads is still sending tonnage coastwise at figures that are lower than a fortnight ago.

NEW YORK

There was a fairly good movement during the week, with demand quiet. The lack of rolling stock is becoming more noticeable and had a tendency to steady prices. The failure to increase production much above the 9,000,000-ton mark is reason for much thought by those consumers who hesitate to fill their bins.

For the week ended Sept. 23, thirteen vessels carrying 53,561 tons of British coal arrived here. An unusual amount of this tonnage was said to be free coal and was offered at around $7.50, alongside, in small lots.

There was a slight flurry in buying and inquiries the last couple of days of the week. Coal, however, moved slowly. About 1,700 cars were reported at the local docks.

Because of the easy quotations and the ability to get coal many consumers are continuing to use bituminous coal instead of the anthracite steam sizes.

PHILADELPHIA

The market is steadily absorbing the output with no particular strain. It would seem that the withdrawal of cars for the anthracite trade has affected operations even more than anticipated. One line which had been turning over several hundred empties a day, has now discontinued this movement, and in addition has added a restriction against loading its equipment off the home road.

One good feature of the trade is the almost entire elimination of priority orders by the I. C. C., the only one now effective being No. 1, covering in a general way emergency shipments of a lower nature.

Despite the rather limited tonnage, lower prices are in the minds of most consumers and they continue to wait, at least to the point of placing only limited orders. The heavy consumer, who is also debating about price, is nevertheless taking good tonnages in an endeavor to get a normal winter stock. Railroads are in this class. As usual, however, the shipper is far from being able to make satisfactory prices on native fuel. Prices have been around $4.50, but some has sold at $4.50.

At Tidewater some reports are current that British coal is inclined to congest, due to the number of recent arrivals, although this is not believed to be particularly true of this port.

BALTIMORE

Prices are again on the rise. At this time the run of cars on entire sections is below 40 per cent, and on some days important operations receive not a single empty. While there is not a thorough reflection of this situation as yet at consuming points, the condition has stiffened the backbone of quite a few operators to demand higher prices.

With a rising market the enthusiasm of Baltimore buyers to cover grows a bit less, as consumers here are in a somewhat better position than those at some other points by reason of the relief that came from the delivery of more than 100,000 tons of Hampton Road coals by barge, which went largely to local plants. Some of the English coal coming in for domestic use has also been sold to industrial plants when its broken condition in particular has brought about its sale below the price charged dealers who are supplying it for household use.

UPPER POTOMAC

Steady advances are being made in the Upper Potomac as conditions are restored to a normal basis. There are, however, a few mines along the Western Maryland still not in operation. With coal becoming more plentiful in Eastern market prices are softer.

FAIRMONT

Western shipments were put under the ban early in the week ended Sept. 16, owing to the fact that the B. & O. was unable to handle this business. During the greater part of the week the car supply was not ranging over 40 per cent of potential capacity. With so much coal forced eastward operators feared that those markets would soon become glutted.

CENTRAL PENNSYLVANIA

Prices vary but show a decline since the first week of the strike settlement. Pool 11 is $4@$4.15; Pool 10, $4.25@$4.50; Pools 9 and 71, $4.55@$4.75; Pool 1, $5@$5.50. High-volatile coal is $4@$4.25.

Railroads find themselves short of motive power to move all the coal. The Altoona shop of the Pennsylvania has a force amounting to 101 per cent of the force before the shopmen's strike was called. With this concentrated on engine repairs, much road equipment is being turned out daily.

Coke

UNIONTOWN

Only the tent colonies scattered about the Connellsville region show the existence of the miners' strike. At plants where cars are placed for loading there is sufficient labor to operate them.

The car situation is becoming acute but despite that development the coal market remains unchanged with the range of $4@$4.50 which has prevailed for the past two weeks. There are plenty of orders for available tonnage but consumers are not disposed to bid against each other.

As a general condition striking miners are holding fast and the majority remain with the "lost cause." Their confidence of ultimate victory despite the many broken promises of the organizers is one of the most remarkable things about the strike. Although union miners have now been working a month no effort has been made on the part of the union to supply that financial relief which was promised to striking Connellsville miners.

CONNELLSVILLE

The coke market has advanced, furnace coke being at $12 and foundry, $13.50@$14. Increasing output is limited by transportation conditions at most plants. There are thousands of men in the region still who consider themselves on strike but a complete wiping out of the strike would have little effect except to start some plants and curtail operations at others, there being a re-distribution of cars rather than an increase in the total supply available.

All told only three or four blast furnaces have been able to resume in the past 30 days on purchases of Connellsville coke, although a couple of steel interests have bought some tonnages, to mix with their byproduct coke. It seems very doubtful if in present circumstances any additional furnaces will be able to collect a supply as offerings are limited and a decidedly heavy demand has sprung up from miscellaneous consumers, in particular a widespread demand from retail dealers. Demand from foundries appears good, not so much because consumption is heavy as because foundries have little coming to them on contract and must buy from time to time.

The *Courier* reports production during the week ended Sept. 16 at 77,500 tons by the furnace ovens and 22,290 tons by the merchant ovens, a total of 99,790 tons, an increase of 2,460 tons.

BUFFALO

Byproduct ovens are getting more coal and are increasing their output. The local furnaces are running strong and are now getting more West Virginia coal by water since the car movement is a little better from that direction. Jobbers quote 72-hr. Connellsville foundry at $13, 48-hr. furnace at $11.50.

Anthracite

Company Price Notices Start Sales of Tonnage

Quotations Higher Than Latest Pre-Strike Figures — Heavy Independent Movement Beyond Pennsylvania Likely, as Producers Say Fair Practice Maximum Is Too Low — Steam Sizes Again Competing with Soft Coal.

New prices have been announced by the companies, who are now releasing the tonnage that had been held at destination pending this announcement. Quotations show an advance over the latest pre-strike figures, presumably to cover the Pennsylvania state tax. Independent domestic sizes are moving within a range of $9@$9.50. The $8.50 maximum set by the Pennsylvania Fair Practice Committee may result in a heavier independent movement to points outside of that state, as many producers say their price must exceed that figure to enable them to operate.

No Lake charters have been reported as yet, although a small amount is dribbling into the Northwest. The movement so far has been almost entirely eastward.

BALTIMORE

Some light supplies have been received. These receipts are all independent coal apparently, which leaves the trade here in a rather peculiar position. The papers have drawn comparisons between the selling price of the retail ton in New York and the retail price in Baltimore as set by some individual dealers.

The freight differential in favor of Philadelphia and New York, however, together with the fact that the New York price is based on the net ton while the Baltimore price is gross by law, proved the big factor in showing that the Baltimore dealer is not getting too much for his coal. Should the day return when the Baltimore dealer can get one-half, or even one-third of company coal, or when the independent price comes down to or near the company price, then the dealer would be warranted in re-adjusting.

NEW YORK

Coal is coming forward in good volume. One of the features of the situation is the difficulty some dealers in independent buckwheat have in disposing of their supplies, although it is said they offered it at company schedule.

Most companies have made known their new price lists and some retail dealers have done likewise. While nothing has been said by the producers regarding their disposition of the Pennsylvania State Tax it is understood that it has been included in the new prices.

Retailers are advertising in the daily papers the fact that coal is coming forward and that those consumers who have not done so should place their orders and that they would be filled in their order. However the State Fuel Administration proposes to see that no consumer secures more than a two weeks' supply at any one time.

Independents are quoting $9@$9.50 for the large coals, although there are reports that some of the smaller operators are exceeding those figures.

ANTHRACITE RETAIL PRICES
(NET TONS)

	Manhattan and Bronx (Labor extra)	Brooklyn and Long Island City (Incl. labor)
Egg	$13.25	$13.50
Stove	13.25	13.50
Chestnut	13.25	13.50
Pea	10.75	11.25
Buckwheat	8.20	8.30
Rice	7.20	7.30
Barley	6.20	6.30

BUFFALO

There is now a little hard coal coming in. So far no price has been made and the coal goes out without a bill. Practically all of the Canadian dealers have already been over here, asking for coal.

All sorts of reports come in from the independent districts. One jobber has obtained a mine price of $12. Another has sold considerable at $13.50.

There is to be Lake coal to load in a week or so, but no charters have been made. There is ample tonnage yet, in spite of the increased loading at Ohio ports.

BOSTON

Dealers are much cheered by early shipments that have already been made. The first cargo of prepared sizes reached Boston on Sept. 22, from Philadelphia, and this will be followed shortly by a dozen or more other cargoes. All-rail, also, considerable shipments have already been made.

There is satisfaction also in the prices announced by the old line companies. The new basis is regarded as fair to the public.

PHILADELPHIA

When company producers announced their schedule of mine prices, the *Coal Age* forecast last week that an increase of 25c@30c a ton was likely was borne out, as the average increase on the three large sizes figures out 28c. None of the companies has issued a circular and prices are quoted for current shipments only; neither has anything been said about State tax and this item has no doubt been covered in the increases noted above.

The independents as a whole have been somewhat slower to announce prices. As yet it is not known what action the independents will take upon the Governor's statement that maximum prices shall not be higher than $8.50.

Retail prices are far from settled, although it is thought those handling company coal will have a price of about $14.50 for prepared sizes, with $11 for pea. However, those dealers who have been receiving prepared sizes at $9.25@$9.50 have been charging $15 for it, and $12 for pea.

Steam coal prices have been considerably increased by the companies. There is considerable variation in independent prices, with none selling buckwheat under $4 and some as high as $5. The demand for all steam sizes is strong and there is very little free coal on the market.

ANTHRACITE FIELDS

Some of the mines have not as yet resumed operation but in these cases the cause for non-resumption has been due to heavy falls of roof that have to be cleared up first. The condition of the mines really depended on the action of the union locals. Many of the locals were willing for the companies to use sufficient men to keep the mines up while others would not permit any of their men doing this class of work.

Production will be probably kept down by the unions themselves as they do not desire to see any coal in storage when the expiration of the contract comes.

South

BIRMINGHAM

Transportation service is still the greatest matter of concern in this district. Approximately 60 per cent represents the general average of requirements as furnished by all carriers. This situation is responsible for as active a market as now exists for steam coal, demand being slightly in excess of the tonnage being produced. Consumers in general are not getting as much coal or receiving it as promptly as they would like but this is due to car supply alone, which has crippled production and movement from the mines.

Some of the carriers insist on observing the priority regulations, although it is understood that first and second priority classes have been getting more coal than actually required except in the case of domestic dealers. There is a distinct shortage of this grade in the spot market and inquiry is strong.

Prices on spot steam and domestic grades within the state have practically stabilized on the basis of the fair-price schedule, a slight premium being offered on both grades of fuel for shipment into adjacent territory.

VIRGINIA

Transportation facilities have not been quite as conducive to an increase in the output as was the case earlier in the month so that less than 50 per cent of capacity or about 125,000 tons a week are being produced. There is still a healthy demand, although Eastern markets are becoming more plentifully supplied. Some buyers are making inquiry about domestic, with the result that egg and lump have stiffened in price to some extent.

Chicago and Midwest

Car Shortage and Weak Steam Demand Prevail

Kentucky Mines Average One Day While Illinois and Indiana Fields Work Two Days a Week—Domestic Prices Firm but Others Soften.

Weak transportation and slack demand for steam coal continues. In eastern Kentucky car supply got so bad last week that many a mine worked but one day and some of them got only a part of a day. Western Kentucky service was almost as bad. In southern Illinois the average of 50 per cent continued to prevail while in central and northern Illinois the record was brighter, running up in some sections to a point close to 75 per cent. Indiana was fully as afflicted in most fields as southern Illinois.

While the call for domestic sizes continued fairly good and prices level, steam coal here and there got into trouble so that a general softening of steam prices was noticed. The difficulty of moving steam coal was so marked that a number of contracts for the coming six months were reported. Some of these from central Illinois ran below $2.50. The coal trade in various prophecies some sort of crisis with the first cold snap.

CHICAGO

The "strike" of big coal buyers is working its way thus far. Prices on many steam sizes continues to soften under the influence of heavy shipments to this market on consignment so that at the end of the week it was possible to pick up large lots of screenings and mine run at prices ranging from $2.75 down to as low as $2.50 in a few instances where the pinch was felt most keenly by the shippers. Through it all, however, southern Illinois operators steadfastly refuse to drop their circular on steam coal though some of it is getting away somewhat at figures a little below the $4 bottom quotation. Many producers merely continue to put the slow sizes on the ground if they have no contracts on which to ship it.

The trade is watching sharply for the signing of new steam contracts. It has been held all along that this is the worst time imaginable for the making of such agreements for the future but the fact remains that some producers are breaking loose and making them. Contracts with railroads at least have the tendency to improve car supply to the producer though they do not guarantee it. Much to everybody's astonishment some of these contracts fix prices for the coming winter at somewhat below $2.50—even as low as $2.25 in one case.

Domestic demand continues fairly strong and prices hold quite firm, but dealers have been doing a lot of buying without unloading to consumers as they have anticipated. In other words the householder has not felt the urge yet. A thin flow of smokeless is getting into Chicago and goes swiftly to retailers. The first trickle of anthracite is going to appear within a few days it is quietly predicted by one shipping concern but only a small volume of hard coal is expected before the first of the year.

INDIANAPOLIS

In spite of the fact that there is a serious coal shortage in Indiana there is not the industrial or domestic demand that was expected when the strike was settled. Along with the general unrest in the market come numerous charges from various sections of the state of profiteering in coal.

The Indiana Public Service Commission thinks $4.50 at the mine is fair. It is receiving by each mail letters from all parts of the state that prices are much higher. Brokers are believed responsible to a large degree. An investigation of marketing is to be made. Some coal is selling at more than $5 at the mines. Practically all grades of foreign-mined coal, largely used in Indiana for domestic purposes, are bringing at least $2 more per ton than they did at this time last year. Retail demand is light.

ST. LOUIS

Locally there has been a vast improvement in the past ten days in the matter of domestic coal. The public is waking up to the fact that anthracite, coke and smokeless fuels are not available and they are ordering the next best thing, which at the present time is chiefly Mt. Olive. Carterville is hard to get and the biggest company in St. Louis has refused to take any Carterville orders.

Mt. Olive is selling in greater proportion than all the other coals together. For open market Standard is bringing $4@$4.25, while Mt. Olive for St. Louis is bringing $4 and Mt. Olive at retail is $7.50 and Standard, $6.75. The Standard operators are taking advantage of an outside market to keep prices up and are shipping heavily to Chicago on consignment. Locally and in the country steam is quiet. Country domestic business is good, consumers taking any coal they can get.

WESTERN KENTUCKY

Car supply, which has been especially poor since Northern coal fields resumed, is growing worse. The Illinois Central, during the general strike furnished almost full car supply, while now it is down to about 50 per cent. On the L. & N., car supply is reported at around 18 per cent.

Coal is a little scarce due to the small movement, and prices are slightly stronger than they have been, as there is a fair demand in the Louisville, Memphis, Nashville, Evansville and other close markets, with some demand still from Chicago and St. Louis. Lump coal is scarce and shows indications of further advances. It is quoted $4.75@$5.25, with very little selling at less than $5.

Right now there does not appear to be much prospect of any material improvement in car supply, unless the plan of routing coal cars under other loads in the direction of the owning line, aids in getting them moved from Northern lines. Today it is not a question of getting business but only to secure cars.

SOUTHERN ILLINOIS

A marked decrease in the amount of equipment furnished has almost stopped production at some mines in the Carterville field. The Missouri Pacific and Illinois Central are in the worst condition. The Burlington seems to be in the best shape. Railroad coal throughout the field is moving out heavily and is making great inroads on domestic. It will take at least three months, operators figure, to get caught up on domestic orders on the books now. Steam sizes are slow. There is much dissatisfaction among miners on account of poor working time.

Somewhat similar conditions prevail in Duquoin and Jackson. Work time is better in the Mt. Olive district, except that no cars were furnished for eleven days at one mine on the Chicago & Northwestern. On account of congestion in this field considerable tonnage is moving to Chicago and the Northwest.

In the Standard district some mines are getting from two to three days per week. It is not a question of quality or preparation any more, it is merely a matter of coal. The county fairs in Illinois have helped to keep tonnage down this week for when there were no cars the mines would not work, especially on the Mobile & Ohio.

Steam sizes are slow and hard to move on account of the big plants that drew from this territory in Missouri using oil. The cancellation of Order 23 will help conditions some, but the assigned car order may cause another tie-up if the railroads decide they want all the coal.

The future is not good. Colder weather will mean an increased demand that cannot be met and there is nothing to indicate that car supply or motive power will show any improvement in the next two or three weeks.

LOUISVILLE

Although production of the country is increasing, in Kentucky it is materially off due to the very poor car supply at Kentucky mines, and prices are advancing. Eastern Kentucky is asking as high as $8.25 for lump, while screenings and mine run are low at $5@$5.25. Retailers need coal, but won't buy it at prices quoted, holding that they can't pay the freight, and handling costs, and still sell it at a price that is fair to the consumer. It is reported that the producers of gas coal are getting better demand and a premium of about 50c. a ton.

Hazard field operators reporting only 8 to 11 per cent of cars needed, and Harlan producers report that the situation is even worse there. Western Kentucky is reporting 18 per cent on L. & N., and 50 per cent on the I. C. The Kentucky coal trade believes that some railroads are holding many serviceable coal cars on sidings around over the country that ought to be in service.

Northwest

Prices Softening Some As Cargo Coal Flows In

Stream of Vessels Unloading at Every Dock—Make One-Day Turn-Arounds —Threatened Dock Strikes Cause Much Worry—Anthracite Arrives.

The Northwest continues to have its fretted feelings soothed by a heavy volume of cargo coal that is arriving in record-breaking quantity. Docks are concentrating every effort to make speedy discharges so that boats often make one-day turn-arounds. This coal has already blunted the edge of climbing prices. With all this coal coming in and prices softening the Northwest now worries principally about the threatened dock strikes which might cut off Lake coal during part or all of the remaining weeks in the shipping season.

The other main worry is over anthracite. The first shipments since the strike are just beginning to arrive and various conjectures are made as to whether enough will get through to meet the most urgent wants. Yard remnants are selling around $16, but in Milwaukee it is estimated the retail price for the rest of the winter will be at least $17.

DULUTH

Prices of Youghiogheny, Hocking and Splint have dropped. Coal men say that this is not so much an actual decrease as it is an adjustment to true values. It is openly stated in the trade that those who were asking $12 for lump, $11.50 for run of pile and $9.50 for screenings last week, were profiteering and that the downward revision is only an adjustment to the correct scale. At the dock lump is sold at $9.50 now, run of pile at $9 and screenings at $7.50. This adjustment has proven most stimulating to trade and many orders are being booked. The docks, of course, are absolutely clean, as coal is being shipped out as fast as it is received.

Receipts are passing all precedent. Last week forty-one cargoes arrived and thirty-four more are scheduled to arrive within a day or two. The forty-one cargoes brought in more than 350,000 tons. Docks are handling the rush in a most commendable manner. Boats are given one-day dispatch, which is unusual even in normal times.

The possibility of a seamen's strike and the reported disturbance on Lake Erie docks are the only two dark clouds on the coal horizon at present. If the seamen strike Oct. 1 it will mean that the Northwest will be in trouble, and if a strike occurs on the docks it is certain that a large proportion of the coal being routed to the Northwest will be diverted. If shipments continue as at present it is an assured fact that the Northwest will be all right this winter.

There is a large call for Pocahontas, which is selling at $12 for lump and $10 for mine run. Briquets also are being sold for anthracite substitute, the price being around $10. Coke is going at $11. Three docks—the Pittsburgh, Carnegie and Northwestern—say that they will start unloading anthracite early this week. No one here knows what the anthracite situation will be. Some claim that the seriousness has been over-estimated, and that not nearly the total tonnage estimated will be required.

MILWAUKEE

Milwaukee's coal supply has been materially increased since last week's report, and an easier feeling prevails. There promises to be a continuous procession of coal vessels to this port from now on. Receipts during September thus far aggregate 233,313 tons of soft coal, making the season's receipts by Lake, including 700 tons of anthracite screenings, 1,086,625 tons.

Interest is now centered in the prospective price of anthracite. Word that $8.55@$8.70 has been set at the mine, leads to the prediction that anthracite will cost Milwaukee consumers $17@$18 per ton when the new supply is available. Remnants in town now are selling at $15.75 for egg, $15.95 for nut, and $16 for stove. No anthracite has arrived as yet but a consignment is expected some time during the next week.

The State Fuel Committee intends to prevent dealers from profiteering. The committee is sending a questionnaire to fifty-eight docking companies asking about costs. From this the committee expects to arrive at dealers' real costs and profits.

MINNEAPOLIS

At last cargoes are reaching Lake Superior docks in good number. If this can be continued for a few weeks, stocks will afford a fair promise of meeting the most urgent needs of this country for the early winter. Only about ten weeks of navigation remain. Transportational troubles limit the volume of Illinois coal that might come up here by rail.

The real difficulty is and has been a matter of getting cars to move the coal from the mines to the docks. There may be now and then a shortage of boats at the lower ports for loading. But the primary difficulty has been cars,—always cars. And the same thing is equally true of the all-rail mines.

One effect of the tonnage moving to the docks has been a softening of top prices. There will be an easing off right along, if transportation does not fail entirely. Coal men now believe the Northwest will be supplied with enough soft coal to serve all urgent needs, and with a portion of the usual hard coal tonnage.

Much complaint is made over alleged profiteering. One association of flour millers has set up that Illinois screenings were quoted at $1 at the mine less than a year ago, and are now quoted at $4.50 at the mine.

New England

No Improvement Shown: Market Remains Inactive

Consumer, Well Stocked, Shows Little Disposition to Buy for Future Needs —Current Inquiries Small and Scattered—Car Shortage Severe.

There is no improvement in what is regarded as a very inactive market. Consumers are well stocked and it would take much more attractive prices than are now ruling to induce buying. There is a firm impression that steam coal is bound to be plentiful for months to come and there is little disposition to buy against January or February consumption. The larger corporations have ample reserves and the only current inquiry is from small users scattered all over the territory.

While there is little spot business at Hampton Roads a car shortage has developed sufficiently to curtail mining in certain of the smokeless districts. The market on Pocahontas and New River meanwhile is supported by Western demand.

Prices f.o.b. vessel at the Roads continue to range $7.90@$8.25 per gross ton, but a large proportion of what coal is dumped is applicable on contracts. Railroad piers at this end are so congested that those who have quotas due them are inclined to postpone shipment for the present.

There is a full line of Pennsylvania grades available for spot shipment at prices all the way from $4 per net ton at the mines to $5.50 for quality coals. The market for Tidewater shipments is sufficiently depressed, however, to leave very little opening for rail deliveries within easy range of re-handling points. It is hard to say how there can be any improvement for Pennsylvania coals the next 60 or 90 days.

Delays on British cargoes continue. At certain of the railroads there is delay of more than three weeks, while private docks are also tied up for at least a fortnight, and foreign cargoes are still arriving. Very little of this, however, is offered on the open market, because the great bulk of these deliveries are for account of corporations and other large consumers who made purchases six weeks or so ago.

Eastern Inland

Domestic Coal Is Strong; Lake Dumpings Gain Rapidly

Yard Stocks Being Replenished and Mine Prices Are Up—Steam Stocks Ample and Demand Weak—Buyers Hope for Lower Prices with Close of Lake Season.

Domestic coal is the only strong market feature. Retailers are actively replenishing yard stocks and mine prices are up, with not much free coal offered. On the other hand, steam supplies are ample and demand is weak.

This steam market quietude has been heightened by the passage of both state and federal coal measures. Ohio is to fix prices for her coal and this tends to restrict current purchases to the barest needs. Then too, the buyer feels that with the Lake season closed, enough tonnage will be thrown on the commercial market to soften prices. Lake dumpings are rapidly increasing and shippers are still hopeful of moving 15,000,000 tons this season.

CLEVELAND

Dull and listless market conditions continue. Supplies are ample and the demand is weak. The feeling of consumers that prices would fall is being justified by the event. Mine run is selling around $4. This is a drop of 50c. in a week and nearly $1 a ton in a little over a month. Market quiet has been heightened by the train of developments leading to the special session of the legislature, the passing of the fuel control bill and finally the appointment by the governor of a state fuel commission. This commission is now taking up the problem of fixing prices. No attempt will be made to fix a flat rate for the entire state. Pending these detailed arrangements, consumers are reducing their requirements to pressing immediate needs.

Lake movement is making excellent headway. The Ore & Coal Exchange, which has the plans for expediting the vessel shipments, is still aiming at a total movement for the season of 15,000,000 tons.

Pocahontas is beginning to arrive in restricted quantities. Dealers are about four weeks behind in their deliveries and orders are being filled as rapidly as the fuel is available. Shoveled lump is selling for $11.75. Practically no anthracite is being received.

PITTSBURGH

Production is at the limit of car supply and there is no prospect of any material change in this situation in the near future. In some quarters there is complaint that too many loaded cars have been allowed to go to the Lakes but such criticism is not universal. Perhaps as a reflection of consuming points enjoying priorities having as much coal as they can unload, the Pennsylvania a few days ago suspended all priorities.

There is a fairly open market for buyers having priorities, and more or less opportunity for others to buy, in small quantities. It appears that occasionally byproduct ovens can buy coal in the open market but in general such business can hardly be put through.

Prices show a wide range, partly because of there being many coals of somewhat indifferent grade in the market, such as are not produced in normal conditions. Indifferent steam coal ranges $4@$4.50 for mine run. Better and best grades range up to $5. Good domestic lump is $5.25@$5.50. The Pittsburgh Coal Co.'s "circular" prices, although no actual circular has been issued, are $4.75 for slack, $5 for mine run and $5.25 for domestic 1¼-in. lump. Connellsville steam is around $4.25.

COLUMBUS

Domestic grades are the strongest point in the market while steam has shown a marked reaction in price. Production is going along as well as possible under the circumstances. Available coal is quickly bought up but steam users are loath to pay the extreme high prices and quotations have sagged considerably. Lump from all fields find a ready sale around $6 and even higher. The larger part of the tonnage coming in is Hocking and Pomeroy. Retail prices are rather high with Hocking and Pomeroy selling $8@$9.50, and West Virginia splints, $9.50@$11.

Lake trade is slowing down because of the high prices asked. One contract was made recently at $4.50 for Hocking mine run, where the Lake shippers will screen the coal and take the lump and resultant size. Shipments over the H. V. Docks at Toledo during the week ended Sept. 20, were 164,570 tons, as compared with 121,769 tons the previous week, making a total of 2,148,723 tons for the season.

EASTERN OHIO

During the week ended Sept. 16, mining operations were speeded up and the output exceeded that of any week since the settlement of the strike. Production was 325,000 tons as contrasted with a potential capacity of 630,000 tons, or 52.5 per cent. The 300,000 tons lost is chargeable in the main to car shortage. Thirty per cent of capacity has been produced so far this year.

Unless improvement can be had in the transportation situation, it does not appear that the mines in this district will be able to operate over 50 per cent of full time. However, with the striking shopmen returning to the roads, the trade is more optimistic.

The so-called "buyers' strike" is, no doubt, attributable to two causes; First, a concerted movement among buyers to prevent any scramble for fuel which might evolve a runaway market, and second, the appointment of a fuel administrator in Ohio under the legislation recently inaugurated and the expectation that the fair prices which are to be named by him may possibly be under those now prevailing in the spot market.

It is estimated that about 60 per cent of eastern Ohio's output is being sent to lower docks for the consignment to the Northwest and steam users, no doubt, feel that when the season of navigation closes ample supplies will be obtainable for storage purposes. A reactionary tendency in spot prices has accompanied the lack of urgent demand and quotations are slightly lower than last week.

Bituminous coal receipts at Cleveland during the week ended Sept. 16, were the largest in some weeks; industries received 726 cars and retail yards 142 cars, this being an increase of 171 cars over the preceding week.

DETROIT

The modification of Service Order 23 has created a more optimistic feeling among industrial and domestic consumers and the belief is expressed that a larger movement will soon be directed into the city. The buying that is now being done seems to come almost entirely from steam consumers who are obliged to come into the market to provide for current requirements.

Hocking lump and egg is quoted at $6.50 f.o.b. mines, while mine run is $5.25 and slack, $5. Fairmont and Pittsburgh No. 8 take about the same price. Lump and egg from Kentucky and West Virginia is $7, mine run, $5.50, and slack, $5.25@$5.50.

The deficiency in the anthracite supply is occasioning much uneasiness. In many Detroit homes the heating equipment is of a character unsuited to use of any fuel except anthracite or coke and the supply of the latter is nearly as short as is anthracite.

BUFFALO

Consumers refuse to buy at all liberally, no matter how the matter of car shortage is set before them. They are bound that the price is coming down and as they have coal they hold off.

Railroads have cut down the mines to about 30 per cent of capacity and even then fail to furnish that amount. It is now reported by some of the leading local railroad officials that the worst of the car shortage is already over, on account of the return to work of so many shopmen, but the shippers are not willing to accept a mere statement of that sort. As a rule shippers believe that we are just at the beginning of the worst shortage in the history of transportation. It really looks that way.

Prices range $5.25@$5.75 for Pittsburgh ⅜-in., and $4.75@$5.25 for Allegheny Valley mine run. Slack sells a little higher than mine run. Add to these figures $2.09 for Allegheny Valley and $2.24 for Pittsburgh for freight.

NORTHERN PANHANDLE

There is an active demand at the Lakes for the output of the region although there is a disinclination on the part of the Lake buyers to pay the current market prices. Northern shipments are as large as railroad facilities will permit. A large percentage of the output is being utilized by the carriers. Some producers are shipping by water in view of curtailed rail transportation.

Cincinnati Gateway

Combination of Events Makes Market Uncertain

Softness at Tidewater, Price Fall at Fairmont, Aloofness of Lake Buyers and Change in I. C. C. Order Influence Trade—Buyer Now Better Able to Obtain Fuel at His Own Figure.

Softness of the market at Tidewater, falling prices in the Fairmont field, a general disposition of Lake buyers to remain aloof and a modification of the I. C. C. Order 23 all militate against an easy or set swing to the market. There has been a lot of running around to find out which way things were heading, a general uncertainty as to what might be expected and a disposition to go warily lest there be some untoward change that might upset the best of calculations.

The market in the meantime has developed its own soft spots, with steam coal edging off in price and an ability of the buyer to get fuel at his figures more readily than he has been in the past three months.

HIGH-VOLATILE FIELDS

Kanawha

Partial paralysis of transportation is still the most potent factor in retarding production. During the week ended Sept. 16 mines were not able to produce more than 40 per cent of potential capacity. There is a better demand in Western markets than in the East. The call for prepared sizes is becoming much more active. Little coal is being prepared, however.

Logan and Thacker

Logan mines have been greatly handicapped by exceedingly poor transportation facilities, the car supply not being equal to much more than 35 per cent of rating. There is little free coal available. There is a growing demand for domestic grades with little to be had, so that prices have stiffened to some extent.

Inroads were made on production in the Kenova-Thacker region by a shortage of cars but notwithstanding this the field is producing more coal proportionately than some other high-volatile regions. The Western movement is far from being satisfactory, however. Railroad fuel consumption is heavy. In common with operators in other fields, Kenova-Thacker producers observe a stronger demand for egg and lump owing to the necessity of retailers restocking.

Northeastern Kentucky

Demand is still much in excess of the output, which is not more than 30 per cent of potential capacity or less than 100,000 tons a week. Most of the priority orders placed in this region having been filled, the mines are now shipping on regular business. Railroads are securing a good deal of coal and some is also going to the Lakes.

The fact that demand is outstripping the supply of domestic is responsible for increased prices on lump coal, ranging up to $6.50.

LOW-VOLATILE FIELDS

New River and the Gulf

New River mines are still working on an open-shop basis, but the car situation is extremely bad and precludes more than a 40 per cent production. Market conditions are conducive to a larger output than the transportation situation permits, yet very few producers are securing more than the Hoover price of $4.50. There is a growing demand for prepared coals and for mine run in the West. There are a few priority orders still in evidence but they are not numerous, the various committees having virtually ceased to function.

Winding Gulf mines are handicapped to about the same extent as New River. Production losses are still averaging about 150,000 tons a week as against an output of little more than 100,000 tons a week. For such coal as is produced there is a fairly active demand with comparatively little fuel from this field shipped to Western markets, owing to the difficulty of getting such coal through. Priority orders have largely ceased.

Pocahontas and Tug River

Pocahontas mines are faring better than those in other smokeless territories, owing to more satisfactory transportation conditions. The greatest difficulty is in getting coal to Western markets where there is sufficient demand to justify a large movement. The N. & W., however, is able to transport more coal to Western points than other lines operating in southern West Virginia. The bulk of the output is going to Tidewater and to Eastern markets where the demand is not very urgent and where there is a probability that the markets will be glutted with coal before long.

Tug River mines are situated just about the same as Pocahontas. There is also in Western markets an active demand for byproduct coal and for fuel for steel companies having subsidiaries in the West. There are no longer many priority orders in effect. Prices as a rule are not ranging much above the Hoover price level, except as to prepared grades, which are scarce.

CINCINNATI

The buyers' strike—if it may be so called—still continues and the most notable effect has been the number of suspensions of orders and rejections by Lake buyers. There, where all the handlers of coal expected the market to be the strongest, it is the weakest. The consequence of this has been to throw a heavy tonnage on markets which are not absorbing the coal as they used to. The refusal of domestic buyers to take coal in quantity has had its effect too. Whether this attitude or the fact that more mines are now turning out domestic sizes is the cause, in any event there has been a drop of $1 on some of the offerings.

The smokeless situation has developed some different curves. More and more New River is being offered through the jobbers. Old-line firms are still offering to book orders at the Hoover prices but with the stipulation that the buyer must wait his turn. Spot shipments are taking a premium, New River and Pocahontas lump selling up to $7.50 and mine run up to $6.50.

The retail situation still continues tense. There was another boost in price this week, one firm advancing bituminous lump to $10.50, and mine run to $9. Other firms have hesitated in following suit, the range of prices being: Smokeless lump, $10.50@$12, bituminous lump $8.75@$10.50, smokeless mine run $9@$10, bituminous mine run $8@$9, slack, $7@8.

West

SALT LAKE CITY

Three or four retail yards have been closed during past week, in some cases for want of coal. Many dealers refused to buy coal during the early part of the summer thinking the price would drop. Then came a shortage in other states and coal produced here went elsewhere. Today, local yards have trouble getting fuel.

Following the announcement that a grand jury investigation would be made into the recent raise of $1 a ton, retail demand fell off. Neither operators nor dealers seem to be worrying very much over the investigation, which is regarded as a political move.

Car supply totals only 75 per cent, on some lines. Operators in afflicted zones regard the outlook as rather gloomy in view of the bumper crops that must be moved.

KANSAS CITY

The coal business is getting back to normal, though domestic demand is surprisingly low. It may be that householders expect prices to drop. Some of the dealers lay the light demand to fuel oil. There are more than a dozen concerns here in Kansas City, who are putting out oil burning equipment and they are all busy taking orders and installing heating equipment.

DENVER

The shortage in the car supply is causing serious concern. Northern Colorado lignite fields are practically the only districts in the state getting anywhere near the normal supply.

The Victor American Fuel Co.'s mines, in Routt County, have been operating only 3½ hours this month.

Price increases at the mines vary from $1@$1.50 per ton. The conservative operators are only asking $1 above the Sept. 1 prices.

News Items From Field and Trade

COLORADO

The Colorado Fuel & Iron Co. [illegible] of the coal [illegible] of the Colorado Fuel & Iron Co. [illegible] to the mines, amounting to upwards of [illegible] tons. Other companies [illegible] are unable to secure a sufficient supply [illegible] of cars to supply the demand [illegible] at their mines. There are plenty of cars [illegible] Canyon, but there is a serious shortage [illegible] Trinidad district. The country to the north of the railroad [illegible]

CONNECTICUT

The Elm City Coal Co., New Haven, has [illegible] an [illegible] capital to [illegible] The company was incorporated in [illegible] and is now [illegible]

F. Cotton Inc., Colchester, has been [illegible] against the town of Colchester, [illegible] in the coastal coal business. The [illegible] stock is $10,000, and the corporators are Fitzroy Harwood, M. A. and R. B. Cotton, all of Colchester.

ILLINOIS

W. J. Buckley, [illegible] engineer of the Illinois division of the Bureau of Mines, recently completed a test of a mixture of coal and coke in water-gas manufacture at the city gas plant at Ottawa. Mr. Buckley has visited gas companies at Aurora, Joliet and Peoria, and Davenport, Iowa, regarding investigations proposed to be conducted at those points.

The Old Ben Coal Corporation of Chicago has completed [illegible] No. 12 mine at Johnston City. It has been shut down since early last December. In resuming the mine has undergone many changes. Other improvements [illegible] have been made to modernize the plant. It will be [illegible] to supply coal [illegible] at which mines. There are plenty of cars at Carterville, but there is a serious shortage in Williamson county. The country to the north of the railroad [illegible]

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According to the figures compiled by County Mine Inspector Edward Flynn of Perry County, there is a total of 2,234,241 tons [illegible] in that county for the fiscal year which ended June 30, 1922. Thirty-two mines were in operation during the year, [illegible] of which are classed as shipping mines and there are local or wagon mines. The [illegible] mines employed 1,644 men.

Coincident with the leasing of the coal mine at Riverton, Fulton County, to W. K. Hawkins of Canton, and William Donaldson of Cuba, by the Spoon River Colliery Co., of Rock Island, the announcement is made that William A. Schaeffer, president and manager of the company, has resigned. His interests were sold to C. J. Rockefeller. Mr. Hawkins and Mr. Donaldson represent the Riverside Coal Mining Co. recently organized for the purpose of taking over this lease. The period of the lease is for five years, the Spoon River company retaining the company store and continuing a lighting business. The lessees will sink another shaft and will double the output of the mine.

L. F. McKittrick, cashier of the American National Bank of Mount Carmel, has taken title to the Powell Coal Co. mine, three and one-half miles west of that city. The force of men at the mine will be greatly increased. The name of the property has been changed to the Black Diamond Coal Mine.

Geo. Wenzelman, manufacturer of Galesburg, is planning to sink a coal mine near Kingston.

It is planned to begin the daily tonnage at the Coal Mine at Ottawa, and to have it producing at the rate of between 1,000 and 1,500 tons daily. A new concrete tipple has been built.

INDIANA

The property of the **Rowland Power Coal Shovel Concrete Co.** was sold at public auction recently at Evansville by Sheriff A. Cleary, receiver. The properties sold to be subject to more than $1,000,000 were sold to the bondholders for $1,000. The bondholders' committee belongs to City Trust and Title Guaranty and was formed [illegible] when [illegible] was appointed [illegible] April. During the [illegible] of the company [illegible] operation under a military board. It is said the stockholders, who purchased the property, will reorganize [illegible] operations.

The Indiana & Eastern Coal Co., Indianapolis, has increased its capital stock from $[illegible] to $75,000.

The Columbus Mining Co., with headquarters in Chicago, has lately acquired the [illegible] mine at Riley, near Terra Haute, and is now re-equipping the plant, expecting to develop the mine fully. At present only half the mine is operating, but the car supply is well maintained on the four rooms serving the field, and an output of eighteen cars a day is going forth regularly.

With a capital of $10,000 the **La Verne Coal Co.** has been organized at Jasonville. The directors are Patrick H. McKerr, Enoch Evans and William Whittington.

The Star City Coal Mining Co., of Indianapolis, has increased its capital stock from $[illegible] to $250,000.

The Saxton Coal Co. has been organized at Saxton, with a capital stock of $100,000. The directors are Hinkle C. Hays, Abram C. Owens, W. Paul Stratton and John S. Tayler.

The Jasonville Fourth Vein Coal Co., at Jasonville, has filed a preliminary certificate of dissolution with the secretary of state.

The Mt. Pleasant Coal Co., Terre Haute, has filed papers of incorporation. The articles show a capitalization of $25,000, and the officials of the firm are George R. Wilson, president; J. J. Hafer, vice-president, and L. D. Scott, secretary and treasurer.

KENTUCKY

It is reported from Falmouth, that J. V. Oldham, of that point had filed records of options on lands on the Licking River, three miles above the city for a **$7,000,000 water power project** at that point to furnish current to cities and towns in central and eastern Kentucky, and mines in some sections of northern and eastern Kentucky.

The O. K. Coal Co., Whitesburg, has been formed by W. C. Dixon, H. D. Caudill and others, to operate a string of wagon mines. Wagon mines are quite active at present prices, and by grouping the output the owners are able to load cars promptly and secure better rail service.

R. C. Simpson, general superintendent of the Kanawha Elkhorn Collieries, Inc., for the past four years, has resigned his position and will be succeeded by **J. L. Morgan**, mining man, and at present mayor of Pikeville.

Governor Morrow has disbanded the **Kentucky Fuel Committee** which, while it lived, was one of the most active of the state emergency boards.

A number of new Kentucky coal companies have filed charter articles the past few days, the list including the following: **Noble Coal & Lumber Co.**, Whick, capital $12,500, G. W., Martha and Pearl Noble, all of Whick; **Dixie Blue Gem Coal Co.**, Nevisdale, $10,000, G. C. Croley, Ben Croley, and Ester Croley, all of Nevisdale; **Broad Bottom Coal Co.**, Pikeville, $12,000, J. J. Christie, Broad Bottom; H. S. Funk and Isabelle Music, of Sutton.

MINNESOTA

J. H. Sanford, president of the Carnegie **Dock & Fuel Co.**, and **J. A. Howe**, vice-president and general manager, were at Duluth on an inspection tour recently. They made a statement that they had large supplies of coal ready to move to Duluth, and that it was possible that the dock might fill all its orders this season.

A city committee on fuel has been named in Minneapolis by Mayor Leach, to carry out coal conservation and distribution policies. It is headed by W. A. Eggleston, real estate man, as temporary chairman. It includes representatives from retailers, public utilities, union labor, motion pictures, manufacturers and others.

Governor Preus has proclaimed a war-time fuel basis for the [illegible] Minnesota.

NEW YORK

The Cheswick Coal Co. has opened an office at Buffalo, with John A. Hatch, formerly with the Pittsburgh Coal Co., as manager.

G. J. Schnabel and **E. A. Kalle** for many years connected with the coal traffic department of the N. Y. C., and **Oscar Schnabel**, formerly with the sales department of W. A. Marshall & Co., are opening an office in the Grand Central Terminal for the purpose of handling anthracite and Pittsburgh coal.

OHIO

The Consumers' & Manufacturers' Fuel Co. is the name of a new company, chartered in Columbus, with a capital of $30,000 to sell directly to the consumer. In a letter to Governor Harry L. Davis, H. H. Sisson, president of the company, advised that it is planned to sell direct at a profit not to exceed 50c. George C. Robb a wholesale grocer of Columbus, is treasurer of the company.

The Burns Coal & Supply Co., a retail concern, has opened a wholesale department in Columbus for the jobbing of coal, with Edward Sharfenaker, president, in charge.

Edsel Ford, son of the Detroit auto manufacturer, accompanied by **E. Sorenson**, in charge of coal purchases, **William Diehl**, purchasing agent, and **Abner Lunsford**, in charge of the Ford mining properties in southeastern Kentucky, were visitors to the Cincinnati market on Sept. 20. Mr. Ford's representatives gave out the statement in which they said the purpose of the visit was to look into transportation possibilities for the movement of coal.

With the strong demand for coal there has been a flood of new corporations for mining and distribution purposes. There has been on the average of a half dozen a week chartered under Ohio laws. Among the number are the **Jobs Coal Co.**, of Nelsonville, capital $25,000, to mine coal near Athens; incorporators, F. M. Rosser, Pearl Rosser, C. Douglass, D. W. Gibson and F. L. Gibson; **Blue Ridge Coal & Dock Co.**, Cleveland, 500 shares, no par value designated; Elmore L. Andrews, David A. Gaskill, Clay Dietrich, Jerome C. Fisher and J. Frank Pease; the **Edgemount Fuel & Mining Co.**, Columbus, capital $5,000; R. M. Hunter, M. L. Bush, R. L. Spencer, Barton Griffith, Jr., and S. A. Senter; **Crawford-Wheeler Coal Co.**, Cadiz, capital $25,000, Clyde Wheeler, Henry E. Crawford, John W. Crawford, Frank B. Grove and W. C. Clifford; the **Penn Coal Co.**, Columbus, capital $50,000, to mine coal in Crooksville district, J. W. Blower, E. W. Blower, Ethel Voolker, Ruth Blower and S. J. Lewis; the **Ohio & West Virginia Coal Co.**, Columbus, capital $50,000, to mine coal in southern Ohio and West Virginia, D. H. Armstrong, D. F. Shafer, E. R. Davis, S. M. Hanley and O. P. Amann.

OKLAHOMA

The Coal Miners' Extension Course, Oklahoma School of Mines, started in February of this year, and is now flourishing with an enrollment of 200 students. It is now possible for those desiring to take the state examinations for certified positions to obtain the required amount of education. Tuition is free to all state residents. Information: Oklahoma School of Mines, Coal Mine Extension, Dept., Wilburton.

PENNSYLVANIA

A charter has been issued for the **Marshfield Coal Co.**, Rohrersville, with a capital stock of $20,000. Its purpose is mining and selling coal. James H. Collier, Minersville, R. D. No. 1, is treasurer and he with James B. Neale and James H. Pierce, Minersville, R. D. No. 1, incorporated the company.

The Laurel Coal Co., Clearfield, $50,000 capital, has been formed. A. Houst, Houtzdale, is treasurer. Purpose: Mining, shipping and selling bituminous coal. Incorporators: Joseph Jurcak and John Jurcak, Anita and Peter Jurcak, DeLancey.

H. B. Powell, president of the County National Bank of Clearfield, recently purchased 367 acres of coal land near Frugality, Cambria County, at a public auction held at Ebensburg. The price paid was $10,950. This land was sold under partition proceedings, it being owned jointly by the A. B. Shaw estate, the Israel Test estate and the Philip Dott estate.

The Weston Dodson Co. has taken over the mine of the **Shipman Coal Co.**, near Shamokin.

Maderia Hill & Co., will operate the mines of the **Mill Creek Coal Co.** These include the Middle Lehigh Colliery at New Boston, which in 1917 produced 126,323 tons, the Morea Colliery, at New Boston, which produced 378,869 tons, and the Wolf Creek Colliery, also at New Boston, which produced 49,131 tons.

A deal has been closed whereby the **Maurer Coal Mining Co.** with offices and workings at Patton, Cambria County, purchased the holdings of the **Glasgow Fuel Co.**, at Glasgow, same county. The deal involves a modern tipple with a 200 ton capacity and a tract of coal land of 240 acres. The Maurer company has also started a new operation at Mahaffey on a tract of 250 acres under a sub-company named the **Mahaffey Coal Mining Co.** The sidings are completed and the mine will produce 200 tons daily.

The following coal companies have notified the State Department of increases in capital stock: **Mason Heflin Coal Co.**, $68,900 to $69,350; J. W. Mason, president, Philadelphia. **Mason Adams Coal Co.**, $40,300 to $44,750; J. W. Mason, president, Philadelphia. **Salem Gas Coal Co.**, $50,000 to $300,000; R. H. Jamison, president, Westmoreland County.

George E. Alter, Attorney General, will appear before the United States Supreme Court, Oct. 2, to ask that the argument of the appeal in the matter of the **Pennsylvania anthracite coal tax** law be advanced because of the importance the tax question bears to the general financial situation of the Commonwealth.

Coal companies recently issued charters include: **Montour Collieries Co.**, Pittsburgh, capital $200,000; treasurer, C. C. McGregor, Crafton. Incorporators are W. J. Gilliland, Pittsburgh; C. C. McGregor, Crafton and R. B. Haverstick, Crafton. **Penn-Brook Coal Co.**, Smethport, $300,000; treasurer, F. L. Holmes, Smethport. Incorporators: W. H. Gallup, Crosby; F. L. Holmes, Smethport, and J. Orin Wait, Erie.

The Ida Belle Coal Co., Indiana County, has notified the State Department of an increase in its capital stock from $5,000 to $100,000. Harry W. Fee, Indiana, is president.

The Titan Fuel Co., recently opened an office in Johnstown, with J. D. Monie in charge as vice-president. Mr. Monie was the New York representative of the Johnstown Coal & Coke Co. and was also connected with the Tidewater Coal Exchange.

The Superior Connellsville Coal Co. has filed notice at the State Department, Harrisburg, of an increase in its indebtedness from $810,000 to $1,250,000. George Whyel, Pittsburgh, is president.

The Winfield Coal Corporation, a Delaware corporation, has registered with Pennsylvania as a foreign corporation which will do business in Pennsylvania. It will maintain an office at 529 Fulton Bldg., Pittsburgh.

Deeds filed record the transfer of two tracts of coal land in Dunkard township. The sale was made by the **Piedmont Coal Co.** to the **Greene County Coal & Coke Co.**; consideration, $45,022.10. One tract was an undivided 16-22 interest in 230 acres and the other an undivided 16-22 interest in seven acres and 122.9 perches. Jesse R. Scott, of Waynesburg, has sold to the Piedmont company an undivided 4-22 interest in four tracts of coal land in Dunkard township, containing 145.9278 acres and 127.2 perches, and an undivided 2-22 interest in 9 acres and 109-6 perches. Nelson Rogers, of Cleveland, has sold an undivided 1-22 interest in the same tract named in the Scott deed, to the Piedmont company, the aggregate acreage being 168.9278 acres and 119 perches, for which the consideration was $6,743.29.

C. E. Reese, editor of the *Gas Engineering & Appliance Catalog* and associate editor of the *Gas Age-Record*, has joined the stoker sales department of the Westinghouse Electric & Manufacturing Co., at South Philadelphia. He was previously with Henry L. Doherty & Co., and assistant engineer of the Illinois Public Utilities Commission.

President Rush N. Hosler of the Coal Mining Institute of America was a recent Pittsburgh visitor.

The State Department of Labor and Industry reports that despite the resumption of coal mining in Pennsylvania there were 115,000 of the 300,000 miners who were involved in the strike holding out on Sept. 15, the time of the semi-monthly reports issued by the various branches of the State Employment Bureau. The result is that in some of the bituminous coal mines there is a shortage and in the anthracite field the condition is such that full production is not expected until late in October.

TEXAS

The Dickinson Ice & Fuel Co., of Dickinson, has been organized and charter filed with the secretary of state. The company will conduct a retail ice and coal business. The company is capitalized at $20,000 and the incorporators are: J. Falco, Nick Falta, C. Falco and others.

The Industrial Coal Co., of Palo Pinto, has been organized and incorporated under the laws of Texas. The charter filed at Austin shows a capital stock of $10,100. Incorporators are: E. J. Elam, J. A. Moore and H. H. Milling. The company will mine coal in Palo Pinto County.

The Channel Fuel Co., of Houston, has filed an amendment to its charter, increasing the capital stock from $100,000 to $200,000.

UTAH

E. A. Greenwood, an employee of the **Utah Fuel Co.** for more than forty years has been promoted to the position of treasurer. The treasurer's office of this company will be removed from New York to Salt Lake City.

Mine Rescue Car No. 9 of the United States Bureau of Mines will constitute an exhibit of the Utah State Fair at Salt Lake City, Oct. 2 to 7. The car will be stationed at Bingham either immediately before or after the fair for the purpose of giving mine-rescue and first-aid training to the employees of the large copper-mining operations in that vicinity.

VIRGINIA

C. H. Meade, president of the C. H. Meade Coal Co., and large coal operator, has moved his home from Beckley, W. Va. to Norfolk, where his headquarters were recently opened.

W. D. Mills, assistant sales manager of the Raleigh Smokeless Fuel Co., Beckley, W. Va., has been transferred to the Norfolk office.

Harry Teagle, manager of the **Dexter & Carpenter** branch, at Norfolk, has returned from the company's operations at Bluefield and Twin Branch, W. Va. The Bluefield office of this company has been closed and its inland business transferred to the Norfolk office.

Tracts of coal land in Henrico and Chesterfield counties will be developed by the **Henrico Coal Corporation**, organized with Frank Hagan, president; J. E. Norvell, secretary, and $250,000 capital.

WEST VIRGINIA

The Lehbo Gas Coal Co. has been organized by Grafton people with a view to developing coal lands in Eagle District of Harrison County. This concern is capitalized at $50,000, headquarters to be at Grafton. Active in effecting an organization of the company were, J. Clyde Lewis, Howard K. Burrell, A. K. Lewis, Nona Hassion and Glenn C. Burrell, of Grafton.

Organization of the **Roman Coal Mining Co.** presages the development of coal territory in Marshall County. This company was capitalized with 200 shares of no par value. Chiefly interested in the new enterprise are: George W. Roman, John Williams, George A. Blackford, A. Tegarden and Z. F. Robertson, all of Wheeling.

The Robinson Fuel Co. has been organized for the purpose of mining coal in Cass District of Monongalia County, this company being capitalized at $25,000. Headquarters of the concern are to be at Maidsville. Identified with the new company are: A. W. Bowlby, Wilson C. and William J. Jamison and R. F. Lazzell of Morgantown and Ira Donley of Green County, Pa.

As to whether continued residence in a coal company's house after refusal to work constitutes contempt of a federal court injunction is a question which Judge George W. McClintic of the United States District Court for the southern district of West Virginia will determine, when R. S. Holley, a striking miner appears before him to answer a rule requiring him to show cause why he is not in contempt of court for refusal to move. Application for the rule against him was made by the **Carbon Fuel Co.**, operating near Charleston. If Holley should be adjudged guilty of contempt, it will establish a precedent, attorneys assert, inasfar as the use of houses owned by companies obtaining an injunction is concerned.

J. R. Dean, who is the vice-president of the W. E. Deegans Coal Co. of Huntington was a visitor in the West during the early part of September.

The Amelia Coal Co. plans to mine coal in Kanawha County, having been recently organized with a capital stock of $25,000. Offices for the present are at Charleston. Principally interested in the new company are: M. L. Hill, William Crichton, Jr., Edwin M. Keatley, A. D. Brummett and William A. Crichton.

The Elm Grove Coal Co., operating at Elm Grove, near Wheeling, in the Northern Panhandle, has completed plans for the erection of a coal tipple at its No. 1 mine. The contract for its erection has already been awarded. The company estimates that it will be able to increase production to the extent of 2,000 tons a day with the new tipple in use.

A tract of between 500 and 600 acres of Pittsburgh coal in Cass District of Monongalia County brought $200,000, this property being acquired by two well-known coal men of Morgantown, **W. K. Hatfield** and **J. J. Reynolds**, the tract being known as the J. Calvin Morris tract. The tract so acquired is on Doll's Run and is reached by the Morgantown & Wheeling. The new owners of the Morris tract plan to open the coal for development just as soon as it is practicable to do so but will have to sink a shaft in connection with any development work which may be undertaken owing to the fact that the coal is about 100 ft. below the surface.

The Real Pocahontas Coal Co. will engage in the production of coal in McDowell County, just having been organized with a capital stock of $25,000. This company will operate in the vicinity of Iaeger, the general headquarters of the company. Interested in the new concern are: W. H. Coleman, Matilda J. Coleman and A. M. Cline of Kenova, and Dollie Cline and E. W. Cook of Iaeger.

The United States Coal & Coke Co., Gary is going to use bone coal, which was formerly considered waste, as a boiler fuel. To this end it is installing the new power plant, two mills for pulverizing coal, a distributing system for conveying the pulverized fuel from the mills to the furnace bins. Each 800 hp. boiler will be equipped with five vertical burners, taking the fuel from five 3 in. screw feeders.

ALBERTA

The Blue Diamond Coal Co., Ltd., of Alberta, owned jointly by the McIntyre and Temiskaming mining companies, has issued a financial statement for the year ended June 30, showing operating profits of $166,276 and net profits after deducting taxes, interest, etc., of $55,498. The previous report, after deducting all charges showed a net deficit of $157,127. Total assets were $2,532,284 compared with $2,311,893 for the previous year.

BRITISH COLUMBIA

While the results of the inquiry into the cause of the disaster which occurred in No. 4 mine of the **Canadian Collieries (D) Ltd.**, near Cumberland, have not been announced the opinion is held that the explosion had its source in the ignition of gas in a cavity on the side of the roadway. The electric wiring connecting the coal cutter was dislocated and whether there was a flame at this time or whether there was a shot fired which ignited the gas are points which are expected to be cleared up.

George S. Rice, of the United States Bureau of Mines, who has been in British Columbia on unofficial business relative to gas outbursts in the Canadian (Vancouver Island) coal mines, **Granby Consolidated Mining & Smelting Co., Ltd.**, has left for the East. It is understood that Mr. Rice was engaged by the company to make an examination of underground conditions at Cassidy and submit recommendations as to how best to deal with various complex problems with which the management has been faced of late.

WASHINGTON, D. C.

The personnel of mine rescue car No. 9 of the United States Bureau of Mines recently completed first-aid and mine rescue training in the Trinidad and Walsenburg districts. At Trinidad a first-aid course was given for Rey Scouts. First-aid and mine rescue training has been conducted by the crew of car No. 9 at State College, Coalport and Madera, Pa. Excellent cooperation was received from both operators and miners, the latter losing time for training on their own time. The crew of car No. 9 recently gave training to students of the University of West Virginia, at Morgantown, in conjunction with the short course in coal mining.

Association Activities

North Dakota Lignite Coal Operators' Association

National Coal Association

Trade Literature

Cut Ash-Handling Costs. Conveyors Corporation of America, Chicago, Ill. Pp. 8; 4 x 8 in.; illustrated. This booklet is an exposition of the steam jet conveyor method of ash handling and contains a description of the conveyor and its method of operation.

Velocity Stage Turbines. De Laval Steam Turbine Co., Trenton, N. J. Catalog C. Pp. 28; 8 x 11 in.; illustrated. Describes a line of velocity and stage turbines especially designed for high pressure and high temperature steam. The turbines are built in sizes up to 1,200 hp.—Advertiser.

Dynamite—The New Aladdin's Lamp. Hercules Powder Co., Wilmington, Del. A 16-page booklet written by T. W. Bacchus, vice-president of the company. An interesting and accurate account of the part played by dynamite in the industrial development of this country.—Advertiser.

Recent Patents

Flotation Apparatus. Arthur W. Fahrenwald, Moscow, Idaho, 1,417,895. May 30, 1922. Filed May 11, 1920; serial No. 380,494.

Collecting Main for Byproduct Coke Ovens. Wm. H. Pavitt, Jr., Brooklyn, N. Y., assignor of one-third to Louis Wilputte and two-thirds to Alice Wilputte, New Rochelle, N. Y. 1,414,524. May 2, 1922. Filed Jan. 19, 1920; serial No. 352,478.

Hopper for Use in Feeding Finely Divided Fuel. James Fisher, New Orleans, La., 1,414,870. May 2, 1922. Filed April 14, 1921, serial No. 461,357.

Mining Apparatus. Edward L. Hopkins, Columbus, Ohio, assignor to the Jeffrey Mfg. Co., Columbus, 1,414,877. May 2, 1922. Filed Oct. 11, 1912; serial No. 725,776. Renewed July 30, 1920; serial No. 400,213.

Means for Closing and Opening Skips. Franz Uhlig, Berlin, Germany, 1,415,066. May 9, 1922. Filed Sept. 11, 1920; serial No. 410,312.

Mine-Skip Loader. Charles L. Lawton, Hancock, Mich., 1,415,181. May 9, 1922. Filed June 8, 1921; serial No. 475,866.

Obituary

Edward J. Conroy, widely known as an authority on fuel and fuel supply and head of the E. J. Conroy Coal Co., died recently at Grand Rapids, Mich. Mr. Conroy had been in the coal business for 16 years.

George L. Rodgers, vice-president and general manager of the Mon-Scott Fuel Co., and treasurer of the Shamrock Fuel Co., of Morgantown, W. Va., died at a hospital in Uniontown, Pa., on Sept. 10. The body was taken to West Alexandria, Pa., for burial. Mr. Rodgers was not only an authority on coal mining but was thoroughly conversant with transportation problems, inasmuch as he had been connected with the Monongahela Ry. at Brownsville and with the Pennsylvania as a traffic executive. The esteem in which he was held by men in the coal business was shown when he was made president of the Morganton Coal Club.

Publications Received

An Investigation of the Properties of Smithing Coals. By H. J. Sloman, assistant professor of coal mining, School of Mines, Pennsylvania State College. Bulletin No. 1. Pp. 16; 6 x 9 in., charts and tables.

Foreign Commerce Handbook.—The Foreign Commerce Department of the Chamber of Commerce of the United States. This publication condenses information as to sources of service in foreign trade. The book contains also a list of the topics of national importance that are engaging the attention of the National Chamber's Foreign Commerce Department Committee.

Map of Producing Coal Districts of the United States. U. S. Geological Survey. Adapted by F. G. Tryon and W. F. McKenney from State maps compiled by C. E. Lesher in 1919.

Annual Report for 1921 on the Mines in the Province of Nova Scotia. Department of Public Works and Mines, Halifax, N. S. Pp. 102; 6 x 9 in.; illustrated.

An Investigation of the Properties of Chilled Iron Car Wheels. Part I. Wheel Fit and Static Load Strains. By J. M. Snodgrass and F. H. Guldner. The investigation was conducted by the Engineering Experiment Station of the University of Illinois in co-operation with the Association of Manufacturers of Chilled Iron Car Wheels. Bulletin No. 129. Pp. 101; 6 x 9 in.; illustrated with diagrams and photographs.

The Ignition Temperature of Coal. By Ray W. Arms. Engineering Experiment Station of the University of Illinois, Urbana, Ill. Bulletin 128. Pp. 69; 6 x 9 in.; illustrated with photographs and diagrams. A small fee of 35c. is charged for this bulletin.

Methods for Testing Petroleum Products. Bureau of Mines, Washington, D. C. Technical Paper 298. Pp. 58; 6 x 9 in.; illustrated. Adopted by the Interdepartmental Petroleum Specifications Committee.

The Geology and Coal Resources of Russell County, Virginia. By Chester K. Wentworth. Prepared in co-operation with the U. S. Geological Survey, with a chapter on "The Forests of Russell County, Va.," by J. W. O'Byrne, assisted by the office of the state forester. Bulletin No. XXII. Pp. 179; 7 x 10 in.; illustrated.

Fuel Briquets in 1921—Compiled by W. F. McKenney of the U. S. Geological Survey. Pp. 5; 6 x 9 in.; illustrated. Giving production figures for the world, and statistics on U. S. production of briquets.

University of Montana Bulletin No. 2. The Montana State Bureau of Mines and Metallurgy, State School of Mines, Butte, Mont. Pp. 30; 6 x 9 in. A directory of the metal and coal-mining companies in the State of Montana.

Coming Meetings

Kentucky Mining Institute will hold its annual meeting Nov. 3 and 4 at Seeback Hotel, Louisville, Ky. Secretary, Elizabeth C. Rogers, Lexington, Ky.

The National Industrial Traffic League will hold its annual meeting Nov. 15 and 16 at the Hotel Commodore, New York City. Secretary, J. H. Beck, Chicago, Ill.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

Alabama Mining Institute will hold its next meeting Oct. 3 at Birmingham, Ala. Secretary, J. L. Davidson, Birmingham, Ala.

American Mining Congress. Twenty-fifth annual convention and exposition of mines and mine equipment will be held at Public Hall, Cleveland, Ohio, Oct. 9-14. Executive offices, the Hollenden Hotel; E. C. Porter, convention manager.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Gas Association will hold its annual meeting Oct. 23-28 at Atlantic City, N. J. Secretary-Manager Oscar H. Fogg, 130 East 15th Street, New York City.

Canadian Institute of Mining and Metallurgy annual Western meeting Nov. 15-17, at Vancouver, B. C. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Can.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, *Editor*

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The Market Outlook

CONDITIONS appear to point to a season of strong demand for coal, of car shortages and high prices. The usual landmarks by which the trade judges an oncoming orgy of coal buying are lacking, however, and many find themselves lost and uncertain. To quote a specific case, a shipper began shipments of eight cars per day to a regular contract customer immediately after the strike settlement in August. Arrivals have averaged one car per day, the remainder being lost in the transportation tie-up. Now, under ordinary conditions that customer would have doubled his order and begun to buy wildly on the open market in fear that he never would get the coal he required. Instead he halved his order. Mines are running on short time, getting cars for one and two days per week. Yet the price is gradually softening and buyers appear confident and cocky.

In 1921 there was produced 415,000,000 tons of soft coal and 90,000,000 net tons of anthracite, a total of 505,000,000 tons. Production of soft coal to Sept. 30 this year was in round numbers 271,000,000 tons and of anthracite, 27,000,000 tons, a total of 298,000,000 tons. By the end of September last year the figures were 295,000,000 tons of bituminous and 69,000,000 tons of anthracite, a combined total of 364,000,000 tons. Thus the output of bituminous coal to date is some 24,000,000 tons less than last year, and that of anthracite about 42,000,000 tons behind.

Stocks of bituminous coal in the hands of consumers on Jan. 1, 1922, were about 47,000,000 tons; they are now not over 12,000,000 tons—some would say even less. This represents a drop of 35,000,000 tons, all consumed in the calendar year in addition to current production. In the corresponding period of 1921 stocks were reduced from 47,000,000 to 42,000,000 tons, or by 5,000,000 tons. In other words, in the first nine months of 1921 consumption plus exports of bituminous coal were 300,000,000 tons as compared with 306,000,000 tons this year.

At the rate at which coal is being consumed the country should have on Jan. 1 next a stockpile of between 35,000,000 and 40,000,000 tons to weather safely the real winter months of January, February and March, when cold and storms delay the movement of freight. That is to say, taking the more conservative figures both as to present and required stocks, some 23,000,000 tons must be added to reserves in the following thirteen weeks of this year. The outside figures indicate 40,000,000 tons as necessary to put the country on the safe side. This will be in addition to coal required for current consumption.

If we assume that the normal consumption of anthracite is 12,000,000 tons per month in coal-burning weather, then for the last quarter of 1922 requirements will be 36,000,000 tons. The prospect is for a production not to exceed 25,000,000 tons, leaving a deficit of not less than 11,000,000 tons to be supplied almost entirely by raw bituminous coal and coke. This added to the minimum estimate of 23,000,000 tons to replenish stocks by Jan. 1 gives us, at the lowest estimate, 34,000,000 tons over and above current consumption. That is, in addition to around 9,000,000 tons of winter consumption per week of soft coal there will be required an added load of nearly 3,000,000 tons to build up stockpiles and to pinch hit for hard coal. To those familiar with the anthracite situation this figure of 11,000,000 tons will appear absurdly low, for it is predicated on absolutely uniform distribution each week. The actual demand for hard coal that cannot be supplied currently will be much greater.

The mines, of course, can produce the 12,000,000 tons per week of soft coal thus indicated as necessary, but can the railroads haul it? They have developed real car shortage at less than 10,000,000 tons per week and it is quite obvious that a weekly average of 12,000,000 tons for the rest of the year is out of the question.

The question that is puzzling the coal trade is how to reconcile the apparent requirement for 12,000,000 tons a week of soft coal with an apathetic demand for around 10,000,000 tons. Beyond doubt the country is consuming coal in greater quantity than at this time last year and consumption is on the increase. Stocks in the aggregate are extremely low. Anthracite is lacking. Yet the market does not respond. Testimony of coal salesmen is to the effect that the small industrials are rather well stocked and are not eager for coal. They are not consuming coal at anything like the rate they have in previous periods of good business. Industrials burning a car or less per week represent 75 per cent in number of this class. They consume but 10 per cent of the coal used by industry, yet they normally carry around 20 per cent of the stocks.

The larger consumers are purposely staying out of the market for all save current requirements. An organized effort, engineered by the government through the National Chamber of Commerce, the National Association of Purchasing Agents and others, is being made to hold back the purchase of coal by 25 per cent of industrials—the big fellows—who consume 90 per cent of the coal used by industry, and also to restrain the railroads using 27 per cent of the total production. A demand for some 2,000,000 tons of soft coal per week for winter storage is being artificially held in check. Herein lies two-thirds of the answer.

Buying of soft coal to substitute for hard coal has not begun, and therein lies the remainder of the answer.

If 10,000,000 tons a week is as much bituminous coal as the railroads are going to give the country, then the future market depends entirely on the efficiency of the machinery set up in Washington to regulate coal. If Mr. Spens can so direct the flow of coal this winter that no consumer will be worried no matter how low his reserves may become or how much the railroads may be tied up by storms, then demand will not outrun production and prices will not unduly mount. The alternative is clear.

The American Mining Congress

industrial relations are among the subjects regularly discussed. It does everyone good to go and express his views as well as to hear what others have to say. The exchange of ideas is the worth-while production of a convention, of which this is typical. These meetings are seldom productive of concrete results, but they do help crystallize opinion and develop policy. Occasionally some tangible result, like the creation of the Bureau of Mines, can be traced to the activities of such an organization, but in the main what the participants carry away from the annual conclaves are ideas and renewed friendships.

In recent years an engineering slant has been given to the activities of the Mining Congress. The enthusiasm and energy of two men, Colonel Warren R. Roberts and Charles A. Mitke—one in the coal industry, the other in metal mining—have built up under the wing of the Mining Congress a National Standardization Conference for the mining industry. This year will be the third of such meetings. Standardization, co-operation, co-ordination and stabilization have become abused words, but each has an important place in the lexicon of the mining man.

The work of the Standardization Conference has not progressed far enough to demonstrate how far it may go or in what direction it eventually will lead. Obviously enough the aim is better engineering and more of it as well as better machinery and more of it. If it were sought to accomplish this by reducing all machines and methods to common types, the idea would fail. Fortunately, this is not the purpose. Standardization is not the word to define the definite engineering conception that is behind this movement, which is something different than that at the foundation of such organizations as the Institute of Mining Engineers.

Every convention must have a slogan. That announced for the silver anniversary of the American Mining Congress is "Greater Prosperity Through Lower Production Costs." To assist through the eye the preachment of this theme there will be an exhibit of many kinds of machinery—an exposition of mines and mine equipment. Thus do the promoters of the Mining Congress provide incentive for attendance, for these exhibitions are worth while, gain added support from manufacturers and tie the engineering and operating contingents together with the business and political.

In these multifarious activities of this organization we find at once its weakness and its strength. Cosmopolitan, it embraces every aspect of mining from drainage to politics and draws support from many fields. But because it is so all-inclusive it can give to none the intensive advantages of a partisan association. Thus we find the separate organizations for gold and silver, for zinc, for copper, for coal, overlapping in membership with the larger group, but having distinct objects. The American Mining Congress gives to the coal industry a contact with the remainder of the mining industry and it is just as essential that the coal men bear their part in its support and deliberation in order that the country may have a true picture of mining as its greatest basic industry as that the coal men have their own association and organizations for promoting their peculiar and particular objectives.



Above — Public Hall, Cleveland, Ohio, where American Mining Congress will meet and Exposition will be held

Where the Mining Congress Will Meet, And What It Is Doing for the Industry

IT IS easier to prevent bad legislation than it is to repeal it. It is less difficult to correct a false judgment before it is uttered than to recall it when once it has gone forth. The American Mining Congress, being stationed at Washington, can prevent wrong at the source, for legislators, like other mortals, sin more often from lack of knowledge than from Adamic perversity.

The American Mining Congress officials are frequently consulted because, it would appear, they are believed to represent the mind and heart of the industry rather than its will. The Mining Congress is a loosely organized body, not a symbol of the power of a dominating industry but an expression of the mind of individuals. At the yearly meetings the legislators and the members of governmental departments and bureaus mingle with the legislated; they learn to know its members as men like-minded with themselves. The program is not carefully staged beforehand; rather it brings together many contrary minds. The men who attend it from outside the industry regard its assembly as if it were one of "just home folks." It is not a trades council; it is rather an institute for gathering new ideas. It impresses the outside man not as a battering ram to enforce an unholy will but as a gathering of men having kindred interests seeking guidance. It is not a force to be met with force but an open hand to be grasped.

The legislators who consult it probably do not know why. They cannot tell perhaps wherein they find it different from better organized, more representative bodies. Those, however, who frequent it year by year know that its strength is in the open forum, where those without the industry and those within rub shoulders and learn fellow sympathy. No doorkeepers are at the gate, no tickets of admission are demanded, and for this reason it commands confidence and accomplishes results.

First among its good qualities is that it has never created antagonism. Blithe with optimism, the American Mining Congress has never seen even a black cloud in the Congress on Capitol Hill. It has always believed that with the word of reason and the warmth of a handshake every evil anticipated could be averted and that all that is needed is that the men in the halls of Congress should know that mining men were seeking treatment in no way different from that imposed on other men. From mine and farm come the essentials of life but that is no reason why they should be made victims of special and inimical legislation.



Left — Auditorium in Hall where will be celebrated the Twenty-fifth Anniversary of the Mining Congress

Note—The [illegible] drawing and photograph herewith, are shown by courtesy of J. M. MacLaurin, architect.

Program of American Mining Congress at Its Silver Anniversary, Oct. 9-14, Public Hall, Cleveland, Ohio

The Mine Taxation division will hold its third national conference on Oct. 9, 10 and 11, when the following papers will be presented:

Valuations of Mining Properties for Purposes of Federal Income Taxation, by R. C. Allen, Cleveland, Ohio, vice-president Lake Superior Iron Ore Association; member of committees on state and federal taxation, American Mining Congress; formerly member Tax Advisory Board, Treasury Department.

Invested Capital of Mining Corporations, by George E. Holmes, New York City; author "Holmes on Federal Taxes"; chairman special committee on state taxation of mines and vice-chairman general committee on taxation, American Mining Congress.

Special Cases under Section 210 Revenue Act of 1917, and Sections 327 and 328, Revenue Acts of 1918 and 1921, by Robert N. Miller, Washington, D. C.; formerly Solicitor of Internal Revenue; member committees on state and federal taxation, American Mining Congress.

Depletion Dividends, by Paul Armitage, New York City; chairman general committee on taxation; member special committee on state taxation, American Mining Congress.

Mine Accounting Methods in Relation to Federal Taxes, by T. O. McGrath, Bisbee, Ariz.; author "Mine Accounting and Cost Principles"; chairman committee on mine accounting, standardization division, American Mining Congress.

Settlements and Compromises with the Commissioner of Internal Revenue, by M. K. W. Kreigh, Washington, D. C.; chief Tax Division; secretary committee on state and federal taxation, American Mining Congress.

Other speakers announced are: Dr. T. S. Adams, Yale University, formerly tax adviser, Treasury Department; C. P. Smith, Assistant Commissioner of Internal Revenue and member of the Tax Simplification Board; Albert H. Fay, Chief, Division of National Research, Bureau of Internal Revenue; Walter R. Ingalls, consulting engineer, New York City; L. O. Evans, general counsel, Anaconda Copper Mining Co.; L. P. Barrett, mineral geologist, State of Michigan; H. R. Fernald, certified accountant, New York City; R. V. Norris, consulting engineer, Wilkes-Barre, Pa., and Howard N. Eavenson, consulting engineer, Pittsburgh, Pa., member, special committee on state taxation, American Mining Congress.

The standardization committee of the American Mining Congress will hold its third annual national standardization conference throughout the week, the general addresses being:

What Standardization Has Done for the Coal Mining Industry, by Colonel Warren H. Roberts, president Roberts & Schaefer Manufacturing Co.

The Purpose of Standardization in Mining, by Charles A. Mitke, consulting engineer, Bisbee, Ariz.

How Standardization Is Strengthening Our National Defense, by General J. W. Wainwright, Assistant Secretary of War.

Eliminating Waste in National Expenditure Through Standardization, by General Charles G. Dawes.

Co-ordination of Standardization Work for the Mining Industry, by E. A. Holbrook, dean of mining, Pennsylvania State College, State College, Pa.; formerly Assistant Director, U. S. Bureau of Mines.

National and International Progress of Standardization, by Dr. P. G. Agnew, secretary, American Engineering Standards Committee.

The following recommendations for standards in mining practice will be presented for discussion:

Drilling Machines and Drill Steel, by Norman Braly, general manager, North Butte Mining Co.

Underground Power Transmission and Power Equipment, by A. B. Kiser, electrical engineer, Pittsburgh Coal Co., and K. A. Pauly, General Electric Co.

Mining and Loading Equipment, by E. N. Zern, Keystone Consolidated Publishing Co.

Mine Timbers, by Gerald Sherman, consulting engineer, Phelps-Dodge Corporation, and R. L. Adams, chief engineer, Old Ben Coal Corporation.

Metal Mine Accounting, by T. O. McGrath, Shattuck-Arizona Mining Corporation.

Underground Transportation, by William B. Daly, general manager, Anaconda Copper Mining Co., and C. E. Watts, efficiency engineer, Berwind-White Coal Co.

Mine Ventilation, by Charles A. Mitke, consulting engineer, Bisbee, Ariz., and C. H. Trik, mine fan department, Jeffrey Manufacturing Co.

Milling and Smelting Practices, by Forest Rutherford, consulting engineer, New York City.

Outside Coal-Handling Equipment, by Dr. Henry Mace Payne, consulting engineer, New York City.

Fire-Fighting Equipment, by William Conibear, department of safety, Cleveland-Cliffs Iron Co.

Mine Drainage, by E. D. Knight, formerly engineer, power and electrical department, Cabin Creek Consolidated Coal Co., and William H. Gallagher, engineer Pickands Mather & Co.

Methods of Mine Sampling, by Philip Wilson, chief geologist, Calumet & Arizona Mining Co.

Steam-Shovel Equipment, by H. C. Goodrich, chief engineer, Utah Copper Co.

Mechanical Loading Underground, by Lucien Eaton, superintendent Cleveland-Cliffs Iron Co.

Standardization Day will be celebrated on Oct. 11. Other features will be papers on the relation of government to industry, on industrial co-operation, on the widening of the market for metals, also on co-operative combinations and possible modifications of the Sherman law to make possible greater economy in operation, with protection to the interests of the public. There also will be a national coal conference. The annual banquet will be held at the Hollenden Hotel on Friday, Oct. 13. A National Exposition of Mines and Mine Equipment, at which it is expected two hundred exhibitors will display their wares, will be held throughout the week in the Public Hall, where the convention will meet. The slogan of this Congress is "Greater Prosperity Through Lower Production Costs."



Big-Scale Operation Effects Economies at Columbine, Northern Colorado's Largest Lignite Mine

New Shaft Yields 1,800 Tons Daily and May Reach 3,000—Swift Work on Panels of Narrow Rooms and Wide Pillars Results in High Extraction Despite Quick Caves and Squeezes

By Charles M. Schloss* and F. L. Peart†

YESTERDAY a barren hillside plot inhabited only by prairie dogs and chipmunks, today a prosperous mining community teeming with life and action—that is the story of Columbine, the newest, largest and best equipped mine in northern Colorado. It is the achievement of a man with a hobby. The man is George T. Peart, assistant general manager of the Rocky Mountain Fuel Co., and the hobby is—Columbine. Peart's imagination pictured it beforehand and his initiative carried the project from the nebulous paper state to its completion. Though an old-timer at this game of mining coal, he has young ideas, all embodied in this operation.

NOTE—The headpiece shows the Columbine mine of the Rocky Mountain Fuel Co. with its headframe, tipple and power house.

*Lindroth & Shubart, consulting engineers, Denver, Col.

†Superintendent of the Columbine mine, Erie, Col.



FIG. 1—ANOTHER VIEW OF TIPPLE AND HEADFRAME

The tep works, like practically everything else at the mine, were designed and built by the mining company. The headframe is of the derrick type with the legs well spread at the bottom so as to relieve the shaft collar of all load.

To reach Columbine one drives twenty-four miles due north from Denver. The railroad serving the property is a two-and-a-half-mile spur from the Chicago, Burlington & Quincy branch between Lafayette and Longmont. Erie is the nearest town, two miles west. Columbine is in the middle of the northern fields, equidistant from the Frederick-Dacona group and the mines at Lafayette and Louisville.



FIG. 2
Location of Mine

An increasing demand for coal and the exhaustion in the near future of workable coal in some of the company's other mines made imperative the opening of a new property. Concentration of effort to reduce overhead dictated a magnitude of operation never before attempted in this particular field. The ownership of 960 acres of coal land near Erie, its accessibility to the market and the quality of the coal under these acres made the site chosen for the Columbine mine unquestionably the ideal spot.

The isolation of the place did not deter the company when once a decision was reached. A gang of laborers removed the first shovelfuls of dirt from the

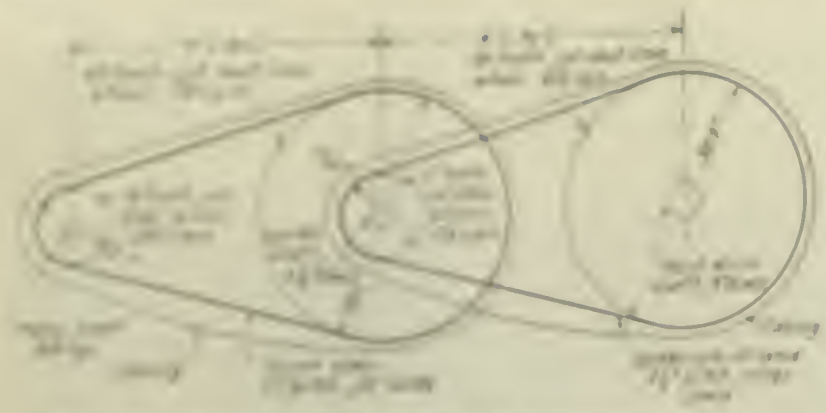


FIG. 3—DETAILS OF DRIVE OF COLUMBINE HOIST

future shafts in the early summer of 1920. However, soon after the coal was reached it became evident that rapid development must be the order of the day. Since that time the output has been increased step by step until the beginning of the great strike, when Columbine really began hitting its stride of 1,800 tons per day. "Maximum capacity every day" has become the watchword to such an extent that two shifts are worked instead of one. It is confidently expected by the officials of the company that the opening of more territory and the operation of a larger number of loaders will soon bring the daily tonnage up to 3,000.

Though every effort is bent toward producing more coal, the building of the camp is being prosecuted with vigor and enthusiasm also. New houses are springing up, all supplied with cold water piped from an artesian well. An amusement hall is already functioning and a baseball club has been organized which on Independence Day crossed bats with the club from a neighboring community. The same day the company built a dancing floor and brought a high-priced jazz orchestra from Denver to furnish the music. "A good time was had by all."

In opening the mine a 9x18-ft. shaft was sunk 300 ft. to reach the thickest coal bed in the district—a seam that varies from 11 to 16 ft. A stratum of sandy shale tops it. Shale and fireclay constitute the bottom. An inch-thick parting of white rock characterizes the bed, ever present though varying in position from place to place. Little water is encountered. An approximate proximate analysis of the sub-bituminous coal reveals ash, 5 per cent; volatile matter, 34½ per cent; fixed carbon, 43½ per cent; moisture, 17 per cent; B.t.u. per pound, 10,000.

In the northern Colorado field pillar drawing in general has not been successful. It is the exception and not the rule, though in a few instances a large percentage of coal has been recovered. In some mines the practice of driving wide rooms with narrow pillars between is still prevalent. Rooms are completed as soon as possible, and all the pillar coal that can be taken is recovered before the inevitable floor squeezes or roof falls occur or before the pillars are crushed by the overlying strata. About 50 per cent of the available pillar coal is extracted.

Quick Work Alone Will Assure High Recovery

Natural conditions are largely the cause of these losses. The overburden lies on the coal like a dead weight. The minute a place is cut, the coal settles. The narrow kerf cut by a chain machine is not spacious enough to prevent the pinching of the cutter bar, which, in consequence, has frequently to be dug out. In addition the bottom is soft and when the room coal is taken out the additional burden on the narrow pillars brings such pressure on the soft bottom that it can no longer resist and up it comes to the roof.

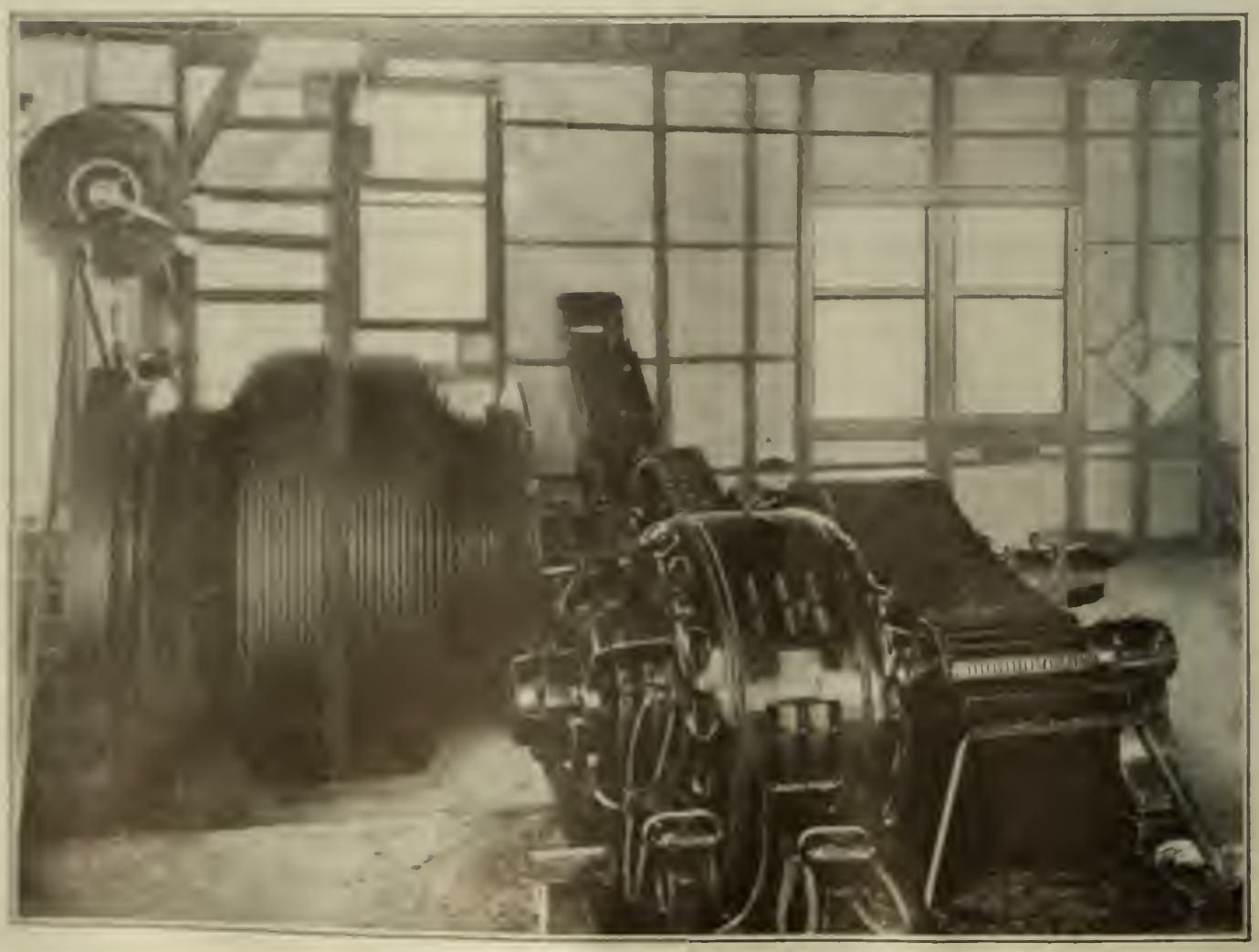
The operators of the Columbine mine are trying to overcome these obstacles. Assistant General Manager Peart says of his method:

"Frankly we are experimenting. A panel system is being used, six narrow rooms being turned on each side

FIG. 4

Electric Hoist

A 5 x 7-ft. cylindrical drum hoists the coal up the shaft. The drum is 10 ft. 6 in. wide and has a capacity of 300 ft. The hoist is driven by a 400-hp. 440-volt induction motor. The full capacity of 3½ tons has not been reached. The connection is by the gearing shown in the illustration. A double reduction of about 4 to 1 is effected. The brake is electric. The motor is controlled from a switchboard in the engine room. The hoist is operated by a single man, who also handles the signals.



of the panel entries and on 70-ft. centers. The rooms on each side are driven up concurrently as rapidly as possible, 8 to 10 ft. of coal being taken and the remainder left for a top. Pillar drawing is begun as soon as the maximum room length is reached, the top coal coming down at the same time chain machines undercut the coal. The pillars in each room are attacked simultaneously, keeping their faces in line. By rapidly prosecuting this work the pillars are pulled before squeezes become dangerous. No coal has been lost so far, and we are sanguine that the scheme will be successful."

Illinois operators who are constantly harassed by the fear of surface subsidence would consider this "the promised land." The company owns half of the surface but that and the other half are so nearly valueless that subsidence means nothing at Columbine.

Auxiliary Airways Provide Against Accident

Reference to the mine plan will show that the arteries of the ventilation system are the triple entries which provide large air passages and consequently reduce the power required to keep the air moving, and also, and this is not less important, furnish auxiliary airways in case of accidental squeezes, falls of roof or fires. Naturally the same provisions augment the haulage facilities. A Sirocco fan 60 in. in diameter and with a 40-in. face blows 75,000 cu.ft. per minute down the airshaft. An 11-ft. Jeffrey disk fan is installed close by as an emergency unit. At the foot of the downcast the air is split three ways; thus as far as ventilation is concerned there are three separate and distinct mines, any one or any two of which can be operated in case of accident to the other one or two.

The availability of electric power from the Western Light & Power steam plant near Lafayette makes generation at the mine both unnecessary and uneconomical. Transformers just outside the hoist house step the high potential current from 2,300 volts to 440 for use by the two 250-volt motor-generator sets. The cutting machines and the locomotives, of course, use this direct current. Because of the short distance of the workings from the shaft bottom the voltage is good, even though the generators are above ground.

If variety is the spice of life, then as far as machines

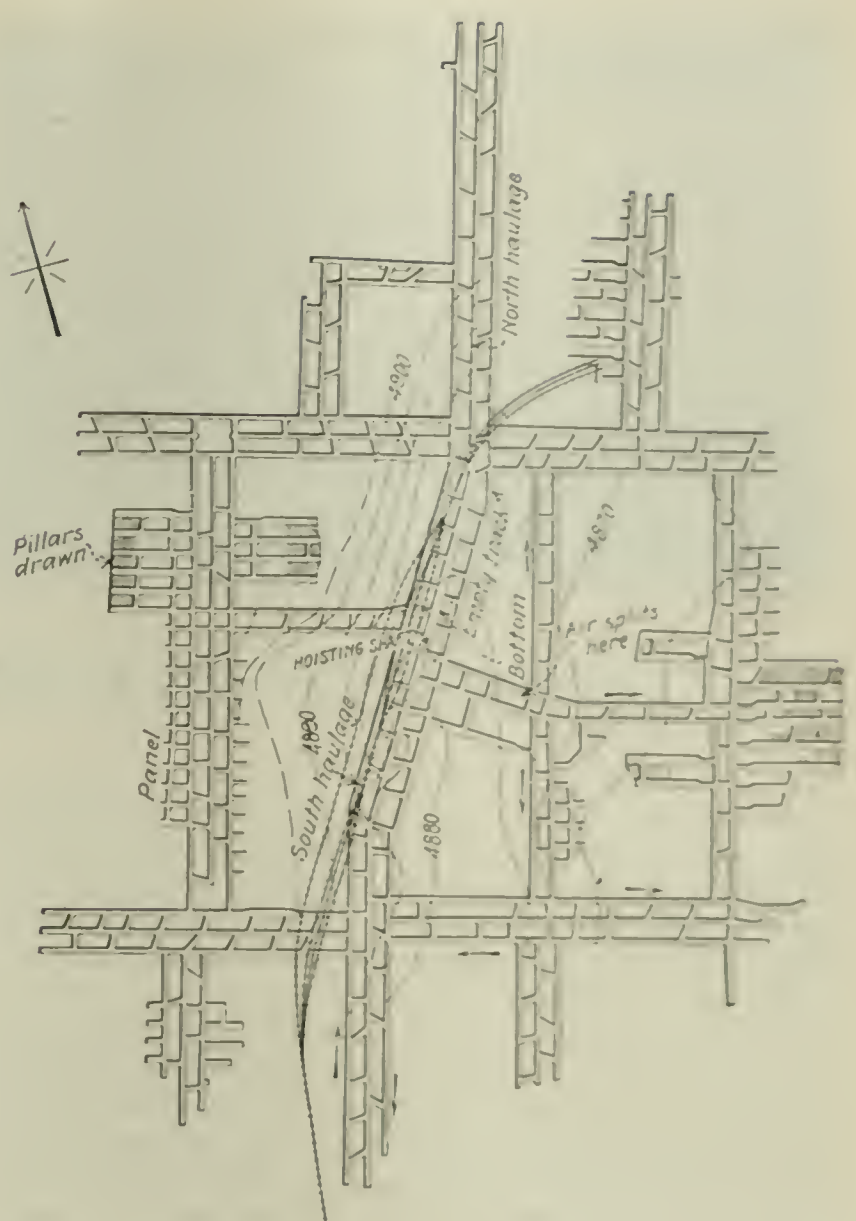


FIG. 6—MINE PLANNED FOR RAPID PILLAR REMOVAL

Much entry has been driven but few pillars have as yet been drawn. Success in pillar work therefore has not yet been proved. The bottom is soft and the coal none too strong.

are concerned Columbine is spicy, for a variety of types are in daily use. The initial purchase was a Goodman shortwall of the standard type. Soon after its installation the Oldroyd made its début at a neighboring mine. The idea of shearing the coal besides undercutting it appealed to Columbine engineers and four Oldroyds were purchased. The Goodman was sent to another of

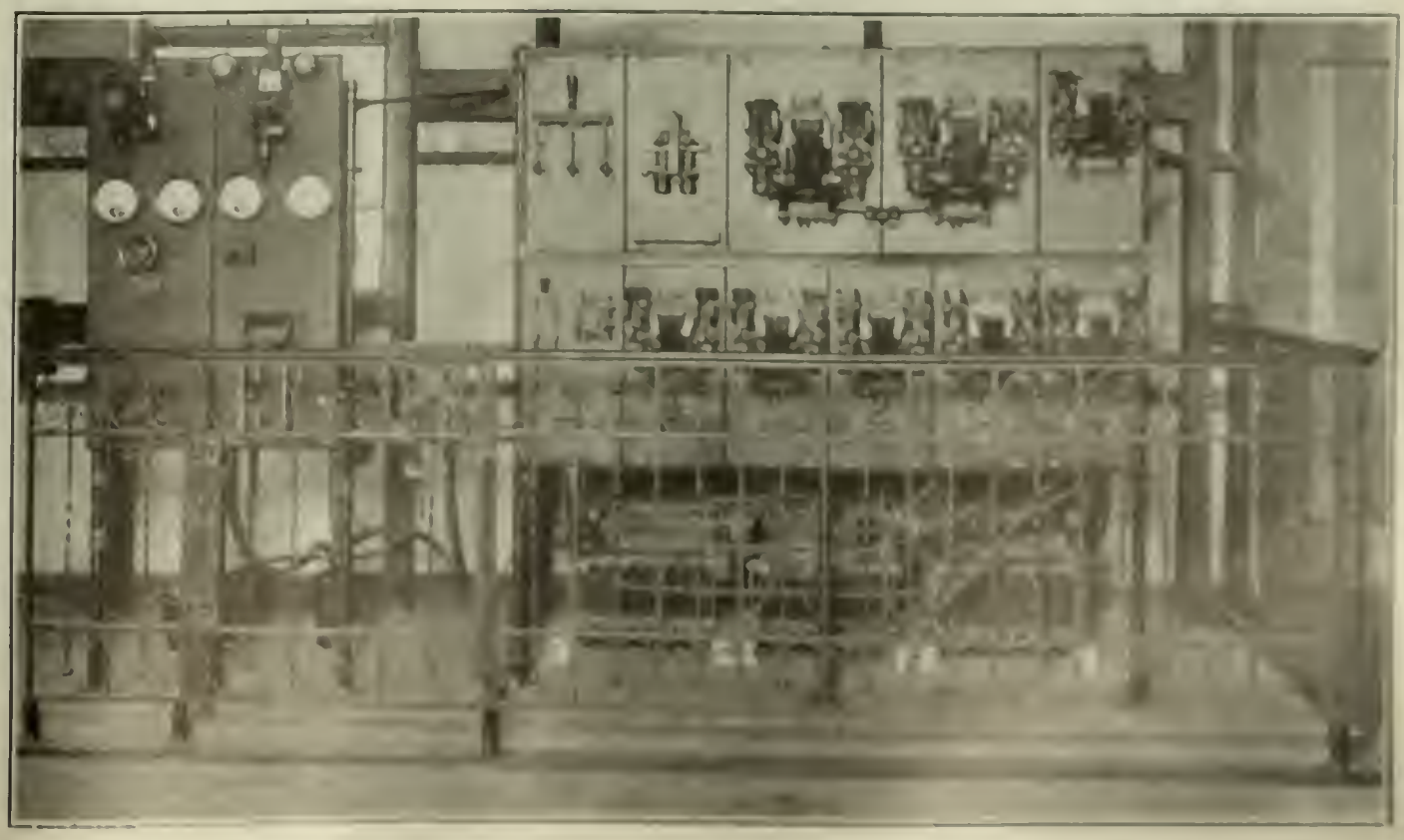


FIG. 5

Switchboard

This master-controller and magnetic-contactor switchboard provides for the automatic acceleration of the hoist motor, the maximum speed of the cage being 1,400 ft. per minute. A 440-volt variable-speed induction motor drives the hoist.



[illegible]

the company's mines. After a year's use the company found the repair bills of the Oldroyds large though it was freely admitted that they were eminently satisfactory in most other particulars. Four Goodman short-walls of the new universal-control type have lately been added to the equipment of the mine.

The shearing feature of the Oldroyd is of immense value in the lignite coal. The extra loose end on which to shoot unquestionably permits the use of less powder and the production of not only larger lumps but also a larger percentage of lump; but this has not been sufficient to overcome the high upkeep costs and expensive delays for repairs. The shortwall will cut on the bottom but this larger machine can cut no lower than the top of the rail, with a resulting bench of coal which must be picked up or shot up at an additional cost. This cost, however, does not assume large proportions when the coal separates easily from the bottom.

Besides these two types, a Jeffrey arcwall, idle at another property, was brought here and has given a good account of itself. Each machine has a territory to itself and does all the cutting in that territory. Only the shortwalls are used for pillar drawing.

In the initial stages of the mine, when it was decided



FIG. 9—LOADERS WHICH ADD TO PRODUCTION SPEED

One operative, one man at the face and two car droppers can clean up two or three entries and load up as much as 100 tons per shift. It has been found difficult to deliver cars nearly fast enough to develop the full capacity of the shovel. This handicap, it is hoped, will be overcome later.

to rush development, two Myers-Whaley shovels were placed in service in entry driving. These have done and are still doing good work. With a crew of four men—one operator, one man at the face and two car droppers—as much as 100 tons has been loaded and two or three entries cleaned up per shift. The output of the machine is limited by nothing inherent in the machine itself but only by the delay incident to keeping empty cars ready for it to load.

All gathering is done by ten mules—the work is not concentrated enough to justify the installation of gathering locomotives just yet; however, they are a future probability. Main haulage from partings to shaft bottom is accomplished by one four-ton and two six-ton trolley locomotives. One or two of these will be superseded by a 13-ton machine just ordered. The heavy grades down which the locomotives must retard the trips make this heavy weight necessary. At the shaft bottom mechanical brawn in the shape of Nolan automatic cagers supplant human labor in feeding loads onto the cages. The crew on the load side of the bot-



[illegible]



FIG. 10—AUTOMATIC CAGERS EASE LABOR AT BOTTOM

Two men with the aid of an automatic cager deliver all loads to the hoist. Empties, pushed off the cages, run by gravity to a car haul which raises them high enough to "kick back" to the empty tracks, where a third man couples them.



FIG. 11—A VIEW OF COLUMBINE CONTIGUOUS TO THAT OF THE HEADPIECE

A model village planted incongruously in the midst of a vast gopher- and rattlesnake-infested prairie, within sight of the Rockies. This mine, which has broken many precedents, East and West, is being closely watched, as it is believed that many methods worthy of adoption have been inaugurated.

tom consists of only two men and the cager. Empties pushed off the cages roll by gravity to a car haul which raises them high enough for them to "kick back" to the make-up track for the empty trip, where another man couples them together.

The Columbine hoist is a Denver-made Dewco, using a cylindro-conical drum 5 ft. in diameter at the small ends and 7 ft. at the center; its maximum hoisting speed is 1,400 ft. per minute. A 300-hp. 440-volt variable-speed Ideal induction motor supplies power to the drum through the medium of a double-reduction of Link-Belt silent and roller chains, all running in dust-proof and oil-retaining casings. A short countershaft supported by two bearings is driven from the motor by the silent chain and in turn drives the drum by a quadruple-strength roller chain, four heavy single-strands built integral. The layout is shown in photographic and diagrammatic form accompanying this article. A Cutler-Hammer master controller and magnetic contactor panel provide automatic acceleration for the motor.

The Columbine tipple, as well as the bath house, club house and all other buildings, was designed and erected by the company. The tipple machinery itself was made by them according to their own details and specifications, much of the material coming from other properties of the company. The screen is unusual in that it is supported on flexible boards and in that its perforations are all square instead of round or slotted. Furthermore, its speed is higher than is commonly found—130 vibrations per minute. The company has found from experience, however, that Columbine sub-



FIG. 12—AN UNUSUAL WAY OF LOADING COAL

Frequently coal is loaded so that the larger coal is at the top, so as to put, as it were, "the best foot foremost." But sub-bituminous lumps slack so readily that it is well to cover them up with the finer coal. For this reason the coal is dumped so that the lumps seek always the bottom of the pile and the slack remains in full view.



FIG. 13—SHAKER SCREEN DESIGNED BY COAL COMPANY

Sub-bituminous coal the coal company believes, can best be sized by a short, quick vibration; on this screen, suspended by pedro of 1x1/2 in. beards, makes 130 strokes per minute. Wire sizes are ordinarily made, but other approximate plates are always ready to prevent additional sizes so that any peculiar market demand may be met.

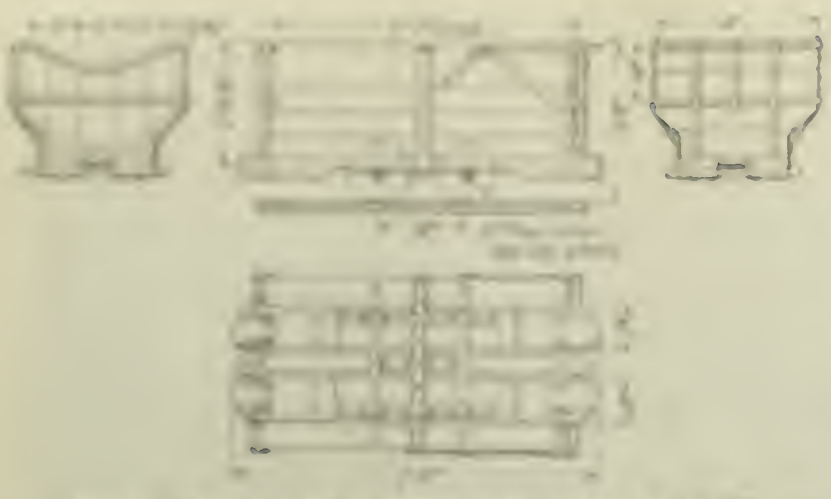


FIG. 6—WOOD CAR BOTH END GATE IS USED

As the mine is dusty and the coal is to be loaded by machine the car is equipped tightly both—E G. 3 in. over all the rail The cage clearance is arranged so the upper wheel 8 in. at the operating height with two packing will be just 4 ft. 2 in.

bituminous coal can be screened most effectively by such equipment.

Coal people of the state are watching Columbine with unveiled interest, not because it is as yet a large producer but because it is a new property, where modern machinery and modern methods are being employed and one that is considered to have a brilliant industrial future.

Testing Contact of Knife-Switch Blades*

By J. P. Burns

St. Louis, Mo.

IT IS important, especially in the case of big switches, that the blades make good contact with the jaws, for if they do not the switch will heat. It is sometimes difficult to determine whether the blade does or does not make a good fit if one does not know just how to go about it. The following suggestions therefore may simplify the matter:

A "feeler" can be used for finding when knife-switch blades make good contacts in the jaws. Any thin, hard material may be used for this purpose. A piece of mica, say 1 in. wide and 2 in. long, is satisfactory, or a very thin piece of sheet steel will answer the purpose. The feeler should be about 0.003 in. thick.

To use this tool, try to insert it between the jaws and the blades at different points. At locations where it can be pushed in readily the contact is poor. This may be corrected by light hammer blows on the jaws. The blades should always be "ground in" to insure good contact between them and the break jaws.

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Measures for Prevention of Ignition of Gas By Electric Detonators

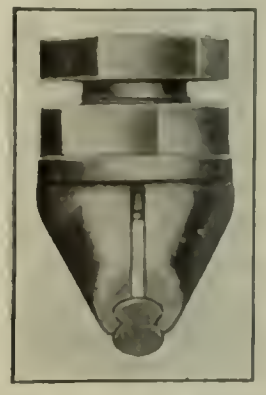
SEVERAL ignitions of gas and at least one mine fire having been attributed to heated leg wires of electric detonators at mines in which outside firing was practiced, certain tests were conducted by the U. S. Bureau of Mines to determine, if possible, the cause of these ignitions. The results are set forth in reports of the Bureau Serial No. 2382.

Three series of trials were made, as follows: Tests in air to show the behavior of iron and copper leg wires when various values of current were passed through them, tests in mixtures of natural gas and air to determine the length of time required for various currents which passed through iron and copper leg wires to cause an explosion, and tests to determine the possibility of gas ignition from the re-establishment of the circuit after firing of the detonator.

As a result of this investigation the following preventive measures are suggested: (1) Detonators should be connected in parallel-series, series-parallel or in straight series. (2) The time during which the firing connection is made should be limited to 0.15 to 0.2 second. (3) Electric detonators with copper leg wires should be used. (4) A firing supply current having the lowest standard voltage that will fire all the detonators connected should be used. (5) An ungrounded firing circuit should be employed.

Trolley Clamp Needs but Two-Inch Headway

THE mines of the country always have been desirous of obtaining a trolley clamp that would take up the minimum headroom. To meet this demand the device shown in the accompanying illustration has been developed. This trolley ear, which is extremely simple in design, possesses certain improvements over its predecessors. It is composed of only four parts, namely, a machined steel center, two malleable-iron jaws and a locking nut. All of these are permanently assembled and sherardized.

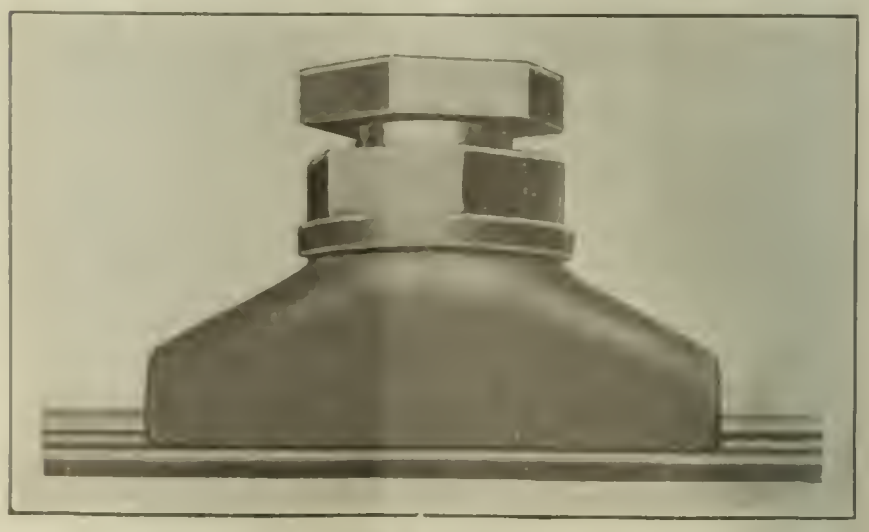


FOUR PARTS ONLY IN TROLLEY CLAMP

A machined steel center, two malleable-iron jaws and locking nut which is sheradized after assembling.

The total height of the assembly is only 2 in., yet a positive grip on the wire is provided and the ear offers the least possible obstruction to the trolley wheel. In installation the upper hexagon nut is screwed up tightly against the suspension, after which the jaws are aligned with the trolley wire and locked in position by means of the lower hexagon nut. This is fitted with a left-hand thread, and the entire assembly is readily brought up tight and snug.

This new clamp is designed in two styles, one for 2/0, 3/0 or 4/0 grooved trolley wire, and the other for 2/0, 3/0 or 4/0 figure-eight wire. Consequently in mines where either grooved or figure-eight wire is standard, one style or



SIDE VIEW

Suspension does not obstruct trolley wheel.

two styles at the very outside need be stocked. This device is being manufactured and placed on the market by the Electric Service Supplies Co., of Philadelphia, Pa. Its great simplicity and small headroom will recommend it to the consideration of operators.

The Coal Operator's Blind Spot

Fails to See Duty to General Public—Rights of Individual Must Yield to Public Necessity—Can Simplify Problems by Improving Reputation

By George Otis Smith
Director U. S. Geological Survey

SIX years ago, at a meeting of the American Mining Congress, the present editor of *Coal Age* and I began a discussion of the cost of coal with the obvious premise that "the price of coal is a matter of vital concern to the average citizen." Since that time more than 3⅓ billion tons of coal has gone up in smoke here in the United States, and the price of coal has repeatedly become a national issue. Yet in these same six years, I fear, we have not been willing learners from experience; the consumer still fails to assume any responsibility in bettering the conditions of coal distribution, the public official still fails to distinguish between the essential and unessential in governmental "interference" with the coal business, and both the coal operator and the mine worker still utterly fail to appreciate that society is larger than any business and that the common weal is superior to any private privilege.

Were I writing for other columns I might well discuss another phase of the subject and appeal to coal consumers for help in reducing the burdens of those who mine and sell coal. The readers of *Coal Age*, however, are at the opposite end of the business, and I shall therefore better achieve my purpose by describing what I may perhaps be allowed to term the blind spot of the coal producer. It would be unfair to charge the leaders in any American industry with utter lack of vision, for we Americans like to consider ourselves forward-looking, yet the recollection of recent events forces me to the conclusion that far too many bituminous coal operators, however wide their angle of vision, have been blind in one particular—they have failed to see their duty to the general public; and, moreover, those leaders who at times have urged the recognition of the public interest have not had the following they deserved.

The Blinding Effect of Coal Dust

Possibly the miner, the operator, and the dealer are all too near to coal to see it in its larger aspects—the coal dust blinds their eyes to the truly beneficent part that coal plays in this world of ours. It is not merely a figure of speech but an evident fact that our social and industrial structure is built on a coal foundation. The labor leaders and the big operators realize this fact to the extent that it is the major premise in all their strategy, but neither the union executive nor the operators' spokesman appears to appreciate the full social value of coal or see that a strike or lockout at the coal mines can bring unmeasured distress to millions of fellow-citizens, and that even the partial stoppage of the country's fuel supply for five months threatened widespread disaster all out of proportion to the wrongs that the disputants were trying to right. It is because he sees clearly the dangers of industrial paralysis that Governor Miller recently characterized as tyranny "the effort of any group of men to control on a nation-wide scale the production of any essential article," and he applied to employers as well as to employees this rule of conduct: "When public necessity intervenes, the right of the individual to do as he will must yield." All this is simply a fresh expression of the democratic principle of the rule of the majority, and as applied to coal it simply means that consumers outrank producers 100 to 1.

The lack of functioning in the coal operator's blind spot is evident from the unfortunate fact that in failing to see beyond the few score or few hundred stockholder-owners of the mine he skillfully manages, or even the 500 mineworkers he employs, he fails to realize that nearly 100,000 of his fellow citizens are dependent upon the product of his mine. In these days "dependent" is not too strong a term, for coal enters into every industry and forms an essential part of every commodity; the importance of coal even on the farm was brought to mind last summer, when a priority was requested for coal to run the threshers whose uninterrupted operation was essential to the saving of the world's bread. It is not simply the steel works and the automobile plant and the gas works that are dependent upon a supply of coal, but every industry, large or small, in which mechanical power strengthens the arm of the workman and increases his ability to produce what his fellow men eat, or wear, or use in any way. The world lives on coal.

Property for Use vs. Property for Power

So it is that the distinction emphasized by an English professor between property "for use" and property "for power" may well be applied to the coal mine. The owner of coal in the ground has no inherent property right based on anything else than the use of that coal, and any neglect of the consumer's right to have that coal as he needs it only incites such suggestive references to a bygone feudal system as are contained in the obnoxious term "robber baron." That idea of property as a source of benefit to the owner alone is centuries out of date here in the United States. The contention of a coal-mine owner that the only point of contact between his private property and the Constitution is the constitutional guarantee of protection is based upon a mistaken idea that coal is the only private property to be considered. Such an advocate of the constitutional rights of the coal operator is himself blind to the obvious existence of other citizens whose property rights and indeed whose health and happiness are dependent upon a supply of coal. It is this social value of coal *for use* that gives the operator and the mine worker their opportunity for profit and earnings, but even that ever-present friend in time of exigency, the Constitution, can hardly be summoned to destroy or injure the property rights of the majority in order to protect a monopolistic property right of the minority.

It was a representative coal man speaking to coal men who named the problems they continually face—

an unfriendly press, a distrustful public, and the threat of socialistic legislation. This statement certainly suggests a burden from which the coal operator must seek relief—a situation that calls for action. Whether he attributes this unhappy condition to prejudice or suspects that it is founded on unwise practices, the coal operator, as well as the coal merchant, as a matter of good business, must seek to better his reputation. Fortunately, those who are engaged in the coal trade realize all this, but between the periods they forget it, and I fear that the fairer reputation will not be won for the coal business until there comes into the whole industry, from the mine room to the consumer's bin, a year-in and year-out sense of the great public service to be rendered by those who mine, transport, and deliver coal. It is not enough for a few to realize this; the great majority of mine workers, operators and dealers must fully realize their relation to the public.

It may be that the case of the coal operators has sometimes been presented so plausibly that they themselves have come to believe it to be stronger than it really is. As an example of too many lawyers on the job, I can cite some long-continued hearings before Congressional committees, where among the array of able attorneys none won the confidence of the committee members and promoted the passage of the relief legislation so effectively as a certain oil operator who made little claim to his rights but candidly told all the facts—so candidly that he was at the time accused by his associates of "spilling the beans." But his frank presentation of the facts, regardless of whether or not they favored his case, saved the day, and it is interesting to note that, so far as the presidency of a national organization signifies primacy, he is today the leader of the oil industry. Might not the coal industry profit by similar tactics?

In the six years since Mr. Lesher and I first wrote on the cost of coal I have more and more regretted the lack of the facts that are needed to clarify the issues raised by widespread criticism, and more and more do I believe that those facts, when found, will help the coal industry as a whole—not hurt it. My own view of the coal business in its relation to the public is that what will help the consumer will help the producer—that the true interests of operator, miner, and general public are not antagonistic. The respective equities cannot be determined, however, under any policy of withholding facts or of conducting the industry's case before the public by claiming everything and admitting nothing. The "strong front" presented by the attorneys for the coal operators—their uncompromising denunciation of others, their vehement claim of rights above those of the public—has had the temporary effect of shaking somewhat my faith in the integrity and good-will of the industry. The spokesmen of the coal operators have overplayed their hand.

The opportunity is now here to reverse that policy and to join in whole-hearted co-operation with a public agency whose purpose is to find facts and present them for public consideration. The United States Coal Commission has been authorized by Congress to study the whole subject for the sole purpose of advising Congress. The end in view is an adequate supply of coal for industrial and domestic use and the maintenance of uninterrupted commerce between the states. No one can render greater assistance in that study than the coal operator, and no one will receive greater benefit from a wise solution of this urgent problem.

I offer the opinion that the coal operator has too long been blind to his own interests in not seeing clearly his large and peculiar function in the service of the public. The failure of the industry as a whole to obtain a fair deal has been due in part to this blindness and to the unfair practices of the few. The facts may injure this minority, but in the long run they will help the fair-minded and fair-acting operators, who, I like to believe, from personal observation, constitute the large majority.



Photo by Galloway.

COAL STORAGE PILES AT EDGEWATER, N. J

Two hundred and forty thousand tons in the storage yards of the New York Edison Co. waiting to be transferred to barges for use in the five steam power houses across the river in New York City. The New York Edison Co. furnishes 70 per cent of the electricity in Greater New York. This picture was taken [illegible] the New York Edison Co. is still well supplied.

Hoists That Accelerate, Slow Themselves Down or Work Unattended and Substations Needing No Attendant*

Nokomis Hoist with Different Speeds for Coal, Supplies and Men, Speeds Up, Reduces Speed and Stops Automatically—Two Inspiration Hoists Work Continuously with Man to Oil and Watch

By C. E. H. von Sothen†
Schenectady, N. Y.

WHEN weighing ways and means for decreasing the operating expenses of a coal mine, two classes of apparatus should be given careful consideration. These are the automatic mine hoist and the automatic substation.

In many large mine hoists today some features have been made automatic in operation, particularly those devices intended for protection against overwinding, and in some electric machines devices for preventing excessive acceleration or retardation have been added. Thus a 1,350-hp. hoist of the Valier Coal Co. at Valier, Ill., is arranged for automatic acceleration, automatic slow down and stop. It is necessary only for the operator to close the control switch in order to start the hoisting cycle. A pilot motor then turns the controller to the full-speed position, whereupon this motor is cut off and unclutched. Near the end of the travel of the hoist cams turn the controller to the off position, and when this is reached the brakes are automatically applied.

Another hoist of this type is the 1,050-hp. machine of the Peabody Coal Co. installed at Nokomis, Ill. This hoist is provided with cams so arranged that the operator may obtain three definite speeds for hoisting—for coal, for men and for material. Automatic retardation and stop are provided at each speed. These hoists, of course, require the presence of an operator on the platform at all times. The automatic features simply permit higher hoisting speeds and more rapid retardation than could be obtained normally with manual control.

There are some large hoists in operation, however, that are completely automatic—that is, capable of performing their functions without an operator being present at the control levers. Where the rope speed is low, no slow down is required before the skip or cage enters the dump. In such cases a direct-current shunt motor or an induction motor may be employed. For speeds above 400 ft. per minute it is necessary to retard before entering the dumping apparatus. A reasonably accurate stop also is required for reliable operation. It is nearly always imperative, furthermore, that the automatic-control system act in the same manner irrespective of the load—that is, that the rate of retardation and the position of stop be nearly the same whether the skip comes up loaded or empty.

The direct-current shunt-wound motor with voltage

*Article entitled "Automatic Electric Apparatus Applied to Coal Mining" read before the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers, at Huntington, W. Va., Sept. 22.

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FIG. 1

Inspiration Hoists

Main hoists at plant of Inspiration Consolidated Copper Co., Inspiration, Ariz. These hoists, though provided with manual control down to the very point of installing controlling levers whereby the hoists can be manually regulated, are arranged to be self-controlled. The skips go up and down in the shaft without any engineer. Not even a pushbutton is used to set the skips going from morning start till "all-hands home." The hoisting distance from loading point to chairs at the loading pockets is 630 ft. and the rope speed is approximately 750 ft. a minute.





FIG. 4—AUTOMATIC RECORDING EQUIPMENT
For finding a mid-coal vein

control is the only type inherently suitable for automatic hoisting at high speed. This system of control has such characteristics that if the controller is moved back at a certain rate the hoist will be retarded at a proportionate rate and to nearly the same speed irrespective of the load being hoisted.

When the officials of the Inspiration Consolidated Copper Co. planned the layout of their main shaft several concurrent conditions indicated the possibility of effecting appreciable savings in hoisting by the use of automatic hoists. Two three-compartment vertical shafts were sunk for two independent balanced hoists, either of which can in an emergency keep the upper works running at full capacity. The third compartment of one shaft contains a double-deck man cage and the third compartment of the other carries a counterweight for this cage together with air lines, electric cables and the like.

The hoists proper were built by the Nordberg Manufacturing Co. and the electrical equipment was furnished by the General Electric Co. Fig. 1 gives a general view of the two machines and the electrical equipment. Each hoist is driven by a 580-hp. 575-volt 244-r.p.m. shunt-wound motor through a flexible coupling and Falk gears. Power is supplied to the hoist motors by a flywheel motor-generator set. This consists of one 850-hp. induction motor, two 500-kw. generators and one 30-kw. exciter, also a 19,700-lb. 112-in. steel-plate flywheel. Each hoist motor is connected separately to one of the generators and is controlled by varying the generator field.

From the dumping point to the chairs at the loading pockets underground is 650 ft. in each shaft. The rope speed is approximately 750 ft. per minute. A manway connects the two shafts, which are about 125 ft. apart, so that the same attendant without difficulty can take the entire care of the automatic weighing and loading apparatus of both the hoists.

To introduce automatic control at the beginning of a shift the operator closes two small control switches and locks in two levers. To start automatic operation a master controller is then thrown to the automatic running position. One hoist or the other will then start, depending upon the position in which the skips have been resting. Suppose that closing the master controller energizes the pilot motor on the controller of No. 1 hoist, which starts, lifting its south skip; then as No. 1 controller moves away from the off position it simultaneously energizes No. 1 generator field and operates a pilot device which releases the brakes on the No. 1 hoist. This machine is accelerated by the controller building up the generator voltage.

Toward the end of skip travel the movement of No. 1 hoist actuates a pilot motor which moves the No. 2 hoist control gradually to the full-speed position in one direction, thereby accelerating No. 2 hoist to lift its north skip. Shortly before this skip enters the dumping horns the travel of No. 1 hoist, by means of cams, one of which is geared to each drum, gradually moves the No. 1 controller toward the off position. This decreases No. 1 generator voltage, thereby retarding the No. 1 hoist. Just as the north skip is about to land on the chairs No. 1 controller comes into the off position. This completes retardation and automatically applies the brakes. No. 1 hoist remains at rest while No. 2 is raising its north skip. In like manner No. 1 then hoists its north skip and then No. 2 its south skip. This sequence continues until it is interrupted or stopped by the operator.

In order that the transition from hand to automatic control and vice versa may be effected easily and quickly the levers on the operating platform are not disconnected from their controllers or brake engines when running automatically. During automatic operation, therefore, these levers move back and forth as if manually operated and are always in the correct position and in proper engagement for hand control.

Under all conditions, except when making adjustments, the cams for effecting automatic retardation and stop remain mechanically fastened to the hoist drum. Limit and emergency switches also are provided.

Empty or Full, Skip Arrived Safely at Top

After installation these hoists were started without difficulty, and on the second morning hoisted forty-four skips. After a few weeks of operation observations were made on the accuracy of stop. In twenty consecutive trips (ten each way) the total variation between maximum and minimum was only 1½ in. of rope travel. During this time the ore "hung back" in the loading pockets on one side, so that six of the trips included in the above figures were made with an empty skip.

To operate two hand-controlled hoists, either steam or electric, of the size of those here described would require at least two operators per shift. Following the practice found in some localities an oiler also would be employed. For the functioning of the automatic hoist only one operator is required and he is able to attend to all the oiling as well as whatever hand manipulation of either hoist may be necessary on his shift. The saving thus attained is readily apparent.

Taking up the second type of equipment mentioned in this article, in order to understand thoroughly what is meant by an automatic substation the following definition may be submitted: An automatic substation is one which at the indication of a master circuit goes into operation through automatic sequence, maintains by automatic means the required character of service, shuts down and clears itself automatically at the opposite indication of the master circuit and protects itself while starting, running and shutting down. The master element may be a contact-making voltmeter, a contact-making ammeter, a remote-control switch, a time

switch, or the station may be started and stopped by switching the alternating-current supply.

For mining service it is usually recommended that the station be started by some means other than a contact-making ammeter or voltmeter and that it run continuously until shut down by the opening of the master element. The reason for this will be apparent when the character of the load supplied is considered in connection with the low cost of electrical energy per ton of coal mined. The peak of a mining load develops so suddenly that a machine usually is unable to get on to the line soon enough after being started on load demand to be of any assistance. This together with the fact that the cost of electrical energy usually is not more than a few per cent of the value of the coal loaded for shipment makes it desirable to operate the station continuously during the hours when power may be needed suddenly. In certain mining installations, however, such as the double-unit synchronous motor-generator equipment of the Star Coal & Coke Co., the starting by load demand of the second set is now being used to great advantage.

That the advantages of automatic operation are being investigated and appreciated by the mining industry is well demonstrated by the remarkable increase in the use of the automatic substation within the past year. Both motor generators and synchronous converters are being automatically controlled with complete success, and it is only fair to assume that the practice will rapidly gain in favor as those engaged in the coal industry become more familiar with the advantages to be gained.

In the past, when labor costs were much lower than they are at present, it was possible to place the substations at or near the working faces and have each cared for by an operator or at least by a man who had little else to do. The time has now been reached, however, when this is uneconomical, yet grouping the substations so that one man can attend to several does not solve the difficulty because of the excessive amount of feeder copper that is required.

Mechanism Proves the Better Attendant

Not only this, but it is evident that the quality of service afforded by several substations cared for by one man cannot possibly equal that of a station in charge of an attendant whose sole duty is that of caring for that particular station. Making substations automatic permits their location near the working faces, thus avoiding long runs of feeder copper and simultaneously saving the wages of one or more operators. The reduction in the quantity of feeder copper necessary often amounts to enough to cover the extra investment entailed in making the station automatic, leaving the operator's wages as a net saving.

The automatic synchronous converter substation of the Lehigh Valley Coal Co. at Drifton, Pa., is located on the surface about 3,000 ft. from the nearest point where an engineer could be found during each hour of the day. This location was chosen in order to place the station at the approximate load center. During last winter this station was snowed under to such an extent that it could not be reached for five days. Throughout this period, however, the service rendered was entirely satisfactory.

It has been found that the quality of service afforded by the automatic substation is superior to that rendered by the ordinary manually operated station and is at least equal to the best. The number and length of interruptions to service ordinarily dependent upon an operator for correction are reduced, as already has been stated, and the voltage regulation is improved without excessive installation of feeder lines and without the addition of any attendants. With better voltage regulation all operations in the mine are speeded up, which in itself is of economic value. Wear and tear on substation apparatus is reduced through the elimination of unskillful handling.

When several manually operated substations feed into the same direct-current trolley system the loads may, of course, shift about to such an extent as to overload one substation and trip its direct-current breaker. This throws the entire load on the remaining stations and may, in an extreme case, so heavily overload them that their direct-current breakers may open successively. If these breakers do not trip, the stations will continue to supply the load, but through such a length of feeder and trolley that the voltage drop will become excessive. A form of automatic control has been perfected which permits a substation to limit its own load to its mo-



FIG. 3—INSTRUMENT AND RELAY PANELS

Switchboard for a 250-kw. synchronous converter. Protects against severe overload or short-circuit and failure to complete starting sequence. Has d.c. relays, a.c. phase starting and undervoltage or shunting trip, overload [illegible] overheated machine windings, reverse power, overspeed and temporary drop in [illegible] voltage.

In England, as Here, Coal Miner Lives Long

NOT only in the United States but in England and Wales the mine workers and their political friends represent mining as disastrous to health and life. The fable is no truer there than here, as the Registrar-General's Table of Mortality among Various Occupations in England and Wales, 1910-1912, conclusively proves. Of course the death rate at the higher ages is not important though motor-car and motor-van drivers, who were probably not numerous in the period indicated, show a consistently low death rate at all ages. Mine accidents are included in the case of miners.

ANNUAL DEATH RATE PER THOUSAND OF AGE REPORTED FOR VARIOUS OCCUPATIONS IN ENGLAND AND WALES, 1910-1912

Age	25	35	45	55	65	75 & up
Seamen, etc. (merchant service)	12.21	16.19	27.01	45.08	84.09	172.14
Bargemen, lightermen, watermen	6.76	11.84	20.53	39.54	77.84	225.35
Fishermen	7.22	10.21	14.25	26.06	59.01	175.91
Chimney sweeps	4.73	12.56	19.19	36.72	64.86	204.48
General shopkeepers	5.85	8.49	16.41	26.59	57.59	159.48
Engine drivers (not railway)	3.87	6.22	11.84	30.85	75.27	209.22
Costermongers	11.26	18.39	27.73	44.48	76.67	228.09
Brewers	6.75	9.95	20.15	36.06	73.18	185.95
Bakers	3.42	6.11	12.84	27.09	59.77	172.83
Patten-clog makers	8.08	10.19	18.02	49.11	91.21	187.50
Carpet, rug, etc., manufacture	3.87	4.15	11.70	29.49	87.96	191.85
Chemists and druggists	4.79	7.55	12.54	29.49	66.44	158.88
Copper manufacture	1.85	5.23	14.85	33.13	85.59	200.00
Carpenters and joiners	3.90	6.47	13.10	27.89	64.38	164.27
Bricklayers	3.49	5.71	12.82	25.19	57.38	159.62
Plasterers, etc.	3.54	6.58	15.54	29.37	67.03	174.52
Tile makers	8.03	15.92	34.24	50.88	102.73	339.08
Cutlers	6.99	15.38	24.37	44.63	93.63	180.56
Stove grate, etc., makers	2.83	4.82	9.87	24.05	47.26	166.67
Dock laborers	7.63	12.46	21.99	36.44	66.58	169.78
Carmen, carriers	5.09	9.44	16.62	34.23	83.71	237.07
Coalheavers	5.38	10.31	19.20	33.64	70.77	219.05
Coke burners	3.08	3.59	11.14	21.10	75.16	254.90
Engine, machine, boilermakers	4.31	7.22	13.63	30.00	75.69	186.02
Artists, engravers, architects	3.93	7.00	13.27	25.56	71.74	181.94
Railway guards, porters, signalmen	3.99	5.76	10.64	23.70	53.06	131.45
Platelayers, gangers, packers	4.15	5.51	11.17	24.52	73.19	235.01
Railway laborers	5.60	11.51	17.16	32.36	88.78	277.07
Coach, cab, omnibus service, grooms, etc.	4.89	9.62	17.97	34.57	72.74	202.81
Commercial travelers	3.39	6.31	13.02	32.78	69.70	206.83
Stone getters, dressers, masons	4.96	9.24	18.85	36.94	73.67	205.13
Coal, coke merchants, dealers	3.09	5.49	11.44	25.17	60.12	201.99
Patent-fuel manufacture	4.27	9.19	15.98	40.40	66.67	222.22
Iron miners	4.07	6.50	10.25	27.25	65.19	210.44
Tin miners	8.07	22.11	32.37	45.80	109.56	255.71
Lead miners	7.17	9.30	21.33	51.35	132.25	260.42
Coal miners	4.39	6.70	12.65	30.07	82.28	221.77
Coal miners (Derbyshire)	3.38	5.25	10.37	25.19	83.28	247.23
Coal miners (Yorkshire)	4.32	6.92	13.08	32.40	91.52	255.02
Coal miners (Nottinghamshire	3.22	5.01	10.82	23.20	68.28	206.03
Coal miners (Mon. & S. Wales)	4.26	7.09	13.65	33.28	84.52	188.65
Motor car, motor-van drivers	2.64	4.75	7.80	12.24	28.57	133.33

CALORIMETER TESTS to determine the losses in calories of coal heated in the air for various lengths of time are being made at the Pittsburgh (Pa.) experiment station of the U. S. Bureau of Mines by J. F. Byrne. At 125 deg. C. the following heat losses were obtained:

Time of Heating	Per Cent Loss	Time of Heating	Per Cent Loss
30 min.	0.30	3 hours	1.01
1 hour	0.26	20 hours	3.3
2 hours	0.311	46 hours	5.7

Samples were heated for various periods of time ranging from a half hour to 100 hours, and the B.t.u. run by the coal laboratory. The results show no regularly increasing loss in heating value as the time of heating increases. The coal samples show a change of weight on heating—at first a decrease in weight due to the loss of moisture. The decrease is generally less up to 24 hours, when there is an increase in weight of 0.64 per cent. After heating 100 hours at 125 deg. C. there is an increase in weight of 1.35 per cent and a loss in heating value of 3.02 per cent.

Mounting Power Costs, Tire Wear, Circuit Losses and Bonding Problems Well Discussed at Huntington*

Association of Mine Electricians in Second Annual Convention—Relation of Demand to Energy Charge—How Long to Run a Tire—Welding New Treads on Tires—Dynamic Braking—Bonding and Gathering Experience

DEMAND charges, like taxes long established, seem to have lost their first sting. When he first realized that he had to pay them the operator could see no justification for their existence and could not understand why they should be imposed so relentlessly when he was running short time. True, the power company had provided a power plant for the operator's advantage, but so had the coal company opened a mine and equipped it for the benefit of the consumer. Noting this parity of conditions, the operator could but wonder why the power company could make him pay for power when he was not using it, whereas he could not make the consumer pay him a ready-to-serve charge whenever he had an idle mine and consumers who were little disposed to buy.

The first day's session of the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers, which took place Sept 19, seemed to show by its tone that the severity of the demand charge, the unfairness of its fairness, if it may be so stated, is less felt than aforetime, but perhaps it should be remembered that most of those present came from non-union fields and had merely felt the burden of the demand charge during the irregular runs due to car shortage and not the greater onus that arises from a complete shutdown or from the infrequent runs that are occasioned by lack of orders.

However that may be, the electrical engineers showed more interest in the locomotive wheel and tire question as introduced by J. J. Fluck, chief engineer of the Elkhorn Piney Coal Mining Co., Huntington, W. Va., than in the methods of checking power costs as presented in M. A. Maxwell's report, excellent as it proved to be. Mr. Maxwell's report appeared in *Coal Age* Sept. 28.

Institute Meets Electrician's Specific Need

It was nearly 10 a.m. when the meeting opened in the City Hall, the visitors most fortunately being unwelcomed by any of Huntington's many spellbinders. The president, J. H. Edwards, electrical engineer, Elkhorn Piney Coal Mining Co., Huntington, W. Va., opened by reading a *Coal Age* editorial on the association's reason for being, showing that no other organization was doing, or would care to take on, the important work that the present institute was undertaking. The association has its own special needs and cannot expect other societies which have theirs to surrender enough time for the discussion and the recital of the needs of the mine electrical engineer.

The first report read was that of the committee on "Methods of Checking Power Costs." In the absence of Mr. Maxwell, C. E. Rogers, electrical engineer, Logan Mining Co., Logan, W. Va., ranking member of the committee, read the report. In the discussion which followed, W. H. Bennett, of the Buffalo-Thacker Coal Co., Ottawa, W. Va., wanted to know what relation the demand charge should bear to the energy charge in a mine producing 10,000 tons a month.

J. H. Edwards, the president, stated that at one mine having about that production the demand charge was $990 per month and the total power bill, demand plus energy charge, was $3,700, showing that the demand charge was only about 25 per cent. However, as everyone hastened to explain, the relation depends on many factors.

J. Louis Dawson, of the Ironton Engine Co., said it depended on whether trolley or storage batteries were being used. Mr. Edwards declared it depended somewhat on the time of peak on which the demand factor was based, remembering, however, that if rates were fair a short peak-time rate would be made somewhat lower than a longer peak-time rate, thus tending to give an equal result.

Demand Charge Is Often Inevitably High

Mr. Edwards said it depended largely also on the track grades and the hardness of the coal; the demand charge would be high in relation to the energy charge with locomotives traveling on heavy grades and coal cutters working in hard or dirty coal. Though the ratio might be made more favorable by the use of judgment and skill there were inexorable conditions which would afford always a high demand charge regardless of professional ability and faithful attempts to better the ratio.

F. L. Stone, of the General Electric Co., remarked that the ratio depended on the load factor. An electrical engineer with a powerful hoist could not hope to keep his demand charge down to a low figure compared to his energy charge, especially if the main use of power was for hoisting.

H. M. McFarland, of the Simplex Wire & Cable Co., wanted to know the probable electrical cost per ton for a mine producing 2,000 tons per day, and A. Fred Phelps, of the Post-Glover Electric Co., declared that one company was getting power for 3c. per ton produced before the strike and during the suspension for 65c., so great was the effect of inactivity on its electrical costs. A. F. Brosky, of *Coal Age*, remarked that 3c. was a remarkably low figure. Inquiries in Pennsylvania had led him to believe that the cost lies between 7c. and 8c. per ton produced.

Mr. Edwards remarked that the costs of power per ton were estimated in so many ways that they were not comparable. Some overlooked entirely the cost of upkeep and some took no consideration of the income derived from current which was sold for lighting in residences, stores, motion-picture shows and other places. His company charged against the electrical department all the costs of electrification, deducting income from electricity sold to employees and others, and then, having thus found the net cost of electrification, divided

*First of two articles containing the discussion on the papers and reports presented at the second annual convention of the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers held at Huntington, W. Va., Sept. 19-22.

that by the tonnage produced, thus obtaining the true cost per ton.

Naturally exception will be taken to this as combining the profits or losses of understanding with the actual costs of producing current for use at the mine. It would seem well to meter the current sold so as to find the cost of the current used at the mine and to find out whether the current thus merchandised is being provided at a profit.

Mr. Edwards said that when a company uses 200,000 kw.-hr. per month at any single group of operations it should certainly investigate carefully whether it would pay to install a generating plant of its own. Should it use 100,000 kw.-hr. per month it would certainly be well to erect a plant and not buy current. C. E. Rogers agreed that these current consumptions represented the limits for careful investigation and unfailing adoption respectively.

How Long May a Tire Be Safely Used?

The report of the committee on "Mine-Locomotive Wheels and Tires" was then presented by J. J. Fluck, its chairman. This report appeared in the issue of *Coal Age* of Sept. 14. R. R. Webster, of the Elkhorn Piney Coal Mining Co., Weeksbury, Ky., in the discussion that followed, asked: "How long may a tire be safely worn before it is discarded?" J. L. Butcher, of the Amherst Coal Co., Amherstdale, W. Va., said that he believed in allowing a tire to continue in use so long as it "stays in center" and does not become loose. Another declared that with the larger wheels, such as those which were 30 in. in diameter, the tires could be allowed to wear till the tire when turned smooth would not be less than ½ in. thick. The tires on 12 or 14-in. wheels can be allowed to wear down thinner than ½ in. Mr. Butcher said that tires rarely become loose, but he admitted that he had observed wheels on mine locomotives with loose tires.

Mr. Butcher in reply to Mr. Edwards qualified his sweeping statement as to the safety of tires when worn almost away by saying that when the tire on a 30-in. wheel wears down so as to be only ½ in. thick after flanging it could not be regarded as safe. He said that he had built up the tires of small wheels electrically and got good results. He would not fill cast-iron wheels. It would not pay to weld a new tread on such a wheel either electrically or with acetylene, for by the time such a wheel had been annealed and turned it would have been cheaper to have bought a new wheel.

He thought that the manner of welding by small increments around the wheel, starting from four points equally disposed about the circumference, as described in the report of the committee, was the right method, as thereby warping was prevented. Asked why he welded only small wheels he said that large wheels could be welded with equal ease and with just as satisfactory results but that if the wheel was so large that there were no facilities at the mine shop to turn it it would not pay to do the welding.

He said that every mine shop should have an electric and an acetylene welding outfit. Mr. Rogers remarked that whether wheels are built up or not at the mine shop a welding outfit should be provided, for it pays to have one. Mr. Fluck stated that the Elkhorn Piney Coal Mining Co. turned wheels up to 30 in. in diameter.

The discussion veered to dynamic braking and someone objected that where this practice was followed it was difficult to start when a locomotive went down a grade to get a car which was on the pitch. Mr. Butcher remarked he was not greatly in favor of dynamic braking and said that the theory was good but, unfortunately, in gathering the men will "goose" or reverse their motors instead of braking them. He did not think dynamic braking suited to main-line haulage.

The motors were supposed to start in series but the men would not make use of that method of starting, switching immediately instead to the parallel position. J. L. Dawson said that most of the "goosing" was done when gathering. The men did not wait to set brakes.

A. Fred. Phelps, of the Post Glover Electric Co., said that though he was strongly in favor of dynamic braking he could not "bring himself to see it" in the larger locomotives. He added that most of the companies were not using dynamic braking on locomotives weighing more than 8 tons, but Mr. Fluck said that the Goodman Manufacturing Co. was using it on locomotives in excess of that weight. One company had tried to equip a 14-ton locomotive for dynamic braking and had found that the result was not satisfactory.

J. W. Tierney, of the Electric Storage Battery Co., said he did not see how braking down a hill would heat up a motor if it did not heat going up, but Mr. Phelps replied that on going downhill the speed may and probably will exceed that pulling uphill and the heating is from the speed with which the armature turns. Going up the speed is about 6 miles per hour and going down it may be 10 or even 15 miles. Reuben Lee, of the Elkhorn Piney Coal Mining Co., of Stanaford, W. Va., said that he found that soft cast-iron brakes were preferable to feralun. No one volunteered any indorsement of this declaration.

Fifty Automatic Substations Already Running

The attendance on Wednesday, Sept. 20, was larger than at any of the other meetings and the interest was considerable, though regarding the first paper and the close of the second there was little discussion. The automatic substation excites much interest but is so little understood by the average mine electrical engineer that he is not ready to discuss it. The first paper, "Automatic Electrical Apparatus as Applied to Coal Mining," was delivered by C. E. H. von Sothen instead of by M. A. Whiting, who was unable to attend. The paper was well illustrated by slides, among which were several showing an installation at the Inspiration Consolidated Copper Co.'s mine.

The marked trend in the industry toward automatically controlled equipment was voiced by Mr. Edwards. Three years ago his company considered installing a 300-kw. automatic substation, but the electric companies discouraged the project. He asked how many automatic substations there were in this country, and the answer developed that about fifty of them were in operation.

Mr. von Sothen, in answer to an inquiry, declared that he knew of only one truly automatic hoist in the world and that was the one he had described. It was installed six years ago and consisted of two 580-hp. units. Asked as to the type of motor best adapted to an entirely automatic high-speed hoist, von Sothen said that the torque of the direct-current shunt motor with voltage control varied but little with the load, and therefore was best suited for that purpose.

Mr. Edwards expressed his belief that the time was not far distant when every modern mine, whether equipped with converters or motor-generator sets, will

have one or more automatic substations. His company, as well as many others, is beginning to realize more and more the importance of automatic devices, and he even went so far as to say that he believed that automatic starters would be used even for the operation of small squirrel-cage motors. Mr. Suiter added that the Winding Gulf Coal Co. has an automatic slow-down and stop at one of its mines. For the five or six years that it has been running the installation has been giving satisfactory service.

The second paper of the morning, on "Underground Transmission and Distribution," was read by J. C. Fuetter, chairman of the committee appointed to report on that subject. His paper was reproduced in full in the issues of *Coal Age* of Sept. 14 and 21. Mr. Edwards opened the discussion by asking whether substations close to the shops should be automatic or manual. Mr. Fuetter recommended that the automatic substation be used under all conditions, as it is far superior to one that is manually operated, being more reliable, less expensive to operate and more desirable in every way.

Squirrel-Cage Motors Suited to Mine Work

A. M. Lupton, of the Lincoln Electric Co., said that squirrel-cage motors of modern design should find more extensive use about the coal mines, where the torque rapidly falls off after a maximum torque is reached. E. D. Knight said that this type of motor is used extensively for raising and lowering loading booms on the tipple. He then asked what provisions were made for brush raising and lowering at the Van Lear installation, to which Mr. Fuetter responded that the substation was equipped with a motor-generator set.

The subject of electric-weld bonding having been mentioned in the paper, J. L. Dawson asked if the association would go on record as recommending electric-weld bonding in preference to all others. A decision was made to delay such positive action until a later date. According to Roscoe Woltz, the electrically welded bond is difficult to make on old rails. Mr. Lupton declared that successful arc-welding can be accomplished only with a motor-generator arc-welding bonding set. Though its initial cost is several times that of the resistance type of welder, it should be used nevertheless, as only by its use can good work be expected.

C. E. Rogers then presented the report of his committee on the "Relative Merits of Storage-Battery, Combination and Conductor-Cable-Reel Locomotives." This report appeared in *Coal Age* in the issue of Sept. 14. L. W. Scott desired to know something regarding the length of haul and the territory negotiated by the battery locomotives mentioned in the paper and whether they were shifted from place to place. Mr. Rogers replied that a locomotive in most circumstances should be allotted to a particular territory, from which it seldom should be removed. The locomotives under discussion worked in a mine laid out in a panel system, 15 rooms on an entry, placed on 60-ft. centers and 300 ft. deep.

It was learned through Mr. Edwards that R. L. Kingsland, of the Consolidation Coal Co., recommends the straight storage-battery locomotive in places with grades up to 5 per cent, the combination locomotive in places with grades up to 10 per cent, and the cable reel for steeper grades. H. E. Carlton asked whether machine-wire costs should be credited to reel type locomotives and debited to the straight-battery locomotive. Mr. Rogers said No; that haulage costs must be kept apart from other operation costs.

R. W. Whetstone said he believed that battery depreciation has a direct bearing on the compilation of costs, and that the charging apparatus should be made entirely automatic if depreciation charges are to be lowered and the life of batteries is to be increased. Mr. Edwards said that the depreciation of batteries will be lowered, as the men learn more regarding their care and maintenance for locomotive duty. He called attention to Mr. Rogers' figures showing that the cost of depreciation was being lowered each year even though the age of the batteries steadily increased.

In the afternoon a group of the men were the guests of the West Virginia Rail Co., whose rolling mill lies on the outskirts of Huntington. The party was shown through the plant by the superintendent, H. H. Diehl, who explained the processes involved in the evolution of a steel mine rail, whether made from scrap railroad rails or from billets.

Mr. Diehl said the manufacturer of steel rail was frequently blamed for defects that arose from the careless use of the electric-weld bonding machine. The burning of the rail frequently weakened the steel, and for defects thus caused the manufacturer could not be held responsible. He laid successively several lengths of rail over two supports spaced at an interval of 2 ft. and struck them with a steam hammer after first making a slight impression with a cutter on the flange of the rail. He showed thereby that a single blow of the hammer would make a clean shear. A similar rail without that slight nick would bend without breaking, which proved his contention that a slight weakness at any section will concentrate the strain at that point. He recommended the placing of the bond on the web of the rail instead of at the base or flange.

None of the Fractures Touched the Weld

The following afternoon several bond contacts were made by means of an electric welding apparatus in the exhibition hall, and these were taken to the mill to be broken. The results showed that it really makes little difference where the bond is made on the rail, provided care is taken not to burn the steel. Those who witnessed the tests were of accord in pronouncing the base of flange the most logical position for a bond because this is the place where it can be most easily applied. The samples broken had been bonded in different positions, but the fractures showed that the rail did not break through the bonding contact but rather around it, provided the weld had been made with due care.

Oxygen and Air in Monoxide Poisoning

DR. R. R. SAYERS, chief surgeon of the U. S. Bureau of Mines, calls attention to page 412 of *Coal Age* of Sept. 14 and says that he should have been quoted as saying that ordinary air is a long time removing carbon monoxide from the system, but pure oxygen, if breathed normally, will remove the monoxide in about one-fourth the time and that oxygen mixed with 10 per cent of carbon dioxide requires one-fifth to one-sixth as long. Dr. Sayers adds that 5 per cent of carbon dioxide apparently works very nearly as efficiently as 8 to 10 per cent. Pure oxygen is often available at the mines and should be used as early as possible in the treatment of carbon-monoxide poisoning.

Grading and Making Height in Mine Entries

IN MINES where loose gradients are to be used, where the roadways have been given low or headings or rooms, where creeps have blocked the roadways or where grading has to be done to promote natural drainage the two illustrations of the work of the Shaverdale in the mines of the Old Ben Coal Corporation, Illinois, will be of interest, the purpose in this



FIG. 1—TAKING UP A HEAVY LIFT IN A MINE OF THE OLD BEN COAL CORPORATION IN ILLINOIS

case being merely to remove an unfavorable grade. Inspection of the illustrations will show that the work has in this instance been in no way eased by a severe creep. The clay is mined without shooting to a depth of 4 to 5 ft.

A difficulty with this machine is that it requires compressed air to perform its work and that is not always available, but where it can be obtained or there is enough work to be done with the loader or with air drills or both to justify the installation of a portable compressor it will certainly be of great assistance. Should it be necessary to load falls or to pass through caved ground it will be of advantage there also. It will load coal below ground or above. Thus it is loading coal inside the mine of the Bellingham Coal Mines



FIG. 2—ANOTHER VIEW IN THE SAME MINE

The steel construction of the roof being due to spots loosened by the Shaverdale.



FIG. 3—A ROADWAY IN THE SAME MINE

The roof has been timbered with steel and the sides covered with concrete and partly whitewashed. Note how well fitted the roadway is for safe and rapid haulage. This haulway was graded with a Shaveloder.

at Bellingham, Wash., and as shown in one illustration it is found available for loading coal from a stockpile at the iron mines of the Oliver Iron Mining Co., Chisholm, Minn. Being small and low it can move around trestles readily. It can be used, therefore, in connection with the recovery of coal from stockpiles either at the mines or at the point where it is to be used. It is further available in removing rock piles, making open cuts to drifts, etc. Speed in removing rock often means far more than an economy in labor. A heavy rock fall may shut off a large part of a mine and delay operations for several days, perhaps a whole week. Such a fall occurred in the Carlinville mine of the Standard Oil Co., and in about ten hours of actual



FIG. 4—LOADING COAL FROM A STOCKPILE

This is from a photograph taken at the Oliver Iron Mining Co.'s iron mines at Chisholm, Minn. The shovel is in the starting position and, as will be noted, it has buried its nose deep in the pile.

operation about 50 cars were removed. It is much used by contractors for tunneling and, of course, would be available for similar work in mines where it would do the "mucking" far more rapidly and cheaply than men.

PRODUCTION OF COAL from leased lands on the public domain of the United States approximated 240,000 tons during the first six months of 1922. The production would have been considerably greater than this had it not been for the general coal strike which began April 1. Technical supervision of the operation of coal mines on leased public lands rests with the U. S. Bureau of Mines.

French Colliery Association Taxes Buyers of Low-Price Coal to Reimburse Those Charged High Rates

Price Controlling Body Thus Maintains Standard Price Established—Reparation Deliveries of Coal Decreased, Coke Increased—Suspension of Eight-Hour Law Proposed—Movement on Foot for University of Labor

By C. H. S. Tupholme
London, England

IN INVESTIGATING the French coal industry that which first strikes the foreign observer is the power of the French Colliery Association or Comité des Houillères. The function of this organization in France is to dispense with all competition between the various industries in the matter of coal supply and to act as a permanent price-controlling body.

At regular intervals the Colliery Association takes inventory of all the coal sold in France, whether it comes from Great Britain, America, Belgium, German reparation deliveries or from the French mines themselves. When this is done what is known as a standard price is established based on the various prices paid for the coal obtained from the different sources and the conditions then obtaining both at the place of delivery and in the French coal-consuming industries. Then those concerns which paid less than this standard figure are taxed to the extent of the difference, and the revenue collected in this way is paid over to those who paid more than the standard. In this fashion conditions are evened up and the man who buys British coal pays no more for it in the long run than the employer who is located near the German frontier and burns German reparation coal. For instance, reparation coal from Germany, which has to be delivered to France at German home prices, was costing the association around 50 fr. a ton. This coal was sold to French industrial concerns at 90-100 fr., leaving a profit of 40-50 fr. on every ton of German coal. This margin was then paid over to those who had bought in the more costly markets.

Eliminates Competition for Cheap Coal

Naturally this method involves some very complicated and delicate accounting, and I have not yet met anyone who could tell me just how it was done, but it works out all right, since French coal operators are paid more for their coal than it is sold for to industrial concerns and the method obviates competition for cheap coal. The manufacturer is happy in consequence.

The French Coal Association is not in the nature of a state bureaucracy but it is a powerful organization, exerting great influence with the government and the press. It has also played a large part in the restoration of the devastated areas.

In connection with the reconstruction of the French coal fields in the devastated areas, it is of interest to note the progress made in the important Lens and Courrières fields. The output of the Lens mines for the first six months of 1921 was 107,500 tons against 205,600 tons in the same period of 1912. In the Courrières area the output was only 597,800 tons during the whole of 1921 against 556,700 tons in the first half of 1912.

Of mines which were not damaged during the war, the output of the colliery at Bruay (Pas-de-Calais) is now the largest in France. In 1920-1921 it produced 2,405,000 tons, but I am told these figures could easily be improved upon if need arose. During the war the annual output exceeded 4,500,000 tons. The possibility of expansion is due to the extreme regularity of the Bruay field, which renders it easy to extract the coal. Bruay coal is especially suited for boilers, as it gives very little dust and burns clean. The net profits of this colliery for the year 1920-1921, after payment for all plant and allocation to reserve, amounted to nineteen million francs.

After the European trade boom France found herself with a gradually accumulating stock of coal for which no market could be found. To remedy this situation the Colliery Association got busy with foreign sales bureaus, so that now coal mined in the Saar area is actually being sold in Germany at several francs less per ton than in France. Thus the curious situation has arisen of Germany delivering coal to France to recompense her for the French collieries destroyed by Germany during the war, while France sells the same coal back to Germany at a discount.

Lately, however, this system has not worked so satisfactorily. In order to increase revenue as a result of the demands of the reparation commission Germany has raised the home price of her coal—and thus the price of delivery to France, for it will be remembered that coal must be delivered to France at German home prices—and increased her freight rates. As a direct result the French Colliery Association has had to increase its standard price. Again, Great Britain has been selling coal at 6s. less than British home prices in order to



A FLOATING RETAIL COAL YARD IN AMSTERDAM

The proprietor, Piet Wolters, advertises that he specializes in English and Belgian anthracite, gas coke and briquets. Car shortage will not bother a dealer who can ship his coal between the coming ship and customer.



DELIVERING COAL IN MEXICO CITY

Because the Mexican railroads are short of coal, the Mexican Eagle Oil Co. has been using coal from the United States. Here a load of coal is being delivered in Mexico City.

Paris, supported the demand for the enactment of legislation suspending temporarily the application of the eight-hour day law in France. A bill has now been introduced in the Chamber of Deputies providing for the suspension of the act until the restoration of normal industrial conditions. Another measure before the Chamber proposes that coal miners be permitted to work more hours while importations of coal exceed 5,000,000 tons per annum.

The seriousness with which the outlook in the French mining industry is viewed is seen also in the recent announcement of the abolition of the coal tax.

There is a movement on foot in France to create a National University of Labor. This movement has the support of the majority of the large industrialists, and committees are working in the principal industrial centers with a view to founding in each area a university where the working classes of every age and type will be enabled to improve the selling value of their labor. It is proposed that a directing board be formed composed of state officials, technicians and employers and employed in the more important trades and that tuition be given by professors and lecturers from the neighboring universities and technical colleges.

Issue Bulletins Describing Geology and Coal Resources of Pennsylvania

THE Bureau of Topographic and Geological Survey of Pennsylvania has put out in the form of bulletins much valuable information concerning the geology and coal resources of the state. Thus in bulletins Nos. 26, 32, 34, 38, 41, 42, and 46, J. D. Sisler describes the coal beds in Washington, Fayette, Westmoreland, Armstrong, Elk, Jefferson and Butler counties, respectively.

These bulletins in each case briefly take up existing conditions so far as commercial coal mining is concerned, following this with a description of the geologic structure of the area under consideration. This is succeeded by a description of the stratigraphy and lastly by an enumeration of the coal beds present. This section of the bulletins contains much valuable information concerning the thickness and quality of the various coal measures.

Bulletins of this kind are of much value to those contemplating the opening of a mine or mines in the region treated or to those seeking detailed information concerning any one or all of the coal beds of the state. Mimeograph copies of these bulletins may be secured from the Bureau of Topographic and Geological Survey.



Price the Connellsville Coke Region Will Have to Pay for Present Strike

By John L. Gans



Unearned Wages, Profits and Overhead More Than Offset by Other Losses That Are Irrecoverable—Permanent Diversion of Business to Other Fields and to Byproduct Ovens Constitutes Greatest Injury

THE Connellsville coke region will pay a heavier price as the cost of the present sympathetic strike of its workers than for any previous interruption in its history as a fuel-producing center. The total will not be found by multiplying the number of weeks the strike lasts by $850,000, the estimated weekly loss in wages of the 28,000 men who have been idle since early in April, nor yet by adding thereto the calculated loss to the operators of the profits on 200,000 to 300,000 tons of coke which could have been made and sold at a fair price to furnaces and foundries had not the coal and railroad strikes laid their withering blight on transportation and industry.

Neither will the aggregate be found by adding to the combined wage and profit loss the extraordinary expenses incurred by reason of the measures necessary to safeguard the mining and coking properties, keep them in a workable condition, protect the men who are willing to work and preserve order in the strike-affected districts. What these costs are, or what they will amount to before the emergency requiring defensive and protective precautions shall have passed, cannot be approximated. They will vary greatly with the conditions, size and number of operations and other circumstances.

In the case of the H. C. Frick Coke Co., owning fifty-five mining and coking plants, the burden is plainly very much heavier than on any other single interest. The problems this and all operators who are striving to restore or maintain plant activity, if no more than on a small scale, will have to meet until the walkout is over and done, involve heavy expenditures. These are not limited to overhead at mines representing investments of millions of dollars in equipment and development where handfuls of foremen, mechanics and a few diggers of boiler coal who keep the mines in ship shape are the only employees on the job. Special watchmen and guards are on duty throughout the region. Transportation, commissary and other incidental expenses which their employment entails, and a wide variety and large number of miscellaneous items which do not come up in the normal operation of mines and coke ovens call for a prodigious outlay.

There are other and indirect costs, such as the inefficiency of untrained men who have taken the places of the strikers; the destruction or damage of miners' houses, mine buildings, tipples and other structures by fire or explosives, and the complete or partial wrecking of machinery and equipment.

But numerous and diverse in character as are the direct and indirect monetary losses which are being sustained by employers and employees because of the strike, and staggering as would be the grand total if it were possible to reduce it to figures, it is the deliberate judgment of persons who have given serious thought to the ultimate effects of the strike in the Connellsville region that the current losses are in part recoverable and in a sense inconsequential as compared with the losses that are likely to be irrecoverable

May Suffer Permanent Diversion of Business

Much of the greater part of the price the historic and famous producer of the standard metallurgical fuel of the world will have to pay for having had the temerity to resist the demands of an oligarchy of mine labor is the permanent diversion of business to other fields and to the byproduct coke oven—the only formidable competitor of the beehive oven as the latter has been developed in the Connellsville region.

This development has been of comparatively slow growth, the rate of which has been measured by the expansion of those industries dependent upon coke for their manufacturing processes. Beginning in the early 80's to assume importance as a fuel source, the region grew gradually in productive capacity until the maximum of 21,654,000 tons was reached in 1913. Since that date each recurring interruption to industrial peace and progress, such as railroad and steel strikes, has been instrumental in further restricting the markets for Connellsville coke and has sent buyers to other fields or set them to building byproduct plants.

Competitive regions like West Virginia have taken a share of the trade previously believed to have been wedded to the Connellsville region for its natural life,

Note—At the top of the page is a good illustration of the coke that made Connellsville famous.



CONNELLSVILLE "BEEHIVE" COKE HAS NOT YET PASSED INTO HISTORY

This oven on the left has just been drawn, the one in the middle is being charged with coal from the larry above and the oven on the right is fired and making coke.

but the contemporaneous expansion of the byproduct industry has been the more direct cause of the reduction in the volume of demand for Connellsville coke. This is definitely shown by the fact that production in 1920 was barely 50 per cent of that in 1913, and last year, a less one in industry, it was only about 16 per cent of that in the banner year. The significance of these declines becomes more striking in view of the general fact that until 1921 coke consumption had grown by a sort of geometrical progression.

Notwithstanding the sympathetic strike, which still persists with great obstinacy, at no time during the valiant but productive fight at quite so low a point as in July, 1921, when the industrial depression restricted output to 20,000 tons and less per week. In view of the grimness of the struggle to reduce the region to inactivity it is noteworthy that the average rate of coke production since April 1 has been considerably in excess of the average for 1921. The independent producers and merchant consumers have not benefited therefrom, however, because 80 per cent of the production has been at plants of the coke subsidiary of the United States Steel Corporation, hence not available in the general market.

In consequence, coke consumers who have heretofore been dependent upon the Connellsville region have been forced to make other connections in order to obtain a supply of fuel. Some have gone to the Southern coking fields and others have become buyers of the excess production of byproduct plants operated in connection with furnaces. Others have bought from merchant byproduct operations, which, so long as they have been able to obtain a supply of raw coal, have been running at maximum capacity. True, the railroad strike has made reliance upon these sources even less secure than upon the Connellsville region, but with production in the old coking fields again resumed the chances favor a resumption of relations established outside rather than a return of some former customers to the Connellsville region.

Contemplation of these things is what causes thoughtful observers of the situation to arrive at the conclusions they have with respect to the ultimate cost of the strike in the Connellsville region. Even when the natural order is again restored, as it will be in due course, there will be, it is feared, disinclination on the part of some coke consumers who have made other trade connections, to return to their first love. Especially will this be true if the strike settlement is of such character that the coke region will not be insured against periodical interruptions similar to those which have prevailed in the strongly unionized districts.

It may appear to some persons that even if the Connellsville region loses coke trade it will still remain a large producer of coal as the raw material in byproduct coke manufacture, and thus be compensated. This is quite true, but the mine operators of the region are essentially coke makers and to that product they very properly attribute the success they have achieved. Many of them have already adapted themselves and their plants to the simpler process of mining and shipping raw coal, but there is a lure and some sentimental association attaching to coke making, not to speak of the business advantage which is derived from the larger measure of profit obtained from coke when the market price is several times greater than the price of the coal equivalent. The present market, with coke $15 and up, compared with the Hoover price of $4.50 a ton for coal, is a pertinent case in point.

Such market conditions do not prevail except at more or less infrequent intervals, but there is a natural desire on the part of the operators to be in position to enjoy the benefits when they are obtainable. That a lessening in the number of such opportunities will be one of the costs to the Connellsville region in consequence of the sympathetic strike counts quite as much as part of the cost as does the disruption to selling connections established after a number of years of patient effort.



Problems of Operating Men

Edited by James T. Beard



Robbing Pillars in Undersea Operations

Submarine Mine of the Dominion Coal Company—Drawing Pillars in Lower Seam—Work in Upper Seam Stopped While So Doing —Working Out Upper Coal First Is Suggested as Safer Plan

REFERENCE was made some time ago in *Coal Age* to the undersea mining of the Dominion Coal Co. at Cape Breton, N. S. It occurs to me that the following paragraphs quoted from the *Canadian Mining Journal*, May 12, 1922, will be of interest to readers of *Coal Age*.

'The Dominion Coal Co., Cape Breton, has begun drawing pillars for the first time, in their largest undersea colliery, No. 2. As another seam overlying this one is being worked by a separate shaft, it was found necessary to stop mining above, until the pillar work below is well advanced.

"It is reasoned out that if work is concentrated on pillar sections and these are rapidly extracted the subsidence will be gradual and the strata will settle without danger of fractures running to the surface, which would not only be dangerous under heavy mountains of water but would affect the workings of the upper seam.

"The mining of undersea coal requires great care. So far it has been costly, as thick pillars had to be left while entering the submarine field. Heavy barrier pillars must be left between sections to provide against accidents from inrush of water. Now that the collieries are reaching the stage where pillars can be drawn, the necessity for continuous development will not be so great.

"There is 1,600 ft. of cover over the pillars of this colliery, at the point of pillar attack. Between the upper and lower seams now being worked there is 450 ft."

Viewpoint of an Outsider on the Order of Working Seams

In commenting on the above method, it is not my desire to do so in a critical way. The officials of the company in charge of the mine are thoroughly conversant with the local conditions and behavior of the strata forming the overburden. It is probable that they have determined their course of action after mature deliberation and careful study of these conditions in the light of their experience.

However, judging by the information given in the article to which I refer, it appears that they are proceeding in exactly the reverse order from what is the general custom and practice. From the viewpoint of an outsider not having the same intimate contact with the work, it would seem that the upper bed should be worked out first.

Irregular Subsidence Caused When Lower Pillars Are Drawn

Unless the strata lying between these two seams of coal are unusually strong and well knit, the drawing of the pillars in the lower seam will undoubtedly cause an irregular subsidence that will produce annoying faults and rolls in the upper seam.

On the other hand, should the drawing of the pillars in the upper seam, on its completion, cause fissures to develop that would permit water to enter the mine, there would still remain the 450-ft. of strata that separates these two seams.

In the later working of the lower seam, with 1,150 ft. of solid strata remaining undisturbed, there would be little doubt but that the strata would overarch and be self supporting. In that case, the work of extraction could cause no settlement that would entail danger by reason of water breaking into the mine from the upper seam. It will be interesting to learn the opinions and experience of others in this regard.

Charles M. Schloss.

Denver, Colo.

Conditions Determine When It Is Advisable to Seal

Practice in regard to sealing abandoned areas varies with conditions in the mine—Experience in southern Illinois—Method of working the chief factor.

IN READING the several letters that have dealt with the subject of sealing off abandoned areas, one is impressed with the thought that conditions alone can determine the safest method of proceeding in this respect. While my own custom has favored sealing off places that are finished, I must admit that many good reasons both for and against the practice have been advanced.

With Ostel Bullock, who writes under the caption "Success of Any Plan Depends on How Carried Out," *Coal Age*, June 8, p. 967, I believe the conditions existing in the mine must be the only safe guide. The records show that practice varies with the conditions. What is a safe plan to follow in one locality would be a dangerous proceeding in another.

My own experience, in the mines of southern Illinois, has convinced me that the sealing off of old works is the safest thing to do in that district where the mines are generally gaseous. At any rate, this is true as long as the present method of working in those mines is followed.

An instance comes to my mind where we sealed off a pair of cross-entries that were worked out and finished. The section was generating much gas and, though the seals were well built, I have often found gas oozing out through the stoppings onto the main haulage road. This was more noticeable at times when the barometer was falling.

Owing to the fact that there was a good current of air traveling the roadway, the condition was not dangerous, as the gas was quickly diluted and passed out of the mine. Had there been no seals closing the mouths of these entries, however, I believe the volume of gas coming from them would have produced a dangerous condition at that point on the road.

Greater Protection Afforded by Multiple-Entry System

In my opinion, the main point, in respect to sealing off abandoned areas to make the mine safer, is the method of working adopted in the general plan of the mine. I refer particularly to the use of the triple-entry system of working, in preference to the double-entry system so commonly employed. These two systems have been explained and illustrated so frequently in *Coal Age* that it is unnecessary to dwell on their points of difference.

It is well known that the double-entry system provides but single main intake and return airways; and the haulage road, even when this is made the intake, is not protected from conditions that may arise in the workings on that side of the mine, by reason of a squeeze or a heavy fall of roof occurring in worked out portions that have been sealed.

On the other hand, the triple-entry system provides a separate haulage road, which is made the intake for the entire mine and is flanked on either side by a main return airway that separates it from the workings on that respective side of the mine. In this arrangement the haulage road is protected from any dangerous conditions that may arise in the old workings.

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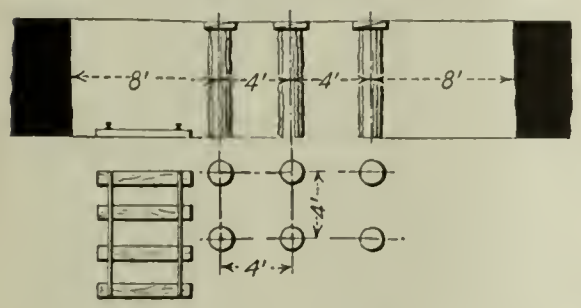
tions, and has little regard to the ever changing conditions in the roof, which every practical miner knows must be considered.

Foremen Often Follow Blindly a Method Proposed

As in the case cited, an innovation of this kind is often blindly followed by mine officials who fail to give a thought as to its adaptation to the particular conditions with which they have to contend. In their minds, the systematic setting of posts at the working face is a plan of universal application that they are eager to adopt.

Not to be misunderstood, let me say here that systematic timbering, under uniform conditions of roof and floor, has many good points. It eliminates any bad judgment, or lack of experience, on the part of the miner and, more particularly, his proneness to postpone the setting of needed posts at the working face.

The main object of systematic timbering in rooms is to distribute and



TWO SYSTEMS OF POST TIMBERING

equalize the roof pressure and thereby strengthen the roof in a miner's working place. By way of illustration, I have prepared two sketches, each of which is an example of systematic timbering in a breast.

The More Effective System

In the figure, the section shown above represents three lines of posts, set 4-ft. apart in the center of the breast, which is the weakest spot in the span across the opening, assuming a uniform roof condition. This is analogous to setting a center post under a collar that shows signs of taking the weight. In the lower half of the figure, the three posts are set at equal distances apart and a like distance from the rib, on the gob side of the breast.

Although in each case the timbering is systematic, the second arrangement is not as effective as the first, since there is a greater width of unsupported roof over the roadway when the timbers are set to one side of the center of the breast. This second arrangement has a tendency to divert pressure from the supporting pillars to the unsupported span of roof above the road.

It would naturally be regarded as a foolish question and one that would reflect on the intelligence of the man were we to ask a coal miner, What are the uses of a post? I believe, however, if this question was propounded to a number of coal miners their answers would be far from satisfactory. Most of the replies would be, "To keep the roof up," though every miner knows that when the coal is taken out from a large area no amount of posting will maintain the roof.

Real Purpose of Standing Posts Under Mine Roof

While such an answer is correct, in a general sense, it does not reveal the true purpose of standing a post. This, to my mind, is to support some local condition with which any experienced miner is well familiar and needs no explanation.

When such a condition is discovered in a man's place the only practical and safe method to pursue is to make the roof secure by posting. The timber must be stood where it will serve the best purpose, irrespective of whether or not it will conform to a system and be in line with other posts.

Timber Reveals Roof Pressure

Another purpose of setting post timbers is to provide a means that will indicate the degree of pressure due to the overburden. A post serves this purpose, particularly in retreating work when robbing pillars and stumps where roof falls are of frequent occurrence making the work dangerous. At such times it is well to set a few posts as tight as possible that they may show quickly any sudden increase of pressure.

In systematic timbering, posts serve the purpose of distributing the pressure more evenly; but this method of timbering is adapted only to a uniform roof condition. In such cases, it will be found the safest and most economical method in the end. However, it does not and must not form an excuse for or warrant any inattention to the daily and hourly inspection of all working places.

I. C. Parfitt.

Washington, D. C.

Inquiries Of General Interest

Flow of Water in Pipes Under Equal Heads

With Like Velocity, Sixteen 3-in. Pipes Will Carry the Same Water as One 12-in. Pipe—Under Equal Head, Thirty-two of the Smaller Pipes Will Be Required

MAY I ask *Coal Age* to kindly sett'e a disputed question regarding the number of 3-in. pipes that will be required to carry away the same quantity of water as a single 12-in. pipe. Where the question originated I do not know; but it has been knocking around hereabouts some time and has caused difference of opinion among those who are studying to fit themselves for examination.

It is argued by some that a pipe will carry an amount of water in proportion to its sectional area, which varies as the square of its diameter. On this basis, it is claimed that, since the diameter of a 12-in. pipe is four times that of a 3-in. pipe, the former will carry $4^2 = 16$ times the amount of water carried by the latter. In other words, it will require sixteen 3-in. pipes to carry the same amount of water as one 12-in. pipe.

On the other hand, a few claim that such is not the case. Although they have not been able to give a satisfactory explanation, they say that this question was asked a long time ago in a mining examination and, to the best of their recollection, a different answer was given. It would seem that the only way to settle this dispute is to appeal to *Coal Age* to answer the question again and explain the reason why more than sixteen 3-in. pipes will be required to discharge the same amount of water as a single 12-in. pipe.

Steubenville, Ohio. Student

We recall that this question was asked in a Pennsylvania examination a few years ago. Very probably it was answered in *Coal Age*, at that time. While it is true that a pipe will carry water in proportion to its sectional area, that condition assumes that the velocity of the flowing water is constant. In other words, for a constant velocity, the flow of water in a pipe varies as the square of its diameter and sixteen 3-in. pipes would then be equivalent to one 12-in. pipe.

A more practical view of the question, however, is to consider the flow of water in these pipes as under a constant head or pressure; and, in that case, owing to the frictional resistance in the pipe, a constant head will not produce the same velocity or quantity in pipes of different diameter.

When the head is constant the pressure producing the flow is likewise constant. Therefore, we write the formula for pressure (or pressure a quantity to flow) in a pipe having a sectional area (or diameter d) and length (l) thus:

$$p = \frac{l v^2}{d}$$

Finally, applying this rule to the case in hand, since the diameter of a 12-in. pipe is four times that of a 3-in. pipe, the quantity of water flowing in the former, under a constant head, is $(\sqrt{4})^5 = \sqrt{1,024} = 32$ times the quantity that will flow in a 3-in. pipe, under the same head. Therefore, in practice, the head remaining constant, it will require thirty-two 3-in. pipes to discharge the same quantity of water as one 12-in. pipe.

Examination Questions Answered

Illinois Mine Managers' Examination. Springfield, July 17, 18, 1922

(Selected Questions)

QUESTION—*Taking the weight of a cubic foot of air at 0.076 lb., what will be the weight of air in a shaft 15 ft. in diameter and 700 yd. deep?*

ANSWER—The cubic contents of this shaft is $3 \times 700 \times (0.7854 \times 15^2) = 185,193$ cu.ft. The weight of air filling this shaft and having a density of 0.076 lb. per cu.ft. is, therefore, $0.076 \times 185,193 = 14,074$ lb., or 6.7 tons.

QUESTION—*If 35,000 cu.ft. of air is passing through a circular shaft 16 ft. in diameter, what is the velocity of the current, in feet per second?*

ANSWER—The sectional area of this shaft is $0.7854 \times 16^2 = 201.06$ sq.ft. Dividing the given air volume by 60 gives the circulation per second, and that quotient divided by the area gives the velocity of the air, in feet per second; thus $35,000 \div 60 = 583.3$ cu.ft. per sec. Then, $583.3 \div 201.06 = 2.9$ ft. per sec.

QUESTION—*There is 10,000 cu.ft. of air passing through an airway having a rubbing surface of 24,000 sq.ft. and a sectional area of 20 sq.ft. What is the water gage producing this circulation?*

ANSWER—The water gage, in this case, is given by the formula,

$$w.g. = \frac{\text{Quan}^2}{1.3\text{Area}^3} = \frac{0.0000075 \times 24,000 \times 10,000^2}{1.3 \times 20 \times 20 \times 20} = 1.15 \text{ in.}$$

QUESTION—*How can a mine foreman tell whether or not there is any circulation in an airway without traveling through it?*

ANSWER—Assuming that the ventilating fan is running at its usual speed, a decrease in the quantity of air in circulation, accompanied by an increased water-gage reading, on the face drift, would point to a probable obstruction of the air current, at some point in the mine. Such a condition may even cause the fan to run at a slightly increased speed, because of the decreased quantity of air flowing through the fan and a lesser amount of work absorbed by friction in its passage, leaving more power effective in turning the fan. This assumes that the power applied to the fan shaft remains constant.

QUESTION—(a) *An entry is 6 ft. wide at the top, 14 ft. wide at the bottom and 6 ft. high, what is the area? (b) What is its perimeter? (c) How many square feet of rubbing surface is a part of this entry one-half mile long?*

ANSWER—(a) The average width of the entry is $\frac{1}{2}(6 + 14) = 10$ ft. and the sectional area is, therefore, $6 \times 10 = 60$ sq.ft.

(b) The spread of the two sides is $14 - 6 = 8$ ft., making the half spread 4 ft. Therefore, the length of one side, for a height of 6 ft., is $\sqrt{6^2 + 4^2} = 7.21$. The total perimeter of the airway is, therefore, $6 + 14 + 2 \times 7.21 = 34.42$ ft.

(c) A half-mile is 2,640 ft. and the rubbing surface, for this length of airway, is $2,640 \times 34.42 = 90,868.8$ sq.ft.

QUESTION—*What is the horsepower of the air when 70,000 cu.ft. per min. is passing at a water gage of 1.7 in.?*

ANSWER—The pressure corresponding to a 1.7-in. water gage is $5.2 \times 1.7 = 8.84$ lb. per sq.ft. The horsepower of the air is, therefore,

$$H = \frac{Qp}{33,000} = \frac{70,000 \times 8.84}{33,000} = 18.75 \text{ hp.}$$

QUESTION—(a) *State for what purpose electricity is used in connection with coal mining. (b) Name the four electrical units.*

ANSWER—(a) In coal mining, electricity is used to supply power to operate coal-cutting machines, drills, ventilating and booster fans, pumps, and engines for hoisting and hauling coal and men. Electricity is also used for lighting and signaling by bells or telephones.

(b) The four common electrical units are the volt, measuring the pressure; the ampere, measuring the quantity or volume of the current; the ohm, measuring the resistance of the conductor; and the watt, measuring the electrical power.

QUESTION—(a) *What is the breaking strain of a good steel hoisting rope 1¼ in. in diameter? (b) How will you find the safe working load for this rope?*

ANSWER—(a) The breaking strain of a 1-in. cast-steel, 6-strand, 19-wire, hoisting rope is 32 tons. This is used as the basis for calculating the breaking strain of similar ropes of different diameters, since the strength of similar ropes varies as the square of their diameters. Thus, the breaking strain of a 1¼-in. rope of this kind is $34 \times 1.25^2 = 53.125$ tons.

(b) The safe working load of a rope must be determined by the conditions under which the rope is used. For example, when hoisting in a vertical shaft it is common practice to use a factor of safety varying from 5 to 10, depending on the depth of the shaft. For a depth of 75 or 80 yd., a factor of safety of 5 may be used, making the safe working load then $53.125 \div 5 = 10.6$ tons. Again, at a depth of 1,000 ft., a factor of safety of 8 may be used, making the safe working load, in that case, $53.125 \div 8 = 6.6$ tons. In each case, however, the working load should include the weight of the rope itself, hanging in the shaft.

QUESTION—*Explain how you would arrive at the cost for hauling the coal, in a mine of which you might be manager.*

ANSWER—The cost of hauling coal in the mine, from the working face to the shaft or slope bottom, must be based on the output or daily tonnage and the number of locomotives used on the main road and for gathering the cars at the working face. This will determine the expense for wages of motormen and tripriders, to which must be added the wages of any trappers, trackmen and timbermen employed on the haulage roads. An estimate must also be made of the cost of maintenance, including all supplies and labor required in the upkeep of the machines and power line.

In addition to this, there must be added the cost of power, if purchased; or the wages of the men employed in the power plant together with the cost of supplies and maintenance of the boilers, engines, generators and machinery forming the equipment of the power plant, making due allowance for the power consumed for other purposes, in the same period.

Finally, dividing the total cost of labor, supplies and maintenance, by the tonnage, estimated on a period of a month, will give the average cost of haulage, per ton of coal mined. This assumes that the overhead charges include depreciation, interest and insurance and are not included in the cost of haulage.

Output of Bituminous Coal in United States in 1921 Was 415,921,000 Tons; Tonnage Per Man Higher

Production of bituminous coal in the United States in 1921, according to final statistics issued by the Geological Survey, totaled 415,921,000 net tons. The Survey's preliminary estimate, published Jan. 7, 1922, or nine months ago, was 407,000,000 tons, which was an error of 2.2 per cent. Several interesting features of these statistics, pointed out by the Survey, are given here in full.

The mines included in these figures, the Survey states, do not embrace the output of country banks and of some wagon mines. They include, however, many small operations that fall within the definition of wagon mines but that operate steadily year after year. The tonnage not included, it will be agreed, would amount to little in a year of acute depression such as 1921. Were statistics available for the small mines not included, the total output would be raised by not much over 1,000,000 tons.

The value of the bituminous coal produced in 1921 was reported to be $1,199,000,000, as against $2,109,000,000 in 1920. The average value per ton f.o.b. mines declined from $3.75 in 1920 to $2.89.

Contrary to what might have been expected, the number of men employed increased in 1921. There was less work but more men to share it. The total employed at bituminous mines was 663,754, an increase of 24,000 men. This figure is not the average number of men at work at any one time, including the weeks or months when the mine may have been shut down; it is rather the number of men on the working force of the mine when it was in operation. Since the effect of the business depression upon the demand for coal did not become acute until February or March, the great majority of commercial mines got at least a few weeks' operation during the year, and their working forces were thus counted in the total number of employees. By August, 1921, so many mines had closed down that the total number of men drawing wages in one week had fallen to somewhere between 500,000 and 520,000.

The increase in number of employed was confined to the tonnage workers. The number of daymen decreased in almost every state. The total number of surface employees dropped from 110,000 to 96,000, and of underground daymen from 174,000 to 168,000.

This reduction in number of day workers was one cause of a remarkable increase in the output per man per day. In 1920 the average production per man employed per day worked was 4 net tons, a new record for the bituminous industry. Yet in 1921 the average rose to 4.20 tons, an increase of 5 per cent. Other factors contributing to this increase, in addition to the change in proportion of day workers, were the natural tendency to restrict development work in a time of depression, an apparent tendency of the miners to work harder when running time is poor and, most important, a remarkable increase in the percentage of machine-mined coal. Average productivity in a machine mine ranges from 20 to 30 per cent above that in a mine where coal is undercut by hand or shot from the solid. Now in 1921 the proportion of coal mined by machines was 65.6 per cent against 59.8 per cent in 1920 and 55.9 in 1918.

Higher productivity per day tended to reduce the number of days worked. The average time worked by all of the bituminous mines was 149 days, the lowest in the history of the bituminous industry. In the calculation of this average, as in earlier publications of the Geological Survey, the size of each mine is taken into account, and each affects the average in proportion to the number of men it employs. The days reported are tipple days, the best single measure of productive time. The use of tipple days gives rise to a tendency to understate the time where repair work or development is carried on underground when the tipple is not working. As this condition was more prevalent in Utah and some other districts during 1921 than formerly, the average for the year is not strictly comparable with earlier years, although the form of question used was exactly the same.

Examination of the figures by states shows that the business depression was felt in every important coal-producing region. Omitting the states of insignificant tonnage, such as California, Georgia and North Carolina, the lowest number of days worked was 112, in Arkansas, and the highest, 196, in Michigan. No important producing state reached the 200-day mark. In Illinois the average was 152 days; in Kentucky, 152; in Pennsylvania, 151; in West Virginia, 149; and in Alabama, 166.

STATISTICS OF PRODUCTION OF COAL IN THE UNITED STATES IN 1921

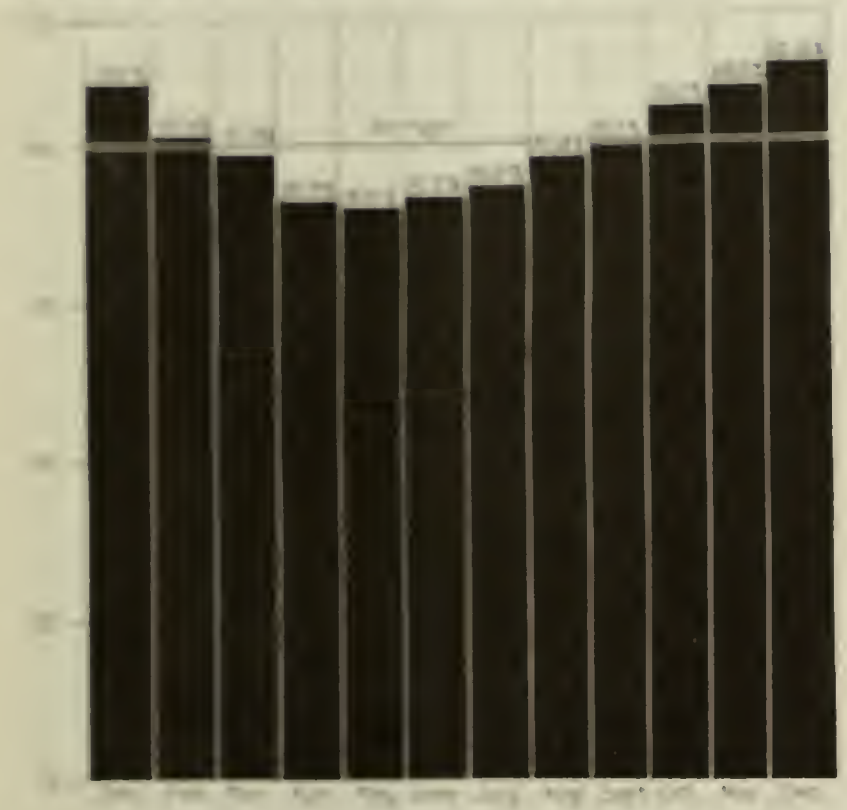
(Exclusive of Product of Wagon Mines)

State	Loaded at Mines for Shipment (Net Tons)	Sold to Local Trade and Used by Employees (Net Tons)	Used at Mines for Steam and Heat (Net Tons)	Made into Coke at Mines (Net Tons)	Total Quantity (Net Tons)	Total Value	Average Value per Ton	Number of Employees: Underground: Miners, Loaders, etc.(a)	All Others	Surface	Total	Average Days Worked
Alabama	11,834,609	313,125	292,807	128,358	12,568,899	$38,713,000	$3 08	15 384	5 587	4 434	25 405	166
Alaska	71,999	3,005	1,813		76,817	496,000	6 46	104	79	218	401	244
Arkansas	1,174,584	19,477	33,716		1,227,777	5,360,000	4 37	2 115	848	453	3 416	112
California, Idaho and Oregon	19,015	13,305	6 525		38 845	181 000	4 66	55	44	58	161	67
Colorado	8,408,613	399,816	253,718	60 613	9,122,760	32,377,000	3 55	8 456	3 499	2 824	14 779	164
Georgia	18,755	373	1,979	12 708	33,815	171,000	2 14	59	28	31	118	143
Illinois	64,174,112	3,371,482	2,057,169		69 602 761	190 986 000	2 74	60 466	23 643	8 032	95 431	152
Indiana	19,116,259	610,620	592 630		20,319,509	52 269 000	2 57	20 472	8 450	8 757	37 687	178
Iowa	3,891,368	521,465	118,559		4,531,392	17,256,800	3 81	7,897	2 813	974	11 684	148
Kansas	3,250,239	111,448	104,894		3,466 641	13,333 100	3 85	5 453	1 548	1 216	8 217	151
Kentucky	30,096,762	802,744	527 257	161 507	31 588 270	85,092,600	2 69	28 737	12 988	8 288	60 013	152
Maryland	1,743,710	56,734	27,296		1,827,740	6 602 000	3 61	2 964	979	536	4 479	146
Michigan	1,058,789	11,354	71 572		1,141,715	5,555,000	4 87	1,540	622	544	2 252	196
Missouri	3,209,496	242,146	99,989		3 551,631	13,915,500	3 92	5 141	1 856	1 384	8 381	168
Montana	2,492,344	115,538	126 076		2 733 958	8 921 600	3 26	2 596	1 004	718	4 318	161
New Mexico	2,326,034	34,754	62 259	30 435	2,453,482	9,585,000	3 91	2 731	1 120	931	4 782	156
North Carolina	20,000		3,438		23 438	135 000	5 76	58	7	15	80	146
North Dakota	700,950	135,550	28 403		864,903	2 329 500	2 69	346	207	289	1 064	178
Ohio	29,788,393	1,559,953	594 241	187	31,942 776	84,686,500	2 65	33 141	11 133	7 063	51 764	154
Oklahoma	3,208,381	25,559	128,683		3 362 623	15,546 000	4 62	5	2 435	1 479	8 814	161
Pennsylvania (bituminous)	102,025,340	4,315 590	2 352 372	7 120 640	116 013 942	322 518 500	2 78	118 618	44 454	28 421	191 493	151
South Dakota	450	7,069	34		7,553	21 200	2 81	41			45	178
Tennessee	4,194,364	88,193	123 730	54 033	4 460 326	14 912 000	3 34	6 001	3 160	1 786	10 947	154
Texas	947,589	2,691	22 559		972 839	2 561 600	2 64	1 388	469	294	2 151	139
Utah	3,668,661	74 705	71 365	262 053	4 078 784	13 662 000	3 35	2 458	1 041	631	4 130	151
Virginia	6,818,178	152 729	98 950	422 521	7 492 378	22 947 700	3 06	3 291	1 039	1 115	5 445	166
Washington	2,274,202	59 641	85 585	6 234	2 425 722	9,787 000	4 01	2 341	1 241	843	4 425	157
West Virginia	68,655,196	2,983 061	805 607	340 130	72 786 996	206 661 000	2 84	83 885	29 931	17 008	130 824	149
Wyoming	6,875,284	103 495	221 827		7 200 606	23 318 100	3 24	4 780	2 291	1 484	8 554	162
Total bituminous	382,064,736	16 135 621	9 121 117	8 599 476	415 921 950	$1 199 583 600	$2 89	349 370	153 077	96 693	663 140	149
Pennsylvania (anthracite)	77,901,110	2,812 551	9 753 790		90 473 451	452 185 000	5 00	73 977	32 880	6 847	113 704	274
Grand total	459,964,846	18,948 172	18 874 907	8 599,476	506 395 401	$1 652 288 600	$3 26	423 347	185 957	103 540	776 844	173

(a) Includes also shottirers. Statistics compiled by J. Memos U. S. Geological Survey, Sept. 23, 1922

Coal Consumption by Utilities at Peak in December, May Is Low Month

Coal consumed by public utilities during 1918, 1920 and 1921 averaged 3,807,200 net tons per month. Using this as 100 per cent, the average consumption rate fluctuated from a high of 113.79 per cent in December (January 1918 per cent) to a low of 90.19 per cent in May, the spring and summer months falling below the average and the autumn and winter period exceeding it, as shown in the accompanying diagram. The April-September average consumption was 46.95 per cent of the total, October-March consumption averaging 53.05 per cent. Some of this variation, of course, is due to the seasonal dullness in general industry during this spring and summer.



COAL CONSUMED BY PUBLIC UTILITIES

Diagram giving ratio of each month's average consumption figure during the last three years to total monthly average.

More Mine Fatalities in August, 1922, Than A Year Ago but Fewer Than in July

Accidents at coal mines during August, according to reports received by the U. S. Bureau of Mines from state mine inspectors, resulted in the death of 98 men, of whom 96 were killed at bituminous mines and 2 at anthracite operations. The total output of coal, including a small amount of steam sizes of anthracite, mostly from river dredges, was 25,776,000 tons. Thus the fatality rate for August was 3.80 per million tons as against 3.69 for the corresponding month last year. The average fatality rate for August over a nine-year period (1913-1921) is 4.15. For bituminous mines alone the August rate was 3.75, as compared with 3.39 for August one year ago and an average rate of 3.78 for the nine years 1913-1921. Thus for bituminous mines alone and for bituminous and anthracite mines combined, the August, 1922, rate is slightly higher than for the corresponding month last year but lower than the nine-year average rate for the same month. In July last there were 74 fatalities, or 4.31 per million tons produced.

During the first eight months of the current year accidents at coal mines have killed 1,025 men, 159 at anthracite mines and 866 at bituminous mines. During the corresponding period last year there were 1,318 fatalities, of which 365 were at anthracite mines and 953 at bituminous mines. For each million tons of coal mined the current fatality rate is 4.07 as against 4.09 for the eight-month period last year. For bituminous mines alone this year's rate is 3.77 as against 3.66 last year; for anthracite mines alone the 1922 rate is 7.16 as compared with 5.90 one year ago.

COAL-MINE FATALITIES DURING AUGUST, 1922, BY CAUSES AND STATES

Compiled by Bureau of Mines and Published by *Coal Age*

State	Underground												Shaft					Surface						Total by States	
	Falls of roof (coal)	Falls of roof in other mines	Mine cars and locomotives	Gas explosions and burning gas	Coal-dust explosions (in mines free of gas and dust explosions)	Explosives	Suffocation from mine gases	Electricity	Animals	Mining machines	Mine fires (burned, suffocated, etc.)	Other causes	Total	Falling down shafts or slopes	Objects falling down shafts or slopes	Cage, skip, or bucket	Other causes	Total	Mine cars and mine locomotives	Electricity	Machinery	Boiler explosions or bursting steam pipes	Railway cars and locomotives	Other causes	Total	1922	1921
Alabama	7		2									1	10												10	11
Alaska																									0	0
Arkansas																									0	1
Colorado								1					3												3	4
Illinois			5										8												8	22
Indiana												2	4												4	3
Iowa													2												2	2
Kansas		1	4																						2	0
Kentucky								1					8												8	6
Maryland																									0	0
Michigan													1												1	0
Missouri																									0	1
Montana			3										3												3	0
New Mexico													2												2	0
North Dakota																									0	0
Ohio													5												5	10
Oklahoma													1												1	3
Pennsylvania (bituminous)	48	1	9					2					14											1	17	25
Pennsylvania (anthracite)		1																							0	0
South Dakota																									1	4
Tennessee																									0	0
Texas																									0	2
Utah																									0	1
Virginia																									3	1
Washington																									28	21
West Virginia	15		6	1			1	1					22					1	2	1		1	1	6	0	0
Wyoming																									96	117
Total (bituminous)	70	1	29	1		1	1	4				3	89					1	2	1		1	2	7	2	38
Pennsylvania (anthracite)	1												1							1				1	98	....
Total, August, 1922	71	1	29	1		1	1	4				3	90					1	2	2		1	2	8	....	155
August, 1921	88	17	24	1	1	27	1	5	1	3	3	3	154		1			1	3			1	2	8		

New Coal Legislation Presents Opportunity to Air Causes of Instability in the Industry

By Paul Wooton
Washington Correspondent of *Coal Age*

The coal industry is waiting in suspense to see what the new Federal Fuel Distributor will do and what policies may be adopted by the Fact-Finding Commission. The feeling in official circles is that the predominant sentiment within the coal industry is hostile to both of these agencies. There are many evidences of a tendency to hold back and oppose, although there are many coal operators who are waiting with open minds and some who see in these agencies new opportunities to improve the industry.

The consensus of opinion in Washington is that, everything considered, the coal trade is getting off easy with the dose of legislation it is receiving after such a major disturbance. Some operators think the industry is particularly fortunate in that the spoon is in the hands of Secretary Hoover and Fuel Distributor Spens. When it is considered that the trouble within the industry practically wiped out the nation's coal reserve and nothing more serious than this legislation has followed, there is reason for the coal trade to be thankful, some think.

The public was forced to suffer inconveniences and real annoyance and was forced to play the galling rôle of bystander. Despite all that there was no great demand for even this legislation. Many are surprised that the public did not insist on something more drastic. The feeling in official circles is that the coal industry should accept this legislation in good grace and do all it can to co-operate fully with each of the agencies set up by the new legislation. In this connection it may be said that officials have had striking evidence of friendliness from the smokeless operators. If all groups would do as much, there would be every reason to believe, it is said, that the situation could be met and all industries allowed to obtain the fuel requirements of the increasing tide of prosperity.

Obstructive Tactics May Prove Disastrous

If, on the other hand, the coal industry starts to fight these agencies with injunctions or suits to test the constitutionality of the laws, it is believed nothing constructive will have been accomplished and that the industry probably will bring down upon itself a form of regulation which will soon place it in the public-utility class. It is contended that the purpose of this legislation is a legitimate function of the government, and if by any chance Congress may have exceeded its power, there is every reason to believe that the strength could be mustered to increase its power.

It is certain that Secretary Hoover and Mr. Spens will not use the powers which have been vested in them any more than they have to. If all will pull together, at least until the lake program has been filled, it is believed that the situation will be left largely to the good sense and the self-restraint of the coal producers. An evidence that Mr. Hoover does not want to use any more power than is necessary to handle the situation is the fact that he recommended for the post of Fuel Distributor a man who was connected with the Food Administration. The Food Administrator had almost unlimited authority. Very little of that authority had to be exercised. Mr. Spens was one of the principal officials who helped carry out that policy. With that training Mr. Hoover undoubtedly selected him as a man who would react in the same way in the matter of coal distribution.

While fact-finding commissions have a reputation of being possessed with an immense amount of inertia and of being distinguished principally by their ability to compile dry reports of great length, there is reason to think that this commission may be an exception. At least the commission gives the coal industry a chance to obtain some of the constructive things it long has been striving to get. Has there ever been a better opportunity to place an entering wedge to effect the amendments to the Sherman law which the coal industry needs so badly?

If coal operators think something should be done in the matter of assigned cars, an opportunity now is presented to obtain a recommendation in line with their views. If anyone has an idea as to improvements in reaching wage agreements or for meeting the wagon-mine problem, here is the chance of a lifetime to convince a body vested with all the prestige of a formal act of Congress. A chance is offered to air the thousand and one causes for instability in the industry. A chance is presented to co-operate with the consumers and with the carriers on such things as the promotion of storage. The government has created an open forum. Many friends of the coal industry believe it should be thronged for the next several months by men within the coal industry who have constructive ideas. An unprecedented opportunity is given to procure a friendly hearing.

Purchasing Agents Adopt Coal Policy to Facilitate Equitable Distribution

Following the conference on coal held by Secretary Hoover on Sept. 15 at Washington, which was attended by Mark Kuehn, chairman of the Fuel Committee of the National Association of Purchasing Agents; E. H. Hawkins, former chairman of that committee, and H. R. Heydon, secretary of the association, the members of that organization were requested to adopt as the coal policy of the association the following:

(1) Buy only for current consumption.

(2) Adjust deliveries on contract, so that they will not exceed current consumption.

(3) Play the game according to our respective actual requirements and not try to beat our neighbor to it.

It was stated that much could be accomplished through the co-operation on the part of all purchasing agents. Every member was mailed a declaration of the coal policy of the association and asked to buy coal only in sufficient quantities to meet current consumption and "thus voluntarily to assist in ameliorating the coal situation by preventing a fictitious demand that will increase prices and prolong the period of coal shortage, thereby affording an opportunity to householders to obtain supplies of coal which are so desperately needed."

Should this voluntary method fail to accomplish its purpose, the declaration says, it is probable that industry generally will be asked to cease production or operation for a period of two weeks. It therefore seems essential that all industry should immediately co-operate in this present coal policy.

Bethlehem Corporation Gets Permanent Injunction Against District Union

In a lengthy decision handed down by Judge J. N. Langham at Indiana, Pa., the temporary restraining order obtained by the Bethlehem Mines Corporation against District No. 2, United Mine Workers of America, John Hruby, its president, and others, is made permanent and absolute. The plaintiff coal mining company employees are non-union. Apparently they were satisfied to remain at work during the strike period when organizers went into the district and, it is alleged, attempted to coerce the miners into joining the strike. An order restraining the union was obtained and Judge Langham now makes it imperative that the union organizers remain out of the field and perpetually enjoin the defendants.

Miners Win First Skirmish in Herrin Case

Lawyers of the United Mine Workers of America have won a point in the arrangements for the trial of the men the grand jury indicted for participating in the Herrin massacre of June 22. Judge D. T. Hartwell decided late last week that the forty-eight men now held under a blanket indictment for the death of Howard Hoffman, one of the slaughtered mine guards whose widow, shall be tried first. Attorney General Brundage, in charge of the prosecution, argued that Otis Clark, the first man indicted for murder, ought to be tried first. He feels that it will be more difficult to get a conviction of forty-eight men than ten, since more local prejudice will be involved and the job of the jury will, by that fact, be more difficult.

The miners wished to postpone the first case until after the first of the year, in order, they said, to interfere as little as possible with coal production by the large number of men involved in the cases and to permit the preparation of evidence. The prosecution wanted to start the trials at once. Judge Hartwell compromised on this point by setting the date for Nov. 13.

Though the grand jury returned 214 indictments in all, they involved but seventy-nine men, for most of the men were indicted under several charges. Practically all of the seventy-nine are now in the law's hands either as prisoners charged with murder, eight of whom are in jail after bonds had been refused, or released under bonds ranging from $50,000 down to $1,000.

Would Compel Labor Unions to Incorporate

A bill for the compulsory incorporation of labor unions and compulsory arbitration of industrial disputes has been introduced in the House by Representative Fairchild, of New York, and referred to the Committee on Labor, which will consider it at the December session of Congress.

The measure provides that all labor unions be enrolled as "national unions" under the Department of Labor, for which purpose the bill would create the office of Commissioner of Enrollments, with an annual salary of $7,500. Employers of more than 25 workers also would be obliged to enroll. A penalty in the form of a tax of $5 a year would be levied upon all members of unions not enrolled in the national union. The national unions, to be organized according to occupations, would be obliged to write into their bylaws a provision against disturbing the regular commercial life of the country and agree to submit all controversies which cannot be composed by private negotiation to the courts of the United States and to accept their decision on final appeal without further controversy. A violation of the labor unions would be considered a misdemeanor punishable by a fine of $1 a day and no employer would be able to have a worker not a member of a national union by paying a fine of $5 a day for each outside worker employed.

First-Aid Contest at Norton, Va., Shows High Proficiency of Contestants

Some remarkably high scores were made at the fourth annual first-aid meet of the Virginia Coal Operators' Association, held at the ball park in Norton, Va., Sept. 16, 1922. Four teams tied for first place with a score of 100 per cent each. In working off this tie Esaba team No. 2 took first prize, Norton team No. 1 took second, Osaka team No. 1 took third, and Wilder team No. 1 took fourth. The lowest percentage won by any team entered in the contest was 91.

Many prizes valuable from both sentimental and intrinsic standpoints were distributed. In addition to medals these consisted of various articles from cash to gold watches, shotguns, overcoats, rifles, flares, cans of carbide, sets of table silver and even baby carriages. Separate watch fobs also were distributed.

First-aid meets are valuable from many standpoints, and the benefits resulting from these competitions are shared not alone by the contestants, for not only do the various teams, residing in friendly rivalry, become keen acquainted in the treatment of the injured but they become acquainted with each other and the members of other teams. A bond of common sympathy is thus fostered. Even the physician judges and the spectators derive benefit from these meets, and it would be well if each mining community in the land could have its team and its annual first-aid contest.

After Many Years' Rest Coal Is Being Mined Within the City Limits of St. Louis

BY E. J. WALLACE

A coal mine has been opened within the city limits of St. Louis. This is the first coal mine in many years to be operated commercially within the city limits. It is in the Clifton Heights district, off Southwest Avenue, where a 4-ft. seam has been opened up with slopes to work under an extensive acreage. The coal is soft and is of fairly



HOW COAL MINING IN ST. LOUIS LOOKS TODAY

In the southwestern part of the city this 4-ft. bed under an extensive acreage has been opened with slopes whose openings are shown in the top and center pictures. The outcrop, under 5-ft. of slate and dirt, is shown at the bottom. Further into the hill the roof over this seam is said to be of hard rock. Most of the coal in St. Louis was mined out in the days "befo' de wah."

good quality. It is estimated that there is a big acreage that will produce several thousand tons. It is easily mined, with a slate roof near the outcrop and a hard rock roof farther in.

This is one of the few acreages that were not mined out in the years from 1830 to 1860 prior to the building of the Eads Bridge in St. Louis. All the coal used in the city at that time was mined in the southwestern parts of the city. One of the miners of that period is still living today. He is John Maule, of Belleville. The two companies in existence today that mined coal at that time in St. Louis are the Garfield Coal Co. and the Porter-Russell Mining & Manufacturing Co.

Spens Orders Daily Reports on Kind, Amount and Price Of Soft Coal Shipped and to Whom Sent

Federal Fuel Distributor Spens' first official act is Order No. 1, issued on Sept. 27. This order divides the soft-coal fields into 17 districts and directs every producer and shipper to make detailed, signed daily reports showing with respect to each car of coal the kind or grade, tonnage, consignee and price, and whether shipped on a contract. Until offices in the field have been designated to which these reports can be mailed they are to be sent to Washington.

In making the order it is pointed out that the Fuel Control Act requires the Federal Fuel Distributor to ascertain many things with regard to production, distribution, prices, shortages and character of consumption. Accordingly, Mr. Spens for administrative purposes has divided the coal fields into 17 units and calls for daily reports from all shippers.

Paragraph 2 of the order thus sets forth the requirements as to reporting:

"Each and every producer of bituminous coal engaged in the mining and production thereof at any place in any of the above designated producing districts shall daily, until further order, mail to the District Representative of the Federal Fuel Distributor in the district in which such coal shall be produced, a written statement or report, signed by such producer, or producers, or by his, their, or its duly authorized representative, setting forth fully and specifically the following information as to all shipments of bituminous coal made during the previous day:

(a) The total number of carloads of each class or grade and size.

(b) Names and addresses of consignees, with car numbers and initials, destinations and amount of each class or grade and size of coal shipped to each consignee.

(c) As to each shipment, the prices or prices f.o.b. mine as contracted for, charged and (or) received for each grade of coal shipped. In the case of coal sold at a delivered price at destination the destination price less transportation cost shall be used as the mine basis.

(d) A designation of such of said shipments as shall have been made under time (or period) contracts for periods of more than one month's duration."

The 17 "producing districts," each to be under the management and direction of a district representative, yet to be appointed, are described as follows:

Producing Districts Designated by Mr. Spens

(1) Alabama; headquarters, Birmingham.

(2) Tennessee; headquarters, Knoxville.

(3) Virginia; headquarters, Norton.

(4) All of Kentucky east of the 85th meridian; headquarters, Cincinnati.

(5) All of Kentucky west of the 85th meridian; headquarters, Louisville.

(6) New River, Winding Gulf, Pocahontas and Tug River districts in West Virginia; headquarters, Bluefield.

(7) Kanawha, Logan and Kenova-Thacker districts in West Virginia; headquarters, Charleston.

(8) Fairmont, Coal and Coke, and Upper Potomac districts in West Virginia, with all other districts in said state not otherwise included, and Maryland; headquarters, Fairmont.

(9) Central Pennsylvania, including the Somerset district; headquarters, Altoona.

(10) Westmoreland, Fayette, Washington and Greene counties in Pennsylvania, the Ligonier Valley district and all mines in Pennsylvania on the west bank of the Monongahela River on the Pennsylvania R.R.; headquarters, Greensburg.

(11) Pittsburgh district, and all other districts in the State of Pennsylvania not otherwise included; headquarters, Pittsburgh.

(12) Ohio; headquarters, Columbus.

(13) Indiana; headquarters, Evansville.

(14) Rock Island, Northern, Wilmington, Fulton-Peoria, Danville and Central districts in Illinois; headquarters, Springfield.

(15) Franklin, Williamson and Saline counties, the Belleville and Mt. Olive districts and all other districts in Illinois not otherwise included; headquarters, St. Louis, Mo.

(16) Iowa, Montana and North Dakota, reporting to C. P. White, Assistant Federal Fuel Distributor, State Capitol Building, St. Paul, Minn.

(17) The United States west of the Mississippi River, except the States of Iowa, Montana and North Dakota, reporting directly to the Federal Fuel Distributor at Washington, D.C.

Assurances of cordial co-operation in the execution of measures deemed necessary to insure an equitable distribution of coal in the present emergency are being received by Mr. Spens from the governors and fuel administrators of the various states. Governor E. F. Morgan, of West Virginia; Hugh J. M. Jones, State Fuel Distributor of Vermont; William J. Grier, chairman of the New Jersey Fuel Commission; Major Alex. Forward, Fuel Administrator of Virginia; J. W. McCardle, chairman of the emergency fuel commission of Indiana; Ivan Bowen, Fuel Director of Minnesota; Governor Len Small of Illinois, the Pennsylvania Fuel Commission, and W. H. Woodin, head of the New York State Fuel Commission, are among those heard from.

North Carolina Public Utilities Face Shutdown

R. O. Self, director of the North Carolina State Coal Distribution Committee, reports that a number of public-utility gas companies are facing a shutdown unless gas coal supplies can be furnished at an early date. The difficulties of these companies are due to the inadequacy of the car supply in the Southern Appalachian coal-producing districts.

Foreign-owned vessels are urged to take on all coal supplies possible at foreign ports. Fuel Distributor Spens has declared that, in his opinion, the existing reconsigning rules should be permitted to stand without revision for the present. "It is true that at about the time the coal strike was ended there was at certain terminals quite a quantity of coal on hand awaiting disposition, but this was due largely, I think, to the fact that this coal had been purchased at high prices, with the result that the breaking of the strike made it difficult for the operators or jobbers to find customers," said Mr. Spens in a letter to the Interstate Commerce Commission. "Today there appears to be approximately one-third of 1 per cent of the total loading of cars held for reconsignment, and I am inclined to the opinion that, with the big demand for coal that now exists and with the instructions that you have extant that consignees must unload within twenty-four hours or be embargoed, we need not, just at this time, have much apprehension that the privilege will be dangerously abused."

An urgent appeal to concentrate on a drive to expedite coal movements, especially during the month of October, has been addressed by Fuel Distributor Spens to the executives of the various coal-carrying railroads.

"I appreciate fully the current conditions on the railroads; the ravages of the strike, and the fact that today the offerings of tonnage of all character are large, and the further fact that, in spite of these circumstances the carriers, in the aggregate, are making a splendid showing in the transportation of coal," says Mr. Spens. "In these circumstances I am loath to suggest the possibility of even better performance.

"Due to the dual strikes there is, of course, a dearth of coal. Consumers, domestic as well as industrial, have been urged only to purchase coal for immediate requirements. Current transportation is adequate for current needs, but not sufficient to permit of reserves. An early cold snap

would just leave with consumers, as well as with the power of the railroads. There might be initial chaos.

"It has been suggested that perhaps there should be a preliminary embargo on transportation of certain other classes of traffic, that more equipment and power might be applied to coal. In my judgment it would be regrettable if any action in that direction should become necessary.

"As suggested by the President, we are extremely anxious to make October the banner month. A personal word directly from you to each member of your operating staff, down, if you will, as far as the division superintendent, that coal shall, so far as practicable, be moved through to destination on schedules with connecting lines, without setting, and that empties shall not be delayed at terminals or junctions but shall be promptly returned to mines will, I am confident, accomplish all that could be reasonably expected. Your traffic department could undoubtedly also be of great assistance by urging prompt unloading by consignees.

"Extraordinary movement of coal, loads and empties during the next few weeks, in view of the heavy traffic in all commodities, probably will tend to increase the cost of handling, but I believe this additional cost might prove to be a good investment as compared with a much greater cost that might be incurred in the event it should become necessary to adopt more drastic measures to care for the situation.

"Every possible to accomplish increased handlings of coal, delays to other traffic may occur, but this is contemplated, or at least should be expected, under the existing order of the Interstate Commerce Commission which provides priority in transportation of coal equal only with food and feed and some minor public necessities."

Business Men Will Help Expedite Coal Traffic

A committee of railroad executives, headed by Daniel Willard, president of the Baltimore & Ohio, and an industrial advisory committee of prominent business men, including Wm. J. Dean, president of Nicols, Dean & Gregg, St. Paul, Minn.; A. A. Landon, president of the American Radiator Co., Buffalo, N. Y.; R. P. Lamont, American Steel Foundries, Chicago, Ill.; A. J. Brosseau, president, International Motors Co., New York City, and S. M. Vauclain, president of the Baldwin Locomotive Works, Philadelphia, Pa., have been appointed to assist in expediting coal traffic and to have large industrial consumers confine purchases of coal under present conditions as closely to current needs as safety permits; to suspend accumulation of advance stocks of coal until the present emergency pressure on production is relieved; to unload coal cars immediately and return them to service and to furnish promptly material required for new railroad equipment or repairs.

A committee of the National Coal Association, of which John D. Bryden, of Baltimore, is chairman, has been conferring with federal officials in Washington with a view to arranging a plan of cooperation between the bituminous-coal producers of the country and the fuel administration.

Assignments of naval officers who will act as field representatives of the Federal Fuel Distributor are as follows: Lieutenant Commander H. H. Ritter, St. Louis, Mo.; Lieutenant Commander A. W. Rieger, Cincinnati, Ohio; Lieutenant Commander L. A. Davidson, Knoxville, Tenn.; Lieutenant Commander Leslie Hancock, Jr., Pittsburgh, Pa.; Lieutenant Commander H. H. Bowen, Columbus, Ohio; Lieutenant Commander J. R. Mann, Jr., Louisville, Ky.; Lieutenant H. O. Patrick, Evansville, Ind.; Lieutenant F. P. Eldridge, Birmingham, Ala.; Lieutenant G. C. Hitchcock, Springfield, Ill.; Lieutenant R. P. A. Simpson, Charleston, W. Va.; Lieutenant O. B. Jones, Fairmont, W. Va.; Lieutenant Edward O'Keefe, Norton, Va.; Lieutenant F. H. Cooper, Altoona, Pa.; Lieutenant W. J. Larson, Bluefield, W. Va.; Lieutenant Joseph C. Arnold, Greensburg, Pa.

These officers are now in the field and have been instructed to keep the Fuel Distributor informed daily on local conditions as to production, distribution and price.

Wayne B. Wheeler, assistant chief of the coal division of the Department of Commerce, has been detailed to the office of the Fuel Distributor at Washington.

Ohio Begins Regulation of Coal

Production, transportation and distribution of coal in Ohio, from the time it is loaded at the mines until it is dumped into consumers' bins, must be reported to the Ohio Fuel Administrator, including prices received by producers, wholesalers, jobbers and retailers, according to a statement issued at Columbus. A comprehensive system of reports from all dealers, jobbers and shippers of all the coal shipped, received or sold in any quantity and form must be made direct to the fuel administrator.

"In the event that any violations or apparent violations are found, civic organizations are at once to make a report to the administrator so that an immediate investigation of the case may be made and the violators subjected to the penalties provided for in the emergency act," reads the announcement. "Producers will be required to report the quality of coal mined, loaded and shipped, with the prices obtained for it. Wholesalers and jobbers must report shipments received, from what source they came, to whom they were consigned and the price received for them. The retailer must report shipments received, from whom they came and the prices received. This class of dealers will not be required to make a report of each separate transaction, but will lump their sales. All these reports are to be made daily, and are mandatory under the act. Thus Administrator Neal and his staff will have a hand on the pulse of the situation at all times."

Output of Smokeless Coal Fell Sharply in July, When Rail Strike Began

West Virginia produced and shipped 2,630,565 net tons of smokeless coal during July, 1922. This is approximately 500,000 tons higher than for July last year, but is the lowest of any month since the strike began and a sharp decline from the June output of 3,777,558 tons.

The total for the first seven months of 1922 is 22,018,974 tons, as compared with 16,170,355 tons during the corresponding period last year.

JULY OUTPUT OF SMOKELESS COALS OF WEST VIRGINIA

	Net Tons			
District	1922	1921	1922 Decrease	1922 Increase
Pocahontas	1,277,460	1,052,170		225,290
Winding Gulf	549,348	464,055		85,293
New River	494,737	297,770		196,967
Tug River	309,020	350,190	41,170	
Total, July	2,630,565	2,164,185	41,170	507,550
Total, June	3,777,558	2,869,974		
Total, May	3,687,874	2,975,711		

The Norfolk & Western hauled 1,586,095 tons of the July output, the Virginian 459,590 tons and the C. & O. 584,880 tons. Total coal movement in net tons of these roads during that month is shown in the following table:

HAULED BY NORFOLK & WESTERN

Pocahontas	1,277,075	Clinch Valley	175,890
Tug River	309,020	Kenova	137,665
Thacker	445,085		
Total			2,344,735

HAULED BY CHESAPEAKE & OHIO

Logan	785,430	Kanawha	122,300
New River	426,220	Coal River	89,770
Winding Gulf	158,660	Kentucky	236,480
Total			1,818,860

HAULED BY VIRGINIAN RY.

Winding Gulf	390,688	New River	68,517
Pocahontas	385	High Volatile	50,738
Total			510,328

The output from open-shop mines in the Connellsville coke region continues to increase steadily. Many men are coming into the region from other sections and a number of old men are returning to work. Two additional plants of the H. C. Frick Coke Co., the Shamrock Coke Co., Grillo No. 2 plant of the Hillman Coal & Coke Co. and the Snowdon Coke Co. have resumed operations on an open-shop basis during the past week. This means that all the Frick plants and all the Hillman plants are mining.

Peace Between Operators and Mine Workers in Sight; District Committees to Work Out Wage Contracts

By E. W. Davidson

Cleveland, Ohio, Oct. 3—Peace appears to have made its entry at last into the long conflict between miners and bituminous operators. Tuesday night, after two days of the mine-operator conference looking toward the next wage agreement, fighting points between men and employers seemed to have been partly removed, a plan for adjustment of future controversies was under way and operators from fifteen mining districts, representing about two hundred and seventy-five million tons production, had almost ceased showing their teeth at each other. It was expected by both sides that the conference could end Wednesday afternoon.

It was practically decided Tuesday after considerable sparring for position both between the two sides and among operators themselves that the method of making future contracts between operators and miners would be worked out by a committee made up of miners and operators from each district, that no joint fact-finding commission should be appointed by that conference and that the request of Washington for a suggested panel of names from which the federal fact-finding commission might be appointed would be answered in the negative.

All this developed during Tuesday following a notable peace speech by John L. Lewis, president of the miners' union. This speech, along with a parallel one by T. H. Watkins, president of the Pennsylvania Coal & Coke Corporation, appeared to pave the way for real accomplishment by the operators, who up to that time had shown not the slightest sign of unity on any subject.

Lewis Bids Both Sides "Bury the Hatchet"

It was apparent when the conference started Monday that no harmony prevailed anywhere among the operators. Part of Ohio and a scattered few operators from Pennsylvania were regarded as ready to "play the miners' game" as they did at the August Cleveland conference which ended the strike. Many operators present were diffident about taking part in the conference, notably Illinois and the Pittsburgh and Central District men of Pennsylvania, who did not agree in the pacts they signed in August to join this conference. Many of the operators from elsewhere also were of doubtful status. It seemed necessary for them to unite on some common ground, but they couldn't do it until after Lewis' speech in which he bade both sides "bury the hatchet; bear in mind that it is essential for them to put their own house in order" and that the miners were ready to meet their employers half way.

"That sounds mighty good; if the miners only will live up to that, things will smooth out," declared more than one operator. Then they proceeded to compose some of their differences. It was made distinctly understood at the outset of this process that neither Illinois nor the two Pennsylvania regions would proceed unless it was distinctly understood that no decisions were to be dictated by any minority and that in the matter of creating a joint wage committee nobody was to be bound by the recommendations it might make Jan. 3.

When this understanding was finally reached the operators had taken their highest hurdle. They then proceeded to do business among themselves. The two main objects of this conference were to create a joint fact finding committee and to set up another joint committee to recommend ways and means for future agreements.

The request from Washington for a panel of twenty names for the new federal coal commission was a new element. At first it appeared important, especially when the operators decided Monday to answer it with a message signed only by themselves, but later it lost weight when it became noised around that Lewis might not insist upon helping to make up such a panel, though he would insist that the reply to Washington be signed by both sides.

The joint fact-finding committee also appeared a less and less important issue as the conference wore on, for the operators got the impression that Lewis was willing to cancel that part of the program on the ground that the Federal Coal Commission would do just as well or better. By Tuesday night the operators agreed among themselves that the federal commission should be left the entire field of coal investigation, so that it could not be said that the coal industry was hampering the people in their effort to correct coal evils.

This left the creation of the wage committee as the principal business to be done at the conference. Some were for organizing it by regions but it was finally concluded that it should be by miners' presidential districts. It was distinctly understood, however, that this committee if created should make no recommendations until after the new federal fact-finding commission has brought in some results. On Tuesday night Phil. Penna, chairman for the operators' separate sessions, and W. D. McKinney, secretary of the Southern Ohio Coal Exchange, declared that the operators had reached a common ground and that if the miners were as reasonable as they sounded the conference would succeed easily.

Expect to Heal Many Schisms in the Industry

John Lewis said the war was over. Thus it appeared on Tuesday night that the operators and miners of the fifteen principal districts of the land had only a day of calm deliberation before them to finish the conference and that possibly many a schism in the coal industry might eventually be healed.

It was undecided whether the joint wage committee should contain one man or two from each side for each district, and it was not definitely decided what the conference reply to Washington would be, but most of the conflict is over.

Practically every producing district in the country was represented when the conference assembled Monday afternoon. T. K. Maher was named temporary chairman and William Green, of the Miners' International Union, temporary secretary. Adjournment was taken almost at once until 10 o'clock Tuesday upon motion of Phil Penna, secretary of the Indiana Coal Operators' Association. He said the operators needed time to "get acquainted" and to review the situation. They remained in session all afternoon, devoting much time to President Harding's wire asking for a panel of names of men suggested for the federal fact-finding board. It seemed obvious that the operators will not favor sending such a list, since many names have already been proposed by coal men. The discussion the rest of the afternoon indicated that the leaders among the operators' faction which led the settlement in Cleveland in August were going to stand pat.

Tuesday morning the committee which the operators had appointed to draft a diplomatic reply to Secretaries Hoover and Davis declining to suggest names for the President's fact-finding commission did their job of drafting, but they did not send it. The message was held because "developments of Tuesday made it seem politic" to wait, even though Washington expected a reply by Tuesday at the latest. The "developments" of the day included a final demand by the miners that the message be signed jointly instead of going merely as a note from the operators. The miners held that the request which was received by T. K. Maher was addressed to him not as an operator but as temporary chairman of the joint conference.

As first drafted the message set forth that the operators, "having full confidence in the wisdom and fairness of the President of the United States" and expressing willingness to abide by whatever choices he should make, were ready to pledge "hearty co-operation" with such a federal commission. Herman C. Perry, of the 5th and 9th Districts of

Illinois, was chairman of the Drafting Committee. G. Webb Stallingford, of the Central Pennsylvania Association, and John A. Donaldson, vice-president of the Pittsburgh Coal Co., were members.

The Tuesday morning joint conference got down to business at ten o'clock by declaring itself in executive session. Thereupon the doors were closed and "keynote" speeches were made by Thomas H. Watkins, president of the Pennsylvania Coal & Coke Corporation, and John L. Lewis, president of the miners' union. Before this session closed it developed more evident than ever that a unified policy by the operators was essential. An effort of Monday afternoon to formulate such a policy on even the single question of procedure looking toward the next wage settlement failed.

An attempt to get a committee named to go into session late in the afternoon and report to the operators late that night was quashed and the operators had ended their Monday separate session without taking any definite step in that direction. But a considerable quantity of verbal fireworks was discharged during the meeting. Then came the Tuesday morning joint meeting, which resolved itself into a separate miners' session that lasted until afternoon, when the operators had their own meeting.

Operators from United Mine Workers districts Nos. 2, of central Pennsylvania; 5, of western Pennsylvania; 6, of Ohio; 8 and 11, of Indiana; 12, of Illinois; 13, of Iowa; 14, of Kansas; 17, of West Virginia; 21, of Oklahoma, Arkansas and Texas; 22, of Wyoming; 23, of western Kentucky; 24, of Michigan; 25, of Missouri, and 27, of Montana, were represented at the meeting.

Jobbers' Executive Board Meets at Buffalo: Many New Members Elected

G. H. Merryweather, secretary-treasurer of the American Wholesale Coal Association, authorizes the following:

"The Executive Committee of the American Wholesale Coal Association held a very successful and constructive meeting at Buffalo on Sept. 28 and 29, 1922. At this meeting many new members were elected and the activities of the association were discussed at length.

"The members of the committee were entertained at luncheon by the Buffalo District Wholesale Coal Association. It was presided over by John T. Roberts, of Buffalo. Addresses were made by Seth W. Morton, president; J. W. Johns, vice president, G. H. Merryweather, secretary-treasurer; Ray S. Bair, of Cleveland, Ohio; Charles L. Dering, of Chicago; H. J. Heywood, of Toledo, and Ira C. Cochran, who was at this meeting appointed acting commissioner, as well as traffic manager, which latter position he has occupied for some time.

"The association is making excellent progress in solving the problems which confront the industry from day to day."

Western Fuel Corporation and Coal Miners Sign Two-Year Agreement

A 2-year agreement has been entered into between the management and the employees of the Western Fuel Corporation of Canada, Nanaimo, B. C., effective Oct. 1, 1922.

A minimum daily wage of $4.25 is set. The superintendent of mines is to be the judge as to the ability of each man to earn the minimum. The company agrees to pay all employees a bonus of $1 per day worked. "It is mutually understood by the company and its employees that any increase or decrease in the bonus herein mentioned shall be governed by competitive conditions," the agreement states. Heretofore the bonus has been 50c. per day worked. The price of coal to employees is set at $3 per ton.

THE REGULAR QUARTERLY MEETING of the Board of Directors of the National Coal Association will be held in Cleveland Oct. 11.

Fundamental Business Conditions Sound

No clearer demonstration could be asked to indicate the soundness of the fundamental conditions underlying the present business revival, the Department of Commerce reports, than the persistence with which commerce and industry have progressed in the face of recent serious obstacles. The extremely serious labor difficulties through which we are now passing would, under many conditions, have completely demoralized business; instead, real progress continues to be made. There is reason to suppose that the economic losses occasioned by the coal and railroad strike will make themselves felt for some months to come. Disturbances of this character affecting basic industries cannot take place without having to be paid for in the long run. It is possible that the full force of these losses will be felt more severely in future months.

Figures now available on business movements during July show that the rate of progress was materially slackened in that month. In the majority of industries production and sales were less than in June. A part of this is to be attributed to the usual midsummer seasonal slump and a part either to approaching overproduction or to increased prices and increased production costs.

The extent of the real progress of industry on the road back to normal is seen when current figures are compared with those for a year ago. In almost every instance production is on a much higher level than in 1921. Perhaps the most favorable feature of the present situation is the prospect for a bountiful harvest this fall. This will do much to offset the other less favorable factors.

Under the appended schedules mining and yardage pay is given as follows:

MINING

Wakeslah and Reserve Mines and No. 1 Upper Seam—91½c. per ton.
Upper Seam—Coal under 4 ft. in thickness, $1.08 per ton.
Lower Seam—$1.08 per ton.

YARDAGE—UPPER SEAM

Levels—$3.37 per yard and coal.
Crosscuts—$2.70 per yard and coal.
Levels—When less than one-half of height is in white rock, $10.12½ per yard; coal to company.
Levels—When more than one-half of height is in white rock, $10.80 per yard; coal to company.
Turning Stalls—Five yd. long by 4 yd. wide, $13.50 and coal.
Brushing rock—One ft. thick, $1.35 per linear yard.

The day rates range from $3.71¼ for muckers to $4.99½ for machine foremen, plus the bonus.

Trading Loss of £550,000 Shown in British Coal Mining Industry in June

Collation of the proceeds and costs of the working of the coal-mining industry of the United Kingdom for June, for the purpose of determination of wages in August, shows a gross trading loss of about £550,000 in that month for the whole of the coal-mining industry throughout the country, equivalent to about 9d. per ton of coal. The average earnings per shift worked in June, taking into account all persons in the industry—men, women and boys—were 9s. 8¼ d., or about 50 per cent more than the 1915 figure of 6s. 5½d.

Fuel Distributor Spens' order requiring daily reports from coal producers, printed on page 557 of this issue of COAL AGE, *is now being served on operating companies by mail.*

THE GEOLOGICAL SURVEY AND THE DEPARTMENT OF COMMERCE are sending out questionnaires requesting information on stocks of coal as of Sept. 1 and Oct. 1. The report of the canvass, which will be the first since March 1 of this year, is expected to be available by Nov. 1, 1922.

Coal Strikes Unknown in Near East, but It Has Fuel Problem

Cold weather does not spell "coal" to the American relief workers in the Causasus district of Armenia; it spells "camels," for the fuel question is just as vital in the Near East as it is here, but the answer is different. In the chilly Caucasus area, where the mercury often creeps down to 16 deg. below zero and there are more than 30,000 shivering youngsters to be kept warm in the orphanages of the Near East Relief, wood is the fuel on which relief workers must depend, according to the Near East Relief.

The accompanying illustration shows a caravan of camels carrying wood fifty miles overland to keep these people



© Photo by Near-East Relief

ONE SOLUTION TO TRANSPORTATION PROBLEMS
Camels fighting the fuel shortage in the Near East

warm this winter. That is how the answer to cold in Armenia comes to be camels. Camels, or ox teams, for the latter do just as well, carry the fuel over many miles. A caravan of seven hundred ox teams was organized last year by an enterprising worker, and rendered remarkably good service.

The Ending of the Coal Miners' Strike

It is some time since the August conference at Cleveland wound up its proceedings with a great victory—for whom? At this time of writing it would appear that honors are fairly well divided; the miners can still claim their seven and a half a day and the operators are getting a good price for their coal to enable them to pay it.

When word was sent out to start work at once did the miner rush down to the mine with the same smile on his face he had when he brought his tools out on the last day of March? If anyone who was not around the mines at that time thinks he did, he is very much mistaken. He took the news very calmly. Many of them still sit with their feet on the front porch rail, pulling at their old pipe, praising Mr. Lewis for the glorious victory.

After our mines had been running a week I noticed that the coal did not rush up the slope (as we fondly anticipated), and found on inquiry that the men were not going to work, and those who were going were not loading much coal. At this information I ventured among the miners' houses and, seeing several of the men, I began timidly to ask them if they knew the strike was finished. Most of them somehow thought there was some change, but they would talk about anything but work. Another superintendent came to me in a great state of mind, saying they were not loading one-tenth of the coal they were before the strike.

The mine foreman spends most of his time showing them places with the result that 99 per cent try another mine the next day and every boss (they know) is standing with open arms to meet them. This strike has made men more dissatisfied and less inclined to work than ever they were before. They have gone five months without work and it seems a lot of them feel they can go on indefinitely without work, and if a superintendent or boss ventures to remind them that those big wages will not always prevail and tells them to make hay while the sun shines, they tell him he does not know what he is talking about.

I cannot help but wonder what is going to be the end of all this. It seems to me that we shall have to have a five months' strike every year to keep production down and prices up on purpose to pay the miner the big wages he is receiving. Mr. Lewis knew what he was doing when he refused the arbitration clause, but it seems to me he either will not or cannot see that it is a mistaken kindness to keep the miners' wages inflated above the rest of the workingmen.

Indiana, Pa., Sept. 5, 1922. T. HOGARTH,
Superintendent.

Independent Anthracite Prices Give Concern: 1920 Level Allowed Temporarily

Independent producers' prices on anthracite are still giving the official bodies of Pennsylvania and Washington some concern. Governor Sproul of Pennsylvania on Sept. 20, 1922, issued a proclamation establishing $8.50 as the maximum price on prepared sizes of anthracite, conferred executive authority on the Pennsylvania Fuel Commission, of which Wm. D. B. Ainey is chairman, and announced that a Fair Practice Committee would be appointed to deal with prices of coal.

Independent operators at once let it be known that they could not produce and sell at the $8.50 maximum, and on Sept. 22 they were informally advised by Mr. Ainey's office that pending the decision of the new Fair Practice Committee they would be allowed to charge prices that were considered fair by the Fair Practice Committee of 1920.

Edgar F. Felton has been appointed chairman of the Fair Practice Committee and has been engaged in the last few days in a study of costs of production of anthracite. A meeting was held on Oct. 2 but no conclusions were reached and no announcement was made other than that everyone concerned with the distribution of coal would be called in an effort to lower the price to the consumer.

It is understood that one large independent held to the $8.50 maximum for a short time, but has now advanced his price to $9.15. Little independent coal is quoted in Philadelphia over $9.50. Quotations in New York, however, are more general at $10.50@$12.50.

At an executive session held Sept. 22 at Harrisburg the Pennsylvania Fuel Commission spent considerable time discussing the appointment of a fair-practice committee, to be established as provided for in the proclamation of Governor Sproul, and the methods to be followed in determining promptly and fairly the cases coming before it.

The commission also met representatives of some of the independent anthracite coal companies and it is understood that the base price some of the companies originally asked for was considerably lowered during the discussion. No decision relative to prices of independent companies' coal was reached, except that it was agreed that the new committee would have to deal with each company individually.

A statement issued by the commission follows:

"The handling of the situation between the present and the time when this committee can function so as not to hold up production was likewise discussed. The commission arranged to have representatives visit immediately some of the larger cities to make plans for local distribution.

"No meeting of coal operators was called, but representatives of three companies who desired to discuss informally the situation of their particular companies and the methods to be pursued under the Governor's proclamation were heard.

"The personnel of the Fair-Practice Committee is being canvassed and will soon be announced.

"Several of the companies which have announced selling prices higher than the $8.50 basis are prepared to withdraw these and make some reductions in their base rates until the Fair Practice Committee can hear their cases.

"Chairman Ainey stated that there was no modification of the commission's purpose to keep anthracite-coal prices to the lowest point consistent with securing a 100 per cent output. In this respect the commission stands unwaveringly on its former utterances and the policy of the Governor that there shall be no strike losses or losses from mine idleness carried into the present coal prices."

THE NEW VERB "to coal" has some interesting forms, among which we notice "shall we coal?" "we will coal?" etc. It all ends, however, with "we may be coaled."—New York Sun.



Production and the Market



Weekly Review

From hints on the urgency of demand steam coals are weaker but domestic fuels are advancing with the advent of cold weather and the usual seasonal household demand. This market is not yet in full swing, but today's domestic quotations have all the earmarks of further increases, as the short supply will be accentuated by orders placed as a substitute for hard coal. This demand will fall largely on producing districts not usually called upon to furnish coal for domestic use, but will doubtless also lead to emergency shipments eastward of high-grade domestic from fields west of the Alleghenies.

Coal Age Index of spot bituminous coal prices declined to 404 on Oct. 2, as compared with 418 the week before. This represents an average spot price of $4.89 at the mines. The decreases were spread over nearly every district, only the Hocking field showing an increase, Clearfield (Pa.) and Springfield (Ill.) coals holding firm.

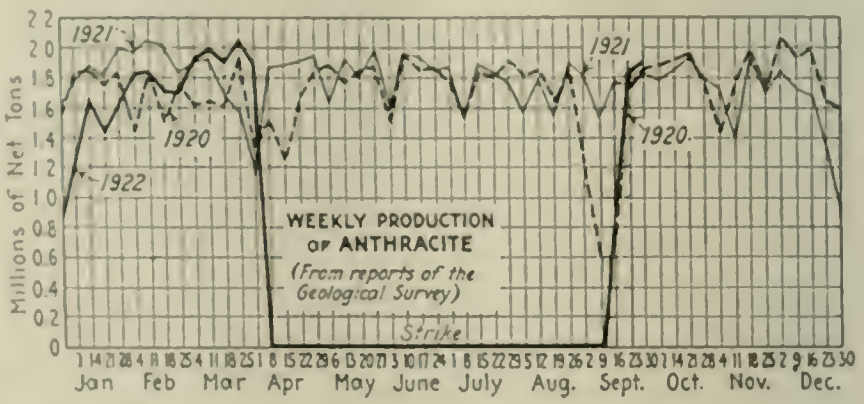
Steam Consumers Conspicuously "Backward"

The steam consumer is purposefully staying out of the market and is taking little coal aside from current needs. In the Middle West he is able to obtain this tonnage by picking up bargain lots which are still sent in on consignment, often being sold under pressure of heavy demurrage. Screenings have been selling on a par with mine-run, but with the apathetic steam market and the better domestic call more operators are screening their output, and this is fast softening the resultant sizes.

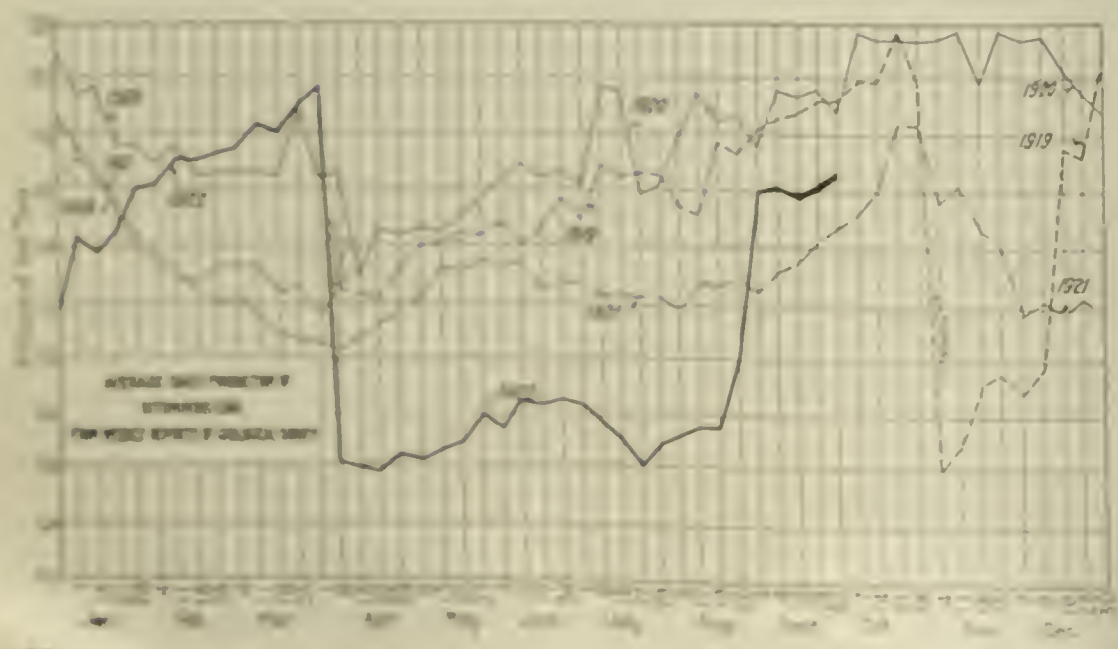
Recent press notices, "It is Ford," have advised buyers "To delay purchases as prices must drop further." The coal trade generally fails to see how deferred demand can spell anything but higher prices, especially with transportation conditions as they are and will be this winter. An argument advanced by buyers in the Lake coal-producing zone is that it is unwise to enter stocking orders at a time when they must compete for tonnage with dock buyers.

With 25 per cent of their motive power out of commission the railroads of the country are now attempting to handle the peak of the year's business. There are no signs that the crest has been reached. Traffic men generally believe that business will be offered the railroads in increasing amounts more rapidly than its locomotives can be restored to the service.

The effect of the Lake sailors' strike which began Sunday at midnight was still doubtful Monday night. Coal-laden vessels continued to load and clear for upper



ports. The Lake Carriers' Association asserted that no boats are tied up and that few men have struck. On the other hand E. J. Sullivan, secretary of the Cleveland local of the union, said most union men had quit and that boats that cleared from there went out with "criminally short crews." The Lake Carriers' Association states it is going to handle all the coal that can be dumped at the docks and that it will be moved for the especial benefit of the Northwest. Railroads originating coal for the Lakes have issued temporary embargoes, until congestion is cleared or the effect of the strike determined.



Estimates of Production

(Net Tons)

BITUMINOUS

Week ended	1921	1922
Sept. 9 (b)	7,083,000	8,791,000
Sept. 16 (b)	8,187,000	9,737,000
Sept. 23 (a)	8,527,000	9,702,000
Daily average	1,421,000	1,617,000
Calendar year	286,550,000	261,149,000
Daily av. cal. yr.	1,280,000	1,162,000

ANTHRACITE

Sept. 9	1,483,000	50,000
Sept. 16 (b)	1,749,000	1,107,000
Sept. 23 (a)	1,725,000	1,856,000
Calendar year	67,759,000	25,224,000

COKE

Sept. 16 (b)	64,000	123,000
Sept. 23 (a)	70,000	135,000
Calendar year	4,034,000	4,625,000

(a) Subject to revision. (b) Revised from last report.

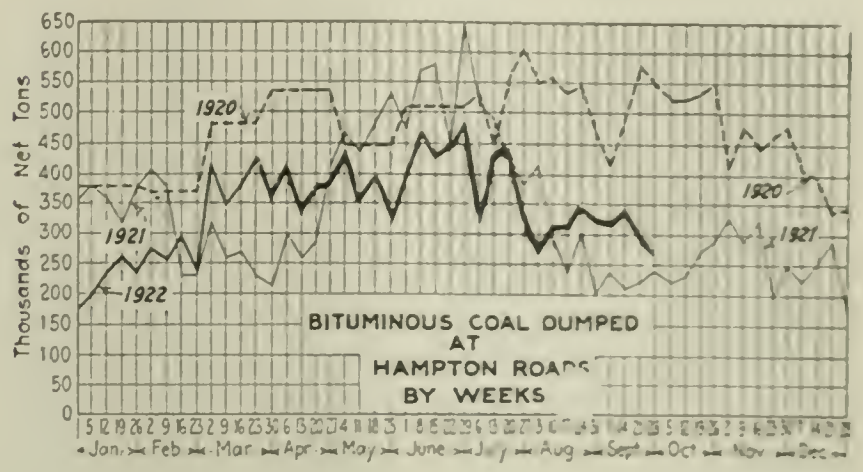
Normal production of anthracite is being retarded by the same conditions that hamper the soft-coal industry —lack of cars and poor transportation. There also is a dearth of labor. The effect of the car shortage is only just now being felt. During the last four days of September the supply began to be "spotty," incurring delays at collieries located on the Lehigh Valley, Erie and D. L. & W. lines.

The anthracite price situation is confusing. Retailers have received independent quotations ranging $9.15@$13 and even higher and are loath to pass this on to their trade. The $8.50 price recommended by the Pennsylvania governor has not been effective and the commission now urges that, pending further investigation and adjustment, operators refrain from charging prices exceeding those established in 1920 by the Fair Practice Committee, which prices ranged up to $12.50, averaging around $10.50.

BITUMINOUS

"Production of both bituminous coal and anthracite appears to have found a temporary level, bituminous at around 9,750,000 net tons, and anthracite at 1,850,000 tons a week," says the Geological Survey. The total of all coal raised is therefore about 11,600,000 net tons, still somewhat less than the amount required to meet current consumption and the heavy movement up the Lakes, and at the same time to rebuild consumers' stocks.

"The output of bituminous coal for last week is estimated at from 9,600,000 to 9,900,000 tons. Heavy loadings



in the early part of the week—38,804 cars on Monday and 33,396 on Tuesday—were largely offset by a decline later in the week. By Thursday loadings had dropped to 26,862 cars as against 29,036 on the preceding Thursday."

The all-rail movement of soft coal to New England increased to 3,255 cars during the week ended Sept. 23

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Sept. 5, 1922	Sept. 18, 1922	Sept. 25, 1922	Oct. 2, 1922†
Smokeless lump	Columbus	$6.10	$6.25	$6.65	$6 00@$7 50
Smokeless mine run	Columbus	5.50	5 75	6 00	5.00@6.50
Smokeless screenings	Columbus	5.35	5 50	5.75	5 00@6 50
Smokeless lump	Chicago	6.40	6.25	6.50	5.00@7.50
Smokeless mine run	Chicago	6.25	5 85	5 85	4 75@7 00
Smokeless lump	Cincinnati	5.60	6 50	6 30	5 15@7 50
Smokeless mine run	Cincinnati	4.75	5.50	5 70	4 90@6 50
Smokeless screenings	Cincinnati	4.40	5.50	5 30	4 60@6 00
*Smokeless mine run	Boston	9.00	8.05	8 05	7 85@8.25
Clearfield mine run	Boston	5 00	4 35	4 50	4 25@4 75
Cambria mine run	Boston	6.00	5 25	5 00	4.50@5.00
Somerset mine run	Boston	5.25	4 85	4 75	4.25@5.00
Pool 1 (Navy Standard)	New York		5 40	5 75	5.25@5.75
Pool 1 (Navy Standard)	Baltimore		5 50	5 90	5.50@6.00
Pool 9 (Super.Low Vol.)	New York	5.75	4 75	5 00	4.75@5.00
Pool 9 (Super.Low Vol.)	Philadelphia	5.85	5 60	5 35	4.25@5.00
Pool 9 (Super.Low Vol.)	Baltimore	6.25	5 10	5 50	5.00@5.25
Pool 10 (H.Gr.Low Vol.)	New York	5.35	4 35	4 65	4 50@4 75
Pool 10 (H.Gr.Low Vol.)	Philadelphia	5.60	5 10	5 10	4.00@4.50
Pool 10 (H.Gr.Low Vol.)	Baltimore	5.85	4.85	4 85	4.50@5.00
Pool 11 (Low Vol.)	New York	5.10	4 10	4 10	3.75@4.00
Pool 11 (Low Vol.)	Philadelphia	5.10	4 85	4 60	3.75@4.25
Pool 11 (Low Vol.)	Baltimore	5.35	4 35	4 35	4.00@4.50
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	5 15	4 35	4 70	3 85@4 50
Pool 54-64 (Gas and St.)	Philadelphia	4 75	4 60	4 60	4.00@4.50
Pool 54-64 (Gas and St.)	Baltimore	5.25	4 60	4 75	4.00@4.25
Pittsburgh sc'd. (Gas)	Pittsburgh				5 25@5 50
Pittsburgh mine run (St.)	Pittsburgh		4 65	4 50	4.00@4.50
Pittsburgh slack (Gas)	Pittsburgh				3 75@4 25
Kanawha lump	Columbus	5 85	5 75	6 40	6 50@7 00
Kanawha mine run	Columbus	5.60	5 50	5 75	5 75@6 00
Kanawha screenings	Columbus	5 35	5 30	5 65	5 75@6 00
W. Va. Splint lump	Cincinnati	5.35	6 85	6 50	6.00@6.50
W. Va. Gas lump	Cincinnati	5 35	6 85	6 50	6.00@6.50
W. Va. mine run	Cincinnati	5 35	5 35	5 35	4.75@5.75
W. Va. screenings	Cincinnati	4 85	5 25	5 10	4.50@5.00
Hocking lump	Columbus	6 25	5 75	6 25	6.00@6.50
Hocking mine run	Columbus	5 25	5 10	4 75	4 50@5 25
Hocking screenings	Columbus	5 25	5 25	4 25	4 25@4 75
Pitts. No. 8 lump	Cleveland	5 50	4 85	5 00	4.50@5.00
Pitts. No. 8 mine run	Cleveland	$5 25	$4 60	$4 60	$4 60@$5 25
Pitts. No. 8 screenings	Cleveland	5 25	4 60	4 35	4.00@4.50
Midwest					
Franklin, Ill. lump	Chicago	5 05	5 40	5 40	5 25@5 50
Franklin, Ill. mine run	Chicago	4 65	4 75	4 75	4.50@5.00
Franklin, Ill. screenings	Chicago	4 25	4 45	4 10	4.00@4.25
Central, Ill. lump	Chicago	4 95	5 10	5 10	4.90@5.25
Central, Ill. mine run	Chicago	4 50	4 55	4 55	4.50@4.75
Central, Ill. screenings	Chicago	4 30	3 60	3 35	3.25@3.50
Ind. 4th Vein lump	Chicago	5 25	5 25	5 25	5.00@5.50
Ind. 4th Vein mine run	Chicago	4 85	4 85	4 85	4.65@5.00
Ind. 4th Vein screenings	Chicago	4 75	4 60	3 85	3.75@4.00
Ind. 5th Vein lump	Chicago	5 10	5 10	5 10	4.90@5.25
Ind. 5th Vein mine run	Chicago	4 65	4 65	4 65	4.50@4.75
Ind. 5th Vein screenings	Chicago	4 40	4 40	3 85	3.75@4.00
Standard lump	St. Louis	4 65	4 75	4 90	4.75@5.00
Standard mine run	St. Louis	3 90	3 90	3 90	3.75@4.00
Standard screenings	St. Louis	3 75	2 85	2 50	2.75@3.00
West Ky. lump	Louisville	4 25	4 75	4 90	5 00@6 00
West Ky. mine run	Louisville	4 25	4 25	4 25	4.00@4.50
West Ky. screenings	Louisville	4 25	4 00	4 00	3.75@4.00
West Ky. lump	Chicago	4 25	4 25	4 25	5.00@5.50
West Ky. mine run	Chicago	4 25	4 25	4 25	5.00@5.50
South and Southwest					
Big Seam lump	Birmingham	4 75	3 45	3 75	4.00@4.50
Big Seam mine run	Birmingham	4 00	2 60	2 85	2.75@3.00
Big Seam (washed)	Birmingham	4 00	3 10	3 45	3.25@3.50
S. E. Ky. lump	Chicago	4 25	4 25	6 00	5 00@7 50
S. E. Ky. mine run	Chicago	4 25	4 25	4 75	4.50@5.00
S. E. Ky. lump	Louisville	5 00	6 65	6 90	6 00@8 00
S. E. Ky. mine run	Louisville	5 00	5 65	5 65	5.00@5.50
S. E. Ky. screenings	Louisville	4 90	5 50	5 50	5.00@5.50
S. E. Ky. lump	Cincinnati	5 50	6 85	6 85	6.00@6.50
S. E. Ky. mine run	Cincinnati	5 25	5 35	5 50	5.00@5.50
S. E. Ky. screenings	Cincinnati	4 85	5 25	5 10	4.50@5.00
Kansas lump	Kansas City	6 00	6 25	6 25	6.00@6.25
Kansas mine run	Kansas City	5 00	5 00	5 00	5.00@5.00
Kansas screenings	Kansas City	2 60	2 60	2 60	2.60@2.60

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in heavy type, declines in italics.
NOTE—Smokeless prices now include New River and Pocahontas.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

INCLUDES PENNSYLVANIA STATE TAX

	Market Quoted	Freight Rates	Latest Independent	Pre-Strike Company	Sept. 25, 1922 Independent	Sept. 25, 1922 Company	Oct. 2, 1922† Independent	Oct. 2, 1922† Company
Broken	New York	$2 34		$7 60@$7 75	$9 00	$7 75@$8 15		$7 75@$8 15
Broken	Philadelphia	2 39	$7 00@$7 50	7 75@7 85		7 90@8 10		7 90@8 10
Egg	New York	2 34	7 60@7 75	7 60@7 75	$9 25@$9 50	7 75@8 15	$9 25@$12 50	7 75@8 50
Egg	Philadelphia	2 39	7 25@7 75	7 75	9 25@9 50	8 10@8 35	9 25@9 75	8 00@8 50
Stove	New York	2 34	7 90@8 20	7 90@8 10	9 25@9 50	8 10@8 35	9 25@12 50	8 00@8 50
Stove	Philadelphia	2 39	7 85@8 15	8 05@8 25	9 25@9 50	8 10@8 35	9 25@9 75	8 00@8 50
Chestnut	New York	2 34	7 90@8 20	7 90@8 10	9 25@9 50	8 10@8 35	9 25@12 50	8 00@8 50
Chestnut	Philadelphia	2 39	7 85@8 15	8 05@8 25	9 25@9 50	8 10@8 35	9 25@9 75	8 00@8 50
Range	New York	2 34				6 50@6 75		4 25@4 75
Pea	New York	2 22	5 00@5 75	5 75@6 45	6 50@7 00	6 50@6 75		6 75@7 25
Pea	Philadelphia	2 14	5 50@6 00	6 15@6 25	6 75@7 00	6 50@6 75	7 00@7 25	6 75@7 25
Buckwheat No. 1	New York	2 22	2 75@3 50	3 50	4 00@6 50	4 00@4 75		4 00@4 75
Buckwheat No. 1	Philadelphia	2 14	2 75@3 25	3 50	4 00@5 50	4 00		4 00
Rice	New York	2 22	2 00@2 50	2 50	2 75@4 00	2 75@3 00		2 75@3 00
Rice	Philadelphia	2 14	2 00@2 50	2 50		2 75@3 00		2 75@3 00
Barley	New York	2 22	1 50@1 85	1 50	2 00@3 00	2 00		2 00
Barley	Philadelphia	2 14	1 00@1 75	1 50		2 00		2 00
Birdseye	New York	2 22		2 00@2 50		1 75		2 75

† Advances over previous week shown in heavy type, declines in italics.

How the Coal Fields Are Working

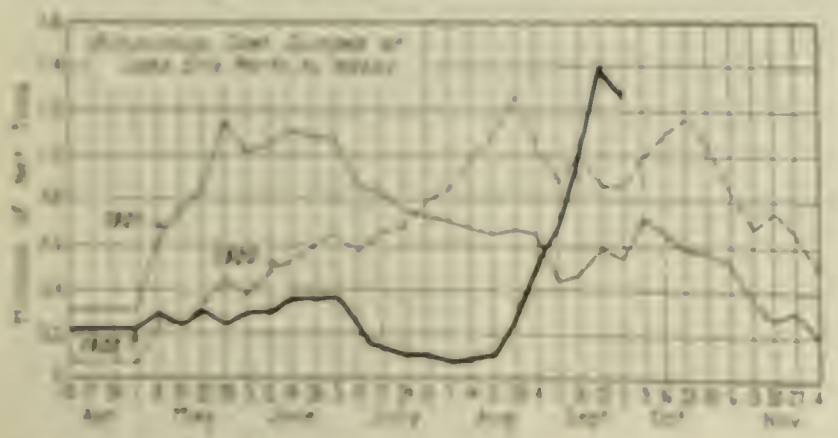
Car Loadings and Surplusages

	All Cars	Coal Cars
Week ended Sept. 16, 1922	849,919	172,241
Previous week	852,744	139,579
Same week a year ago	852,240	165,511
Surplus cars		
Sept. 15, 1922	4,428	17,614
Sept. 8, 1922	43,548	34,685
Sept. 17, 1921	218,391	116,514

from 13,000 cars in the preceding week. That market, however, is dull, as industry has sufficient coal on hand to last well through the year.

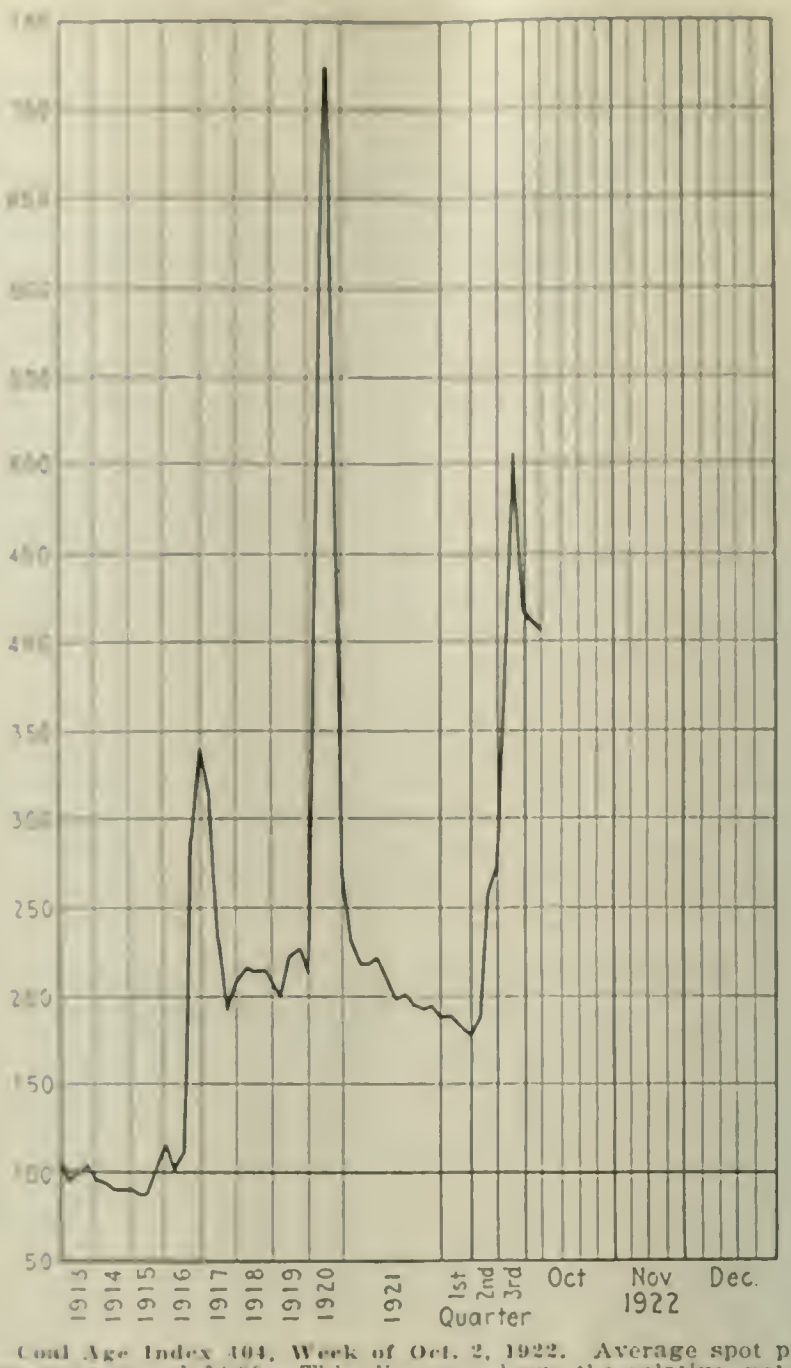
On the Lake Superior docks there were 6,786 tons of anthracite and 209,561 tons of bituminous coal on hand Sept. 15, compared with last year's figures of 836,438 tons of anthracite and 3,613,543 tons of bituminous; on the Ashland-Washburn docks 577 tons of anthracite and 44,177 tons of bituminous were on hand, as against 25,615 tons of anthracite and 259,925 tons of bituminous a year ago. On upper Lake Michigan docks there were on hand Sept. 1 of this year 69,302 tons of anthracite and 156,979 tons of bituminous, compared with stocks of 887,203 tons of anthracite and 2,197,119 tons of bituminous on these docks on Oct. 1 of last year.

Priority orders for the movement of coal are being employed only rarely. The Federal Fuel Distributor is asking the I. C. C. to issue such orders only in cases of coal distress where it is impossible to relieve an acute fuel situation by any other means.



Receipts [illegible] dumpings were 240,000 net tons during the week ended Sept. 23, as compared with 237,000 in the week preceding. Congestion in the North and West is throwing more coal to this Tidewater and prices are soft.

Lake coal is now going forward at the highest rate in the history of the trade. The week of Sept. 24 set the record with 1,671,884 net tons, but last week's figure of 1,241,000 tons is still in excess of any dumpings prior to this season.



Coal Age Index 404, Week of Oct. 2, 1922. Average spot price for same period $4.89. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

The total dumped for the year to date is 10,185,210 tons, as compared with 18,843,148 tons in the corresponding period of last year.

Numerous complaints are reaching Washington from coal operators who are not being given assigned cars. It is asserted that railroads generally are misinterpreting the I. C. C. service order and are assigning cars for railroad fuel. These complaints point out that it is flagrant discrimination when a few operators are allowed to absorb all the transportation in a coal-producing district. Several instances were cited where certain mines are receiving 100 per cent car supply whereas the complainant is being given only 20 per cent of the cars he requires.

ANTHRACITE

Production of hard coal was 1,856,000 net tons during the week ended Sept. 23. Preliminary reports for last week indicate an output of 1,800,000 to 1,900,000 tons. The approach to normal production, however, was checked in the last few days of September by a growing car shortage. Movement of loads is also slow and deliveries uncertain.

COKE

With beehive coke production increasing—135,000 net tons during the week ended Sept. 23—the car shortage has overshadowed the strike. It is now apparent that the strike will no longer be the dominant factor in curtailing the production of coke. The market is stiffer, furnace coke being in demand for domestic purposes, while foundry coke steel is quotably higher.

Foreign Market And Export News

European Coal Markets Show Signs of Revival

France Feels Effect of Withdrawal of British Fuel for American Emergency —With Unfilled American Orders, British Prices Hold—Coal Shortage in Germany and Buying Power Crippled.

Foreign coal markets show some improvement. The emergency American demand removed an embarrassing volume of British offerings from Continental markets, stimulating prices and production. The French industry felt the effect of this immediately. British exports to France were stopped or greatly reduced and French mines cleared away their heavy pithead stocks with the disappearance of these competitive offerings.

Great Britain still has many unfilled orders for North America and producers are not inclined to reduce prices to attract Continental buyers. They feel that these orders, having been delayed for many weeks, will soon be forthcoming.

Germany is suffering from a coal shortage. Her buying power is reduced by the exchange rates and she must take steps to increase her production.

Prices Firm on Best British Coals; Dock Congestion Still Acute

Special Correspondence

There is more activity in the superior Admiralty coals and the best drys. Canada is still in the market and is now inquiring for 60,000 tons for Montreal delivery before the end of November. Continental demands are also good. With the exception of these quality coals, other descriptions show an easier tendency. The output during the week ended Sept. 16 dropped to 4,995,000 tons, according to a cable to *Coal Age*. This is the first week since Aug. 12 that production has been below 5,000,000 tons

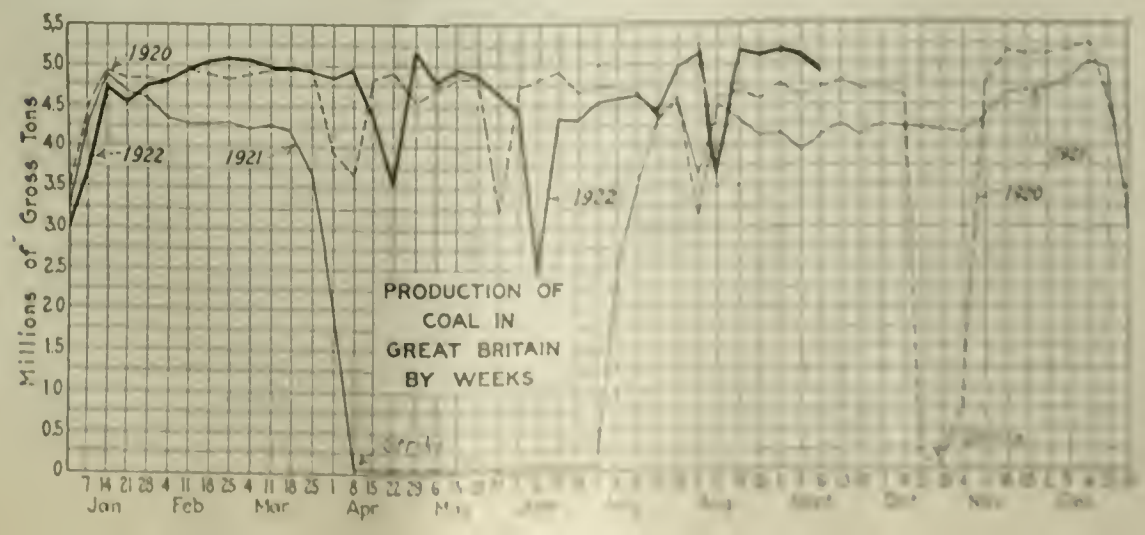
The position in the Welsh fields now is that the pits have an abundance of contracts to carry them into October. Leading operators are not inclined to make any cut in prices. On the other hand, Continental and South American buyers are holding back orders because they believe that now the heaviest American demand is over operators will have to reduce prices to get rid of their coal. The demand for the lower grades of coal is extremely poor and stocks are accumulating.

In the north of England, American inquiry is still heard, although there is not much actual business. Here again the chief operators are well sold up and have little to offer. The coke market is strong. Among the contracts recently fixed are 4,000 tons of second Durham gas coals for Malmö at 21s. 6d. f. o. b., 2,000 tons of gas coal for Esbjerg and 90,000 tons of Durham coking coal for Oxelsund at 20s. 6d. f. o. b. An inquiry was made for 30,000 tons of Durham coking coals for immediate shipment, but the quotations were too high and the inquiry was withdrawn.

The new arrangements for the loading of coal cargoes at the Northeastern ports, under which two hours' overtime are worked at the end of the second shift, is proving a success. Congestion of the docks has undergone no appreciable relief; in fact, the conditions are so unsatisfactory that a considerable amount of trade is being diverted from these to other ports.

Under the circumstances, it is likely that a further attempt will be made to induce dockers' representatives to agree to a reversion to the three-shift system. When the two-shift system was introduced during the war, it was provided that there should be a return to the old arrangement if the volume of trade justified such a move. It is undeniable that the time has arrived for the change. Thousands of tons of shipping are being held up, thereby incurring heavy losses in demurrage, and siding are crowded with loads.

The result of this congestion has already been felt at some of the collieries, which have been forced to close down temporarily owing to wagon shortage. The aggregate loss to the miners in wages is very considerable, and their resentment against the attitude of the dock workers' officials can be well understood.



French Coal Is in Good Demand; Miners Deliver Ultimatum

Special Correspondence

French coal is finding a ready market, with the exception of the Saint-Etienne field and other minor districts of the Center of France.

The National Congress of French Miners, which met recently at Angers, voted a resolution declaring that should the French government or the French Parliament manifest the intention of modifying any of the fundamental provisions of the Act of June 24, 1919, on the eight-hour working day in mines, a general strike of French miners would be the immediate response. The possibility for intensifying the present conflict between operators and men implied in such a resolution is quite evident.

FRENCH PRODUCTION IN JULY

District	Metric Tons
Nord, non-devastated mines	584,795
Nord, devastated mines	651,544
Saint-Etienne	274,670
Lyons (Blanzy, La Mure, etc.)	215,111
Minor Central fields	99,225
Southern	337,423
Minor Western fields	9,224
Ronchamp mine (Nancy)	7,665
Lorraine	345,457
Total	2,525,114
Year to date	14,665,488

During July France also produced 85,424 tons of coke and 226,545 tons of patent fuel. The Sarre output was 988,242 tons of coal and 22,049 tons of coke. Her pit-head stocks were 593,810 tons of coal on July 31, as compared with 619,285 tons on June 30.

FRENCH IMPORTS AND EXPORTS IN JULY AND YEAR TO DATE

IMPORTS

	Metric Tons	
	July	Jan.-July
Coal		
Sarre	260,183	1,791,316
Great Britain	915,824	6,662,264
Belgium	178,950	1,427,818
United States	4,128	23,251
Germany	249,107	2,212,170
Netherlands	80,700	423,522
Other countries	114	3,642
Total July	1,611,906	12,544,413
Total June	1,529,934	
Coke		
Great Britain	1,965	37,189
Belgium	48,501	195,484
Germany	391,520	2,437,251
Other countries	24,841	196,999
Total July	445,539	2,876,564
Total June	427,633	
Patent fuel		
Great Britain	20,617	43,199
Belgium	14,854	491,953
Germany	11,873	276,997
Other countries	424	5,346
Total July	47,944	817,495
Total June	105,264	

EXPORTS

Coal, etc.		
Belgium	28,447	176,274
Switzerland	12,944	283,606
Spain	201,861	700,258
Italy	2,465	11,956
Germany	15,552	439,524
Austria		262
Other countries	24,874	453,202
Bunkers	58,728	96,110
Total coal	343,182	2,164,216
Coke	26,748	216,159
Total patent fuel	3,240	31,446

The comparatively heavy shipments to Spain in July (200,000 tons) were due to the strike of the Asturian coal miners.

The quantities of fuel to be supplied by Germany on reparation account during September and October have been divided as follows: France, 1,952,000 tons; Luxemburg, 111,000 tons; Belgium, 227,000 tons; and Italy, 210,000 tons.

British Coal Exports in August



Germany Seeks Reduction of Reparation Tonnage to Relieve Shortage

German industry generally is suffering more and more from the loss of the valuable coal resources alienated to other countries and intensified by the deliveries required for the Allies. Increasing efforts, as is known, are being made in the country to get greater tonnage out of the coal available.

Production of coal in the Ruhr region during the week ended Sept. 17 was 1,84[illegible] metric tons, according to a cable to Coal Age, as compared with 1,781,000 tons in the week preceding.

The following increased prices for coal are in force as from Sept. 1:



Production during July, excluding the Saarbe, was 9,500,000 metric tons, as compared with 10,870,000 tons in June, 1921.

A German journal gives the wording of the resolution adopted at the meeting of the International Miners'

Congress held in Frankfurt, on the subject of Germany's shortage of coal as follows:

The International Miners' Union at its meeting on Aug. 11, 1922, confirms the previous resolutions of the Amsterdam Workers' International on the reconstruction of the devastated regions, without adopting a position on the after-war policy. In view of the great disorganization in the labor market and the bad labor conditions in the mines in all European lands, and the consequent resulting extensive scarcity, particularly in Germany, it expresses the opinion that the decisions of the Spa Agreement respecting German coal deliveries to the Allied countries are responsible to a certain degree for the present difficult position, and resolves to request the Reparations Committee to receive a deputation from the International Miners' Union for the purpose of bringing about a variation in the Spa Agreement to ease the present economic position in the mining business.

Coal Paragraphs from Foreign Lands

ITALY—The market continues dull. Our supply is somewhat better. There is no demand from the mills and railways. Stocks have increased to about [illegible] tons and more steamers are expected soon. The prices are: Bengal best, Rs.25; Bengal good 2nd, Rs.26@Rs.27; British, Rs.38; African, Rs.27½.

SPAIN—The first deliveries of Asturian coal for Barcelona after the miners' strike have put in an appearance. Orders have been numerous in consequence of the low level of stocks and the rise in quotations for foreign coal. In a certain number of mines the return of the strikers has not yet resulted in a full output, owing to the necessity of restoring workings.

BELGIUM.—The market is improving every day. Coke is very firm, especially metallurgical coke. Briquets are also strong. The state has laid in large stocks and the partial revival of navigation at Antwerp has led to an improvement in demand.

Hampton Roads Pier Situation

	Week Ended— Sept. 21	Sept. 28
N. & W. Piers, Lamberts Point		
Cars on hand	430	1,235
Tons on hand	72,898	75,226
Tons dumped	127,122	113,785
Tonnage waiting	64,650	27,600
Virginian Ry. Piers, Sewalls Point		
Cars on hand	906	923
Tons on hand	52,600	51,500
Tons dumped	88,974	70,104
Tonnage waiting	18,500	7,500
C. & O. Piers, Newport News		
Cars on hand	1,051	910
Tons on hand	52,500	45,500
Tons dumped	44,619	71,143
Tonnage waiting	1,400	3,850

Unusual Dullness at Hampton Roads

Unusual dullness featured the situation last week. Dumpings fell off to a point far below the minimum in the last twelve months, and demand, particularly in the coastwise trade, receded rapidly.

Spot prices have returned almost to the level which existed before the railway strike. Steamers engaged for months in the coastwise trade are being withdrawn and laid up.

Dealers expect very little more business from New York, because of the opening of the Pennsylvania trade which makes competition from this port unfavorable. Some revival in the export trade is being predicted, as indicated by the sailing of several foreign ships with coal, made possible by declining prices.

Export Clearances, Week Ended Sept. 28, 1922

FROM HAMPTON ROADS

	Tons
For Atlantic Islands	
Nor. S.S. Jose, for Kingston	1,067
For Cuba	
Am. S.S. Miami, for Havana	5,534

United States August Coal Exports

(Gross Tons)

	August 1921	August 1922
Exports bituminous coal		
By rail to		
Canada	1,319,087	373,859
Mexico	13,604	6,052
Total	1,332,691	379,911
By vessel to		
Newfoundland		1,080
British West Indies	7,856	15,801
Other West Indies	7,355	8,750
Panama	9,611	9,595
Cuba	48,318	10,629
Total	73,140	45,855
United Kingdom	2,442	
Denmark	3,887	
France	16,068	
Italy	87,399	
Norway	12,487	
Sweden	10,394	
Total Europe	132,677	
Argentine	47,835	
Brazil	43,419	
Chile	1,022	
Total South America	92,276	
Egypt	21,399	
Other countries	42,907	34
Total bituminous exports	1,695,000	425,800
Total anthracite exports	373,005	28,704
Total coke exports	18,029	26,121

Pier and Bunker Prices, Gross Tons

	Sept. 23	Sept. 30†
PIERS		
Pool 10, Philadelphia	$8 25@$8 75	$[illegible] @$8 00
Pool 11, Philadelphia	8 00@8 50	[illegible] @ 7 75
Pool 10, New York	8 00@8 25	[illegible] @ 8 00
Pool 11, New York	7 75@8 00	[illegible] @ 7 75
Pool 1, Hamp. Roads	7 90@8 15	[illegible] @ 8 10
Pools 5-6-7 Hamp Rds.	7 90@8 15	[illegible] @ 8 10
Pool 2, Hamp. Rds.	7 90@8 15	[illegible] @ 8 10
BUNKERS		
Pool 10, Philadelphia	$8 50@$9 00	$[illegible] @$8 50
Pool 11, Philadelphia	8 25@9 00	[illegible] @ 8 25
Pool 10, New York	8 30@8 55	8 00@8 25
Pool 11, New York	8 00@8 30	[illegible] @ 8 00
Pool 1, Hamp. Rds.	8 00@8 25	[illegible] @ 8 10
Pool 2, Hamp. Rds.	8 00@8 25	[illegible] @ 8 10
Welsh, Gibraltar	40s. f.o.b.	40s. f.o.b.
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	50s. f.o.b.	50s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	42s. t.i.b.
Welsh, Algiers	41s. 6d. f.o.b.	41s. 6d. f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b.	65s. f.o.b.
Welsh, Madeira	45s. 6d. f.a.s.	45s. 6d. f.a.s.
Welsh, Teneriffe	43s. 6d. f.a.s.	43s. 6d. f.a.s.
Welsh, Malta	42s. 6d. f.o.b.	42s. 6d. f.o.b
Welsh, Las Palmas	43s. 6d. f.a.s.	43s. 6d. f.a.s.
Welsh, Naples	42s. f.o.b.	42s. f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore	52s. t.i.b	52s. t.i.b.
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Welsh, St. Michaels	50s. t.i.b.	50s. t.i.b.
Welsh, Alexandria	43s. f.o.b.	40s. f.o.b
Welsh, Port Said	51s. 6d. f.o.b.	51s. 6d. f.o.b.
Welsh, Oran	40s. f.o.b.	40s f.o.b.
Welsh, Fayal	50s. t.i.b	50s. t.i.b.
Welsh, Dakar	46s. 6d. f.o.b	46s. 6d. f.o.b.
Welsh, St. Vincent	46s. f.a.s.	46s. f.a.s.
Welsh, Montevideo	50s. f.o.b	50s f.o.b.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	Sept. 23	Sept. 30†
Admiralty, large	26s 6d	26s @ 27s
Steam, smalls	16s. 6d.	16s @ 16s. 6d.
Newcastle:		
Best steams	24s@24s. 6d	24s 6d @ 25s
Best gas	23s 9d	23s @ 24s
Best bunkers	22s 6d	23s

†Advances over previous week shown in heavy type; declines in [illegible]

North Atlantic

Consumers Apparently Set On Depressing Prices

Market Continues to Reflect Indifference of Users—Car Shortage Such That Lower Prices Are Unlikely, Save Temporarily—Fuel Comes from Divers Sources.

The consumer is close to a buyers' strike in his determination to depress prices. The market so far has retained its indifferent aspect, from the consumers' standpoint at least. There is, however, a growing feeling that the car shortage has reached such proportions that lower prices cannot be expected except as a temporary measure. Coal men realize that a slight return to buying would quickly wipe out spot offerings and they are extremely cautious about quoting futures.

Coal from all sources can be had at lower figures than last week. British cargoes have sold off, Southern coals are not so easily salable and Tidewater piers have a good supply at hand.

CENTRAL PENNSYLVANIA

Car shortage is seriously curtailing production. Figures show a loss in output of 700 to 800 cars daily.

The situation is fairly good so far as the Pennsylvania is concerned, particularly in the eastern part of the district, but farther west where other roads enter the field, it is exceedingly bad, not only due to the scarcity of cars but also to the lack of motive power.

Spot prices are as follows: Pool 11, $3.75@$4; Pool 10, $4.10@$4.25; Pools 9 and 71, $4.25@$4.50, and Pool 1, $4.50@$5.

BALTIMORE

Prices here are well maintained, especially as to the better grades, as the continued car shortage is holding down production and delivery. While industries have been running on the hand-to-mouth basis, or at least have made no attempt to stock up at the high prices prevailing, the near approach of colder weather is making some of them consider this necessary. Purchasing agents are showing greater desire to get under cover, and this has meant that little coal of the better grade is to be had below $5.25.

Heavy importations of British coal continue to be received, and in fact there was one diversion of a cargo to New York City after it had been reported as reaching this port. During September fourteen steamers arrived here with a total of 79,895 tons of British coal. The steamer diverted to New York City after arriving in Baltimore was an American ship, with a total of 8,232 tons cargo.

FAIRMONT

Transportation conditions are somewhat better but it will be some time before the B. & O. will be able to handle anything like normal quantities and congestion is still so general that the movement to the West is badly upset, and embargoes have been continued. Much of the output is moving to Eastern markets. Mine run is quoted $4@$5 a ton.

PHILADELPHIA

It is an indifferent market, at least from the consumer's standpoint, as many concerns needing coal are simply holding off, insisting that their guess as to much lower coal is bound to come true. And so far they do seem to have the best of it.

All houses are extremely cautious about promising delivery, as they fully realize how serious is the rail situation. Naturally the consumer reasons that if the operator urges him to take coal it must be plentiful, but the actual truth is that the small floating supply that is available for a spot market is extremely small, and would be wiped out almost in an instant with but only a slight increase in ordering.

On the Pennsylvania, the mines east of Altoona were reported receiving the best service this week, while the New York Central was quoted as in trouble. The B. & O., out of the Fairmont region, has not improved, and shipment via Connellsville from Somerset County is now in almost the same condition.

There has been some decline in prices, and in some instances there have been deep cuts due to the necessity to move a limited tonnage for some reason or another. Producers predict that the lowest point has been reached, but this is very much of a moot question, with some consumers close to a buyer's strike in their anxiety to depress the market.

UPPER POTOMAC

Injunction proceedings in the Georges Creek field have been dropped under an agreement with striking miners who have promised not to molest the miners who desire to return to work and the feeling exists that this will go far to break the strike. Considerable progress has been made in getting back to normal in the Upper Potomac, where there is no prospect that the labor status will be changed.

NEW YORK

Coal is becoming so plentiful that contracts are being talked of and in some instances have been closed at $3@$4.50, the latter figure having to do with Pool 10 quality coal.

Demand shows no improvement. Buyers are apparently willing to take their chances with the poor car supply and the approaching winter months before them. They believe prices are going to be lower.

The slowing up in the receipt of British coal is noticeable. During last week about 80,000 tons in ten vessels were reported. At the office of the Fuel Administrator it was announced there was a cargo in the harbor which could be bought to sell at about $10. At about the same time it was announced by dealers there was a cargo of foreign coal at a Brooklyn dock which was being offered at $10.50 per ton on wagons. Local houses were offered coal anchored off Boston on a basis of $7 per ton, it being stated there were in the neighborhood of sixteen cargoes awaiting buyers.

Southern coals are not causing much competition here, prices being about the same as for coals usually found at this Tidewater.

Activity along the line prevents heavy shipments to Tidewater. However, coal is coming forward in sufficient quantities to take care of the local demand. On Sept. 29 there were 1,583 cars reported at the local docks, a gain of 200 cars over the day previous.

West

DENVER

The labor situation is much improved with the readjustment of the wage scale. Cars are still scarce and there is a great lack of power to move the coal.

Denver is not suffering from a coal shortage, as it is close enough to the mines to get a fair supply of both bituminous and lignite coal. Prices are the same at the mines as previously when the same wage scale was in effect. Retail prices in Denver are 75c. lower than a year ago on account of lower freight rates.

SALT LAKE CITY

There is very little domestic demand. People are waiting to see what the grand jury, now in session, will decide about alleged price fixing by operators and dealers. A prominent dealer, who is also interested in the wholesale end of the business, states that the retailer, in spite of the contention that the raise from $9 to $10 for lump coal has permitted him to draw an abnormal profit, is getting 50c. a ton less on domestic sizes and 25c. a ton less on slack than he did a year ago.

Canada

TORONTO

A little anthracite is now coming forward and is being sold in small lots, as low as $15.50, the old price. There is also a limited quantity of Pocahontas on the market at $16.50. The Welsh coal bought by the city is being held in reserve for emergencies.

There is plenty of bituminous coal obtainable and it is being freely bought by domestic consumers in small quantities until anthracite becomes generally available. Quotations are variable but average $10.75 for 3-in. lump and $10 for slack, wholesale, f.o.b. destination.

The city on Sept. 27 commenced the distribution of semi-anthracite recently secured from Pennsylvania. There was a rush of orders and during the day 1,100 tons were disposed of in one-ton lots at $15.50 per ton. [The only semi-anthracite produced in Pennsylvania is found in Sullivan County.]

Anthracite

Diverse Independent Prices Disturb Retail Dealers

Little Coal Offered at $8.50—Range Now $9.15 @ $11 on Family Sizes. Pending Adjustment—Canadian Buyers Take Tonnage Available at High —Obstacles to Production

Retailers are upset by the variety of independent quotations being made. Very little of this coal was offered at the $8.50 price which had been established by the Pennsylvania commission and prices now range $9.15@$11 on the family sizes, following the commission's recommendation that prices be kept within the limits fixed by the Fair Practice Committee of 1920, pending further consideration and adjustment. Canadian buyers are appearing in large numbers, taking any coal available at the high of the range.

Production is being slowed by spotty car supply and some labor shortage. Loads are moving slowly and deliveries are hampered by unsatisfactory transportation conditions. Steam coals are selling off.

BALTIMORE

Some receipts have been recorded but the run is not heavy and a number of dealers are still without fuel to distribute. The coal coming in is practically all of the independent variety, and if it were not for the fact that the dealers are glad to get any kind of coal there would be undoubtedly considerable complaint over the fact that a large proportion of the shipments are poorly prepared.

Pending more definite information as to wholesale prices members of the Baltimore Coal Exchange have taken no action toward recommending prices. The majority of dealers who have any coal to sell are asking $10.75 a gross ton for No. 1 lump; $10 for No. 2, 3 and 4 (nuts); $10.50 for Sanitary; and $11 for Cyclone Valley.

BUFFALO

Coal is coming in perhaps as fast as it was expected to and if the present reported distribution is kept there will be a fair amount in consumers' cellars before cold weather sets in. Distribution is on a cut and dried basis. A price of $11.10 has been made on prepared by one of the larger retailers, $11.35 on egg, and $11.55 on stove and chestnut.

There is no small more demand for independent coal than can be furnished but there is great temptation to ask inflated prices. The authorities do not seem to have obtained control of that phase of the trade yet. Prices of $11.50@$11.60 have been made at the mines.

So far one cargo has been loaded, 4,000 tons for the Lehigh Valley Co., for Chicago. Two other cargoes have been chartered. Other companies ought to be in the field by another week.

BOSTON

Practically all the large Tidewater retailers have received their first cargoes and all-rail shipments have been scattered around about as well as could be managed under the various car-supply complications that prevail.

Retail distributors are working over their "applications" and making deliveries of a ton or so on the old orders. Boston dealers are charging $15 for all sizes down to pea, much as they did in the spring.

It will be interesting to watch sales of independent coal during the next month or so. Quotations range $9.50@$12.50, f.o.b. mines, but it is not easy to see how retailers can pay those prices without undergoing serious losses before the season ends.

ANTHRACITE FIELDS

Production would have almost reached normal this week if it had not been for the car shortage. This shortage seems to have hit the mines on the D. & H. and the D. L. & W. more than on any of the other roads.

It seems as if the miners had not had enough of strikes. An outlaw strike was called at the Pettibone Colliery of the Glen Alden Coal Co., because some of the men had not paid their assessments to the union and because some of the firemen were not members of the union. It seems strange that after a long idleness and only sixteen days of work the men would be in a position to strike or that they would want to strike. The miners are talking of backing the railroad shop men, and it is intimated that a sympathetic strike might be called.

NEW YORK

Independent producers as well as some of the larger companies have difficulty in disposing of the steam coals and in some instances buyers of independent domestic coals are asked to include some of the smaller coals in their orders.

Many smaller independent operators are selling their product over the counter, buyers from various sections of the country and Canada spending most of their time at the mines. Business is being done mostly on a cash basis, the coal being paid for before shipment.

Heavy stocks of bituminous coal in the cellars and bins of many industrial concerns and in some other places where the anthracite steam coals have been used, as well as the installation of oil burning apparatus is given as one reason for the lack of demand for the small coals at this time.

Retailers are getting a fair supply of domestic coals and are careful to follow the orders of the State Fuel Administrator regarding distribution. While some are quoting $13.50, regarded as a fair price by the Fuel Administration officials, others are quoting as high as $17. Complaints are being made to the Fuel Administrator of attempted profiteering and these are being investigated.

PHILADELPHIA

While the matter of price is still much of an annoyance to the retail dealer, nevertheless his chief concern is to get sufficient coal to meet the orders he has on his books. Consumers are becoming insistent that they be given preferred treatment, and at the same time complain of the price charged.

Larger retailers are for the most part asking $14.50 for egg, stove and nut, and $11.50 for pea. There is also a considerable number who quote $14 for the large sizes and $11.25 for pea. Perhaps a few dealers did charge $15 for prepared coal during the first week they had coal, but it is doubtful if any one is charging this price now.

At this time there seems to be much more than a rumor of car shortage at the anthracite mines. So far the mines in the southern field have not been affected, but to the north there has been some lost time on this account. All roads have issued drastic orders against loading line equipment to foreign roads, and have requested shippers to take some box cars.

All companies have an active market in buckwheat, rice and barley, and of the former size there is very little to be had on the spot market, with a fair amount going into the domestic trade.

South

BIRMINGHAM

Demand for steam coal is only moderate, consumers appearing not concerned except in regard to movement and car supply, which continues to be the principal disturbing factor. Any shortage in coal supply is attributable to these hindrances which are holding production down to a figure which closely approximates the demand.

However, there is a strong demand for lump and other sizes. The supply of lump is necessarily depleted largely by the easing off in the steam requirements. When prices were at top notch during the recent heavy demand from Western and other foreign territory little domestic coal was produced at the steam coal operations, hence this served to curtail the movement.

Quotations are practically stable at the maximum fixed schedules, although limited amounts of steam fuel have been sold during the past week somewhat under the figures above referred to, though it is not thought there will be any very material concessions from these prices. Open market will prevail on domestic coal in many instances where contracts with dealers do not extend beyond September.

VIRGINIA

The pendulum has begun to swing in the direction of a somewhat larger production, bringing the output up to 144,000 tons. Cars are beginning to get more plentiful, with C., C. & O. mines producing 62 per cent of capacity and with production on the Southern also on a larger scale. N. & W. supply, however, is not quite as adequate.

Chicago and Midwest

Steam Market Remains Weak in Middle States

Gluts Here and There Force Screenings Prices Lower — Domestic Demand Fair—Rail Service Improves Slightly in Certain Regions.

Steam coals continued in no demand during the past week, everywhere except in Kentucky and even there the call was not heavy. It weakened enough in St. Louis to send heavy shipments of screenings up to be dumped on Chicago where that class of coal got into demurrage difficulties by the hundreds of cars and sold down to $2. Domestic demand continues fair in all regions, although there is so much protest against high prices that nobody is buying heavily.

Some fields have been getting better railroad service. The L. & N., in Kentucky, has raised its average car service from about 15 to 30 per cent. Northern and central Illinois service is at least 50 per cent and even in the Carterville region of southern Illinois there is some improvement, but most of the southern Illinois mines are complaining of discrimination against them in favor of other fields.

SOUTHERN ILLINOIS

A slightly improved car supply is the most interesting development of the week in the Carterville field. The efforts of the roads to give coal the preference in movement is getting some results. There are orders on hand for domestic sizes that will take 90 days to clean up. The steam sizes are giving some worry. This has even affected the minerun market. Steam users are not stocking up. Somehow, somewhere, they have a hunch that "coal is coming down." Motive power is not far from normal, but the Illinois Central has shown rapid strides in getting back to nearer normal than any other mid-west coal carriers.

Miners who have been away since last summer are beginning to drift back and the mines are filling up. Very few minor disputes are reported that cause loss of time. Somewhat similar conditions prevail in the Duquoin and Jackson fields that depend on the Illinois Central alone for cars. The Mt. Olive field shows up with better car supply on the trunk lines, but short on the local coal roads, due to congestion in the St. Louis terminals. A good movement is noted to Chicago and Omaha markets, with some to Kansas City, although the bulk is going to St. Louis. All mines show a steady increase in daily tonnage.

The Standard field is as usual afflicted with the thought that "coal is coal" and that anything goes. A better car supply may bring normality and save operators there from being the first "objects" of federal investigation.

INDIANAPOLIS

Prices continue about the same, though there has been some easing off on some grades of foreign mined coal. Indiana coal seems to be as strong as last week, with prices ranging $4.50@$5 and more. Because of rail conditions the Indiana mines have been able to work only about half time.

The utilities of the state, generally the biggest buyers, are purchasing spot coal in just as small quantities as possible. The utilities are making a determined fight to eliminate brokerage fees. Cooler weather made the retail demand a little more active. One retailer in Indianapolis has announced he will sell no more than three tons to any one customer and officials of the retailers' organization are urging purchases in small quantities.

CHICAGO

Few changes are noticeable in the Chicago market since last week. Steam sizes continue a drug with the heavy consumers still making a success of their policy of holding out and picking up coal that gets into trouble. The heavy consignment shipments that have been coming to this city have amply filled their needs.

The prices paid have varied from $3 on good Illinois and Indiana stuff down to as low as $2 on some northern Illinois and Standard screenings and the effect of this has been to compel a softening of the circular price list on screenings, for circular no longer can be maintained on steam coals. Buyers have been hammering so hard on steam prices for so long that coal men are now charging many of them are refusing contract shipments in order to further embarrass the producers.

Demand for domestic sizes continues fairly strong and likely to burst upward at the first cold snap, carrying prices with it. Just now there is little difficulty in getting $5.50 for good 6-in. lump from both the Fourth Vein field of Indiana and the southern Illinois counties. Smaller sizes of domestic coals are also strong and bring $5@$5.50. Very little mine run is shipped except on contract. Screening plants are fully justifying their investment and operating costs. They greatly reduce the amount of coal that must either be stored on the ground at the mine or be sold at a loss.

LOUISVILLE

As a result of better production of steam coal in all producing sections the shortage is being rapidly relieved, and the big question now is in supplying retail dealers. In some sections retailers are buying freely but in Louisville, however, it looks as if the retail business will be late and heavy. Operators are producing very little prepared size coal. However, with the let-up of steam demand there should be better production, especially with a better car supply, but until Lake demand is filled prepared production is not promising.

Operators are asking a margin of about $2 a ton between eastern Kentucky lump and mine run, which is causing retailers to do a lot of beefing. Eastern Kentucky coals start at $5 for mine run and screenings and go as high as $8 for lump. Western Kentucky starts at $3.50 for screenings and goes as high as $6 for lump.

Locally retail prices are $10.50 for eastern Kentucky or West Virginia lump, $10 for mine run or screenings, $9@$9.50 for western Kentucky lump, and $8.50 for mine run or screenings. Eastern Kentucky this week reports around 30 per cent car supply—the best for some weeks—and there is a chance of three days operation. Western Kentucky reports 15 to 30 per cent, the L. & N. doing better, and averaging close to 30 per cent.

ST. LOUIS

Seasonable weather is helping with the domestic demand. This however, is not as pronounced as was expected. Dealers complain about too much "socialistic" advice to the public "a la Ford" from sources ignorant of coal conditions. This has resulted in delayed buying and small orders.

Carterville tonnage is small. Plenty of substitution of inferior coals by jobbers is reported. Mt. Olive is best, with poor call for Standard, whose price is high. Small town domestic buying is delayed. Low priced crops and poor business generally, due to recent labor troubles, make high-priced coal a luxury. Steam locally is slow. Buying is light and is forcing prices down, and aside from the public utility plants storage is not marked. Country steam is somewhat similar. Oil retains its hold locally and pretty well throughout the St. Louis outlying territory. The Chicago market is the dumping ground for steam sizes that won't sell here.

Coke is scarce and hard to get and there is no promise of West Virginia smokeless or anything from Arkansas. A few cars of anthracite have been shipped, but the tonnage will be small and not a factor. Retail prices in St. Louis are: Carterville lump, egg and nut, $9@$9.50; Mt. Olive, $7.50; Standard, $6.75.

WESTERN KENTUCKY

It is reported that retailers are demanding prepared sizes all the way from Michigan and Wisconsin to Mississippi, and that prices are stronger, there being very little if any prepared at under $5 this week, with the price going as high as $6 in western Kentucky. Steam coal has slipped, as demand is a little off and screenings are in better supply. Some screenings have been reported at $3.25, but $3.50@$3.75 is closer to the market. Minerun is weaker and is quoted at $3.75@$4, with some houses quoting high at $4.25.

Steam coal from here on is not likely to bring such fancy prices, as demand will be largely for lump to fill up domestic consumers. This will result in considerable supplies of screenings and weaker prices, as there is no longer a heavy outside demand for minerun for railroad use, and many industrial concerns are going back to screenings as the price works down.

Eastern Inland

Consumer Waits, Placing Orders at Receding Prices

Car Shortage Is Controlling Factor—Curtailing of Free Coal Prevents Further Decline—Lake Jam Causes Temporary Embargo to Lakes—Seamen's Strike Feared.

The consumer continues to play a waiting game and each order placed last week went at a lower price. Car shortage now controls production and the curtailed amount of free coal offering is all that holds spot prices from a further decline. The only market strength is shown in domestic coal. Steam buying is hand to mouth, industry refusing to compete with Lake buyers for current offerings, in the belief that with the close of navigation the release of this tonnage will bring about an easier market.

A jam of loads has caused temporary embargoes to the Lakes. Dumpings are still the highest in the history of the traffic and while the seamen's strike is not yet felt the trade fears its possible effect at the rush point of the season.

COLUMBUS

Buying is limited to present needs only. With propaganda on the part of the National Chamber of Commerce and other agencies advising the people to hold off orders are placed for what is actually needed.

This applies particularly to the domestic trade and dealers are buying in limited quantities. Retail prices are holding rather firm, around $7.50 for mine run, and $8@$8.75 for lump. Hocking Valley coal. West Virginia splints are selling around $8.75@$10.50, while Pocahontas when obtainable is quoted at $11.

There is a setback in the Lake trade due to the embargo announced as the result of the threatened seamen's strike. There was a fair accumulation of coal around lower ports and with the embargo a good tonnage will be available for commercial purposes. Loadings at the Toledo docks of the H. V. Ry. during the week ended Sept. 17 were 177,891 tons as compared with 184,570 tons the previous week, making a total of 1,797,401 tons for the season.

CLEVELAND

Consumers continue to play their waiting game. So far they have been on the winning side. Prices have been slipping steadily and each new order has been obtained at lower quotations. As for the suggested prices of $5.50@$6.50, which is being talked of as likely to be adopted by the state fuel commissioner as the official fixed price, operators doubt such a scale is possible. If the above mentioned prices are fixed, operators say they will be compelled to sell their coal out of the state by rail, or shut down. The lake trade is paying $4.25@$4.50.

Retail dealers are waiting for anthracite and Pocahontas. The former is extremely scarce and is not expected to be received in any quantity for the rest of the year. The situation with regard to Pocahontas is nearly as bad and little of it is to be had. Car shortages are complicating the situation. Lake shipments are being speeded.

NORTHERN PANHANDLE

Much of the output is going to the Lakes but there is also an excellent demand in Northern markets and a large tonnage is being utilized as railroad fuel. There have been no further developments in the labor situation and it is now largely a question of securing cars and of having coal moved. The B. & O. has been greatly hampered in getting coal to the Lake, owing to poor motive power.

DETROIT

Very little improvement is apparent in the volume of bituminous coal coming into Detroit. This has not been productive of a very active demand, however. Many industrials are showing little interest and are drawing from reserves in the expectation of a lower scale of prices. Retail inquiry is not urgent.

Hocking lump or egg is quoted $6.50, while mine run is $5.25 and slack, $5. Fairmont and Pittsburgh No. 8 are offered at about the same price. West Virginia or Kentucky lump and egg is $7, with mine run or slack at $5.50. Smokeless mine run is $6.50.

Anthracite is arriving in small quantity. Shipments from some of the independent operators are reported to be bringing $12@$14 at the mine. A mine price of $14, with freight of $4.60 added and including a margin for the dealer would make the anthracite cost around $20 to the consumer.

PITTSBURGH

Production is at substantially the same rate as formerly. Car supplies are limited all around, but are much more pronounced on some divisions than on others. The Pennsylvania has declared an embargo, Oct. 2 to 11, on all receipts from connecting roads, to go east, except coal, provisions, etc. Thus there is congestion, but apparently the coal consignees who had priorities are supplied with all the cars they can unload.

The market is a trifle easier. Coal buyers on the whole are showing a strong disposition to limit their purchases to over immediate necessities only. There is evidently a general feeling that prices will be lower later. In particular the opinion is held that ending of the Lake season will make a great difference. Producers and dealers think buyers are placing entirely too much dependence on this factor and that the market will be tighter instead of easier. Prices are shown in the Weekly Review.

EASTERN OHIO

While mines actually worked from 8 to 10 per cent less during the week ended Sept. 23, than in the preceding week, the output was increased 15,000 tons, thus indicating that the mines are getting back into full swing and that the problem is now one of transportation. Tons produced amounted to 134,000 and operations were at the rate of 55 per cent of capacity.

Since the return of the striking shopmen to their jobs improvement is discernable but due to the heavy increase in general traffic railroads are now finding it necessary to invoke temporary embargoes in order that terminals may not become wholly congested. During the week the B. & O. placed an embargo against further shipments of Lake coal to Lorain until the clearance of at least part of the accumulation on hand.

Domestic consumers are manifesting considerably more interest in the matter of filling their bins. However, with smokeless fuel difficult of procurement because of traffic congestion, prices continue strong and retailers are reluctant to store much of this fuel.

Steam demand is negligible and inquiries few. The fuel supply of industry may be said to be on a hand-to-mouth basis. Spot prices have receded further under this status of the market. It is likely that no storing will be attempted until after the close of Lake navigation.

Receipts of bituminous coal at Cleveland during the week ended Sept. 23, were the largest of any week in months. Aggregate receipts were 1,273 cars as compared with 868 cars the preceding week. Industry received 1,026 cars; retail yards, 247.

A new high record has been made in the quantity of cargo coal handled over the lower docks. During September up to the 28th the docks had dumped 75,000 cars, as compared with 38,000 cars last year.

BUFFALO

The situation must remain much as it is for awhile, for the shortage of cars is such that all other influences are slight in comparison. There are but few cars for anybody.

At the same time, consumers are refusing to buy, on the ground that they can bring prices down. They demand $2.50 and look on the reports of even the most candid shipper as a mere effort to sell coal. Consumers who have coal on hand are willing to use it rather than buy at present prices. If this state of things does not produce a panic before long it will be only because conditions change for the better soon. The country is bound to see a car service for awhile that is largely confined to the moving of perishable freight.

Prices are no more uniform than they were. Some shippers who have been able to hold their customers up to the real needs of the situation can sell coal above $6, but possibly as much is sold at $4 and occasionally less. A good average is $5.25 for gas lump, $5 for Pittsburgh steam lump, $4.25@$4.75 for all mine run, with slack usually a little higher than mine run.

Northwest

Heavy Volume of Coal Reaches Northern Docks

September Cargoes Exceed Best Previous Month of 1922—Some Rail Anthracite Is Welcomed—Looming Lake Strike Is Cause for Worry.

The upper ports are jubilant for the time being. Soft coal receipts are heavier than at any time during the present shipping season which means that enough bituminous coal is arriving to remove all danger of immediate distress. This region is counting on—and getting, to a certain extent—a good deal of rail coal from Illinois and Indiana. So the principal thing that worries it now is a strike of boat crews. Only sixty days of the shipping season remain.

The first hard coal of the fall has reached Milwaukee—by rail, not by boat. This coal is selling at the old retail prices while cities further north are talking about $22 rail hard coal—if it ever reaches them. The coal men at the ports are struggling to make up their minds whether to sign long contracts at present prices.

MINNEAPOLIS

After prolonged travail over the coal supply for the Northwest, there appears to be some real action. The month of September sees around 1,000,000 tons of coal delivered at the Lake Superior docks,—all soft coal. But some hard coal is now reported en route. The dumpings at the Lake Erie ports for the Northwest promise an equal or better showing for October, if the lake seamen's strike does not block things. Altogether, the coal supply situation looks the best that it has this season.

It is well established that barring transportation troubles the Northwest can get all the coal—at least soft coal—that it is willing to pay for. To get it, the current price at the mines must be paid. If the market or going price is above the "fair price" figure, it is a certainty that the coal will go to those who will pay the ruling price.

So dock men and jobbers generally are working to determine how much coal they will be safe in buying at the price now ruling, for it is felt that just as soon as the rush is over for the immediate needs for coal, there will be an easing of prices. But the dock season ends in less than eight weeks. If, in the course of five or six weeks, prices ease off, the owners of coal stored on the docks, bought at higher prices, will have to absorb the decrease.

Much less than the usual amount of hard coal is expected by Lake. It is possible that there may be some brought up all-rail, but it might have to retail for $22@$23 as against the old price of $17.50@$18.

MILWAUKEE

The arrival by rail of the first anthracite of the season was the outstanding feature of the coal market last week. The consignment consisted of about 1,000 tons of chestnut. It is being retailed at $16, with an extra charge of 75c. for carrying in. Another shipment of 119 cars is in transit.

No anthracite has been received by Lake as yet though an allotment of 2,100,000 tons has been made to Great Lakes ports. A conference is being held in Washington to determine Wisconsin's share, which is expected to be about 1,000,000 tons.

The general coal situation has been considerably brightened by liberal receipts of coal, forty-eight cargoes aggregating 377,099 tons having docked in September up to the 26th. It is safe to predict that September receipts will aggregate at least 425.000 tons. Up to this time June has held the record for receipts for the season, with 303,401 tons. Illinois and Indiana coal is coming in freely by rail.

The City of Milwaukee has absolved all coal contractors from the thermal unit requirement of their contracts so long as a federal pooling order remains in effect. The city contemplates buying its own coal in the Eastern market in future.

DULUTH

Approximately 432 000 tons of soft coal arrived here last week in fifty-four cargoes. Thirty-four cargoes are reported en route, and a general air of optimism prevails. Shipments of anthracite have not arrived, but it is thought that another week will see some hard coal in the harbor. When anthracite does arrive it is planned to apportion it throughout the territory in the proportion of orders booked. This will mean that Duluth dealers will not have first call on all of it.

Reports have it that a large amount of smokeless has been ordered by householders for furnace use. This has been brought about by the sudden cold weather, which foretells the advent of winter. The price on this is around $12. The amounts put in in each case have only been enough to tide the consumer over until the period when it is thought hard coal will be available. Briquets are quoted at $10.50 and coke at $12.

The I. C. C. has warned that demurrage will be charged on cars here after 48 hours. There has been no shortage of cars so far but it is feared that there would be if some of the present practices were permitted to continue. The demurrage charge has been put on as a preventative measure.

Independent mining companies on the Iron Range are starting operations in a way that shows more promise than at any time for the past year. They seem to be confident that there will be no shortage, and are laying plans to mine throughout the winter.

New England

Well Stocked in Advance. Consumers Not Buying Now

Price Trend Confirms Disinclination to Buy Now for January Use—Congestion at Railroad Wharves Fails to Strengthen Spot Market—Oversupply at Roads and British Receipts Softening Factors.

There continues no improvement in the current market. Buyers have so generally anticipated their wants during the summer that with few exceptions they are well stocked for months to come. They are still disinclined to make purchases that will not be needed until after Jan. 1, and price development from week to week only confirm their attitude

High-grade Pocahontas and New River have been offered down to $9.50 per gross ton, on cars Boston, and notwithstanding congestion at railroad wharves there is no sign of firmness in the spot market. Hampton Roads shippers now have an oversupply, the all-rail shippers are actively seeking business, and continued receipts of British coal are further softening market factors.

At Hampton Roads the deficit of a month ago has been changed now into a surplus of upward of 100,000 tons, coal in excess of boats waiting, and while we have heard no quotations at less than $7.85 f.o.b. vessel, it would not be surprising to see a further drop. There are still rumors of short car supply on the Southern roads, but orders are none too plentiful, and it is hard to see how there can be any advance in quotations for the present.

Grades from central Pennsylvania are being freely offered, and while movement was tolerably good during September there is beginning to be a slight falling off in the quantity coming through the Hudson River gateways. Prices have also eased materially, and there are several groups of mines that will soon be obliged to curtail production. The volume via the Philadelphia and New York ports is still light, the general situation favoring movement from Hampton Roads.

Cargoes of British coal arrive from day to day, and from present indications will continue arriving until well after Oct. 15. There has been slightly less delay in handling these, due partly to fewer arrivals and partly to the number of private docks that have been utilized. Stocks to say, buyers are still being canvassed for new purchases abroad, both coal and freights having been quoted recently at materially less figures

Cincinnati Gateway

Situation Made Obscure by Baffling Cross Currents

Second Rate of Prices for Smokeless—Weakness in Steam Shown by Slowing—Lake Buying Causes an Increase in Strike Imprints—Barge Movement on Ohio Gains.

Cross-currents without leaving any clear indication of their significance have been noticeable here for the past week. The smokeless situation is badly muddled. Three or four different sets of prices prevail. Steam coal has shown a greater tendency toward weakness and has dropped like Gas and byproduct, while suffering a slight decline, is still in demand.

Lake buying practically ceased with the season forcing the issue to a strike. Railroads are badly demoralized. A better volume is coming down the Ohio by barge than has been noted for months. The supply of supplies at the mines has dwindled down to almost the zero point with a large number of loads lying on all of the converging coal roads still waiting movement to the gateway.

CINCINNATI

More retail buyers are on the market than for several months. They want coal for immediate shipment but are prepared to buy only from hand to mouth unless contracts that are within reason can be secured into. Little lump was to be had below $6 and from that the price ranged up to $7.50 for choice New River, Pocahontas, Thacker and Hazard. The market is not overburdened with offerings. The make of block is still so small that it is worth the price of mine run.

There are three prices on smokeless. Some companies have their October prices out, showing the figures that Hocking did, plus commission. Others have advanced this $1, plus commission, making the values $6.21 for prepared, $5.94 for mine run and $5.94 for screenings. Both of these prices are for loaded cars—the coal to be delivered when the mines catch up with back business. They hope is a higher spot price for quick delivery.

There has been little change in the coal situation except that dealers are refusing to take on any new business until that can get caught up.

HIGH-VOLATILE FIELDS

Kanawha

The region was greatly handicapped during the week ended Sept. 23 by an embargo on car supply. However, agreement was reached between the C. & O. and striking shopmen and it seemed probable that ultimately there would be a better supply of cars but improvement will be necessarily slow. Little coal is finding its way eastward owing to the poor demand at Tidewater. Much of the output is being shipped to the Lakes, about 15 per cent of the coal so destined moving under service orders.

Logan and Thacker

Logan mines are not finding it possible to produce more than 40 per cent of capacity owing to a limited car supply, but conditions are being gradually improved. Much coal is being shipped to Lake points where congestion is retarding the process of dumping. There is a strong demand for egg and lump but mines as a rule are not preparing much coal owing to the continued heavy demand for mine run which commands a price of about $5 a ton.

Kenova - Thacker mines are also hampered by poor transportation facilities, limiting the region to about 60 per cent of capacity. Much of the coal is going to the Lakes and to Inland West markets, with the railroads also securing a generous share. Inquiries are numerous for prepared grades for which high prices are being offered.

Northeastern Kentucky

Although the potential capacity of the field has been built up to 320,000 tons not more than 80,000 tons are being produced. There is an ample market for all the coal which can be produced at prices ranging $5.50@$6. Buyers are offering as high as $7.50 for prepared grades, but there is little egg or lump to be had.

LOW-VOLATILE FIELDS

New River and the Gulf

Although an agreement has been reached between the C. & O. and its striking shopmen, not enough men are at work to materially change conditions and mines in the New River region are struggling along with a very meager supply, not averaging over 30 per cent. Western prices are holding up but there is little equipment available for these shipments. With so much more coal going to Tidewater, the price is softer there. There is a strong demand for prepared grades.

Gulf mines also are laboring under a transportation handicap and the output is not averaging more than 40 per cent of capacity.

Pocahontas and Tug River

Although more coal is being produced proportionately in the Pocahontas field yet the output is not over 55 per cent of capacity. The trouble is due to accumulation of loads on the N. & W. Tidewater and other Eastern shipments are heavier. There is a particularly strong demand for prepared grades. Western shipments are partly embargoed.

With car supply not exceeding 30 per cent, Tug River mines are not producing near their normal tonnage. Under existing conditions it is proving to be rather a difficult matter to get coal through to Western markets. There is a strong demand, however, for all grades. Most companies are confining themselves to the production of mine run, which ranges $4.50@$5.50 a ton.

Coke

CONNELLSVILLE

Complaint of car shortages is louder and more widespread. Apparently the placements are fully as large as formerly, probably somewhat larger, but with greater working forces the operators feel the restrictive influence more keenly. The supplies are also very irregular, causing irregular drawing of ovens.

There are still thousands of "strikers" in the region but the strike as a general industrial factor was eliminated some time ago, the region's production being entirely a matter of car supply. Many plants are still closed on account of strike, but if these plants were to attempt resuming that would not increase the total car supply of the region.

The market is stiffer, with prices on the whole a shade higher. Demand of retail dealers for furnace coke is widespread and mounts up to quite a tonnage. Small lots are taken, such as would hardly interest a blast furnace, but in the aggregate this competition is a factor in making it still more difficult for any furnace to pick up enough coke to base an operation upon. Foundry coke is in somewhat wider demand, with offerings quite limited. The market is quotable at $11.50@$12.50 for furnace coke and $13.50@$14.50 for foundry.

The *Courier* reports production during the week ended Sept. 23 at 80,950 tons by the furnace ovens, and 24,390 tons by the merchant ovens, making a total of 105,340 tons, an increase of 5,550 tons.

UNIONTOWN

Inability of railroads to provide cars is now the only factor curtailing production. The H. C. Frick Coke Co., largest employer of labor in the region, has increased production to 80 per cent of capacity and could further add to the output were more cars made available.

Strange as it may seem with the known coal shortage the market softened last week and operators and brokers are not finding it any too easy to dispose of tonnage. The market is declared especially soft on so-called "line shipments" and operators report that the Great Lakes, destination of much tonnage in the past few weeks, is jammed and cancellations are in order. Most sales were closed this week upon a basis of $3.75@$4.

Defections are occurring daily in the ranks of the strikers but the drift back to the mines is yet lacking substantial proportions. Operators announce that practically all strikers have been evicted and that plants are being reorganized upon a permanent basis.

BUFFALO

The supply is very light and demand is only moderate. Jobbers quote 72-hr. Connellsville foundry at $12.50@$13; 48-hr. furnace, $11.50@$12. Add to this $3.28 to cover freight.

News Items From Field and Trade

ALABAMA

Announcement has been made of the appointment of **Joseph Youmans** as general manager of the Warrior River Service of the Mississippi-Warrior barge lines. Mr. Youmans will have complete jurisdiction over this branch of the service. He assumed his duties Oct. 1, succeeding **Henry T. DeBardeleben**, who resigned some time ago.

The Alabama Fuel & Iron Co. has provided electric safety lamps for its miners employed at its Acmar and Margaret operations in St. Clair County in order to minimize the possibility of gas explosions at these operations.

COLORADO

The Rocky Mountain News reports that **Capt. James I. Smith**, its mining editor, and **Harry F. Nash**, general manager of the Oakdale Coal Co., both of Denver, have been appointed by Gov. Oliver H. Shoup and Mayor Dewey C. Bailey of Denver as their delegates to the meeting of the American Mining Congress to be held in Cleveland early in October.

The Turner mine, near Walsenburg, until recently under lease to the **Turner Coal Co.**, has been taken over by the lessors, **The Calumet Fuel Co.**, and will henceforth be operated by them as their Calumet mine; the Calumet company is a part of the **Utah Fuel Co.** of Salt Lake City. Frank Cameron, vice-president and general manager; C. B. Hitchkiss, assistant general manager, and A. C. Watts, chief engineer, have returned to Salt Lake City after a few days spent at Calumet mine.

I. T. Robinson has resigned his position with the Danson & White interests in Routt County, and has returned to Billings, Mont.

ILLINOIS

R. W. Arms, of the department of mining engineering of the University of Illinois, Urbana, will leave the university Nov. 1 and join the staff of Robert & Shaefer, contracting engineers. He will have charge of the department of dry concentration for this firm, directing a new process for dry cleaning of coal. He was been at the university since 1917.

The Shuler Coal Co. has been incorporated to conduct coal-mining operations on several thousand acres of land in Henry and Mercer counties. Charles Shuler of Davenport, Iowa, is the president. Hugh Shuler, of Des Moines, and Jacob Scheib of Rapid City, Iowa, are the other stockholders.

Five men were killed and two injured Friday, Sept. 29, when an explosion occurred in the Lake Creek mine of the **Consolidated Coal Co.**, near Johnston City. Three of the dead were surveyors and the other two were miners who were near the room in which the explosion occurred. It is unofficially reported that two miners smoking pipes were tamping a shot in a room, while surveyors were working there. A spark from one of the pipes is said to have fallen in a powder keg, causing the explosion. An investigation was to have been completed early this week. The five dead are Paul Best, Lee Bailey, and Harry Shaw, all surveyors, of Collinsville, Ill., and Marcus Kalowlich and Pete Castrola, miners, of Johnston City.

INDIANA

The Dana Coal Mining Co. of Terre Haute and the **Metropolitan Fuel Co.** of Indianapolis were sold at public auction recently. **George Hilgemeier**, a well-known retail dealer of Indianapolis and a member of the firm of F. Hilgemeier & Bros., purchased the mining company for $25,000. **Charles W. Craig**, also of Indianapolis, bought the fuel concern for $20,100. Receivers were named for both companies last year.

John Stark, general superintendent for the Bogle Coal Co. and two workmen were badly burned by a gas explosion recently at Bogle Mine No. 1 near Clinton.

KENTUCKY

Max Milligan, who has been in charge of the Atlanta office of the **Harlan Coal Co.**, has come to Louisville as general sales manager of the company's Louisville office. **Elmore Manning**, who has been acting as general sales manager, will take charge of the Cincinnati or northern office as northern sales manager.

Mayor Quin of Louisville has named five delegates to the 25th annual convention of the American Mining Conference and National Exposition of Mining and Mining Equipment to be held at Cleveland, Oct. 9 to 14. The men named are **Kenneth U. Meguire**, of the Harlan Coal Co., **R. C. Tway**, of the Tway Coal Mining Co., **Fred M. Sackett**, of the Speed Mines; **C. E. Reed**, of the West Kentucky Coal Bureau, and **A. G. Butler**, president of the Louisville Engineers' & Architects' club.

MASSACHUSETTS

The Webber Coal Co., Boston, Mass., was recently established by Joseph Miller, to engage in the retail coal business.

The Boston Elevated Ry. Co. has commenced work on the construction of an elevated coal pocket, to cost approximately $6,000. The pocket will have the latest type equipment.

MINNESOTA

The mayor's fuel committee in Minneapolis urges the quick release of coal-carrying cars and any other action that may contribute to increased transportation efficiency as the best way to aid the coal situation. The committee anticipates no reduction in hard coal prices and sees but little hope for reductions in soft coal. It does not expect a normal supply of anthracite to reach the city.

NEW MEXICO

The Weaver mine tipple of the **Gallup-American Coal Co.**, at Gallup, was recently completely destroyed by fire. The company has not yet decided on future plans.

The Grenko Coal Co. has just installed the first low-vein shortwall to be used in the Gallup field. The machine is successfully cutting in a 26-in. vein.

NEW YORK

Bids were received by the **Board of Purchase of the City of New York** on Sept. 27 for supplying 93,082 tons for anthracite and bituminous coal to fifteen city departments. Bids were received from fifteen concerns. Bids received on buckwheat delivered ranged $6.43@$6.47 per ton; on rice, $5.18@$6.74; on barley $5.41@$5.75. The bid on 3,000 tons of buck, $3, delivered at the Hart's Island Reformatory was $4.42 on 27,500 tons of buck, 1, at the St. George Staten Island Ferry Coal Pockets for the ferry boats was $6.43.

OHIO

The Atomized Coal Co. has been chartered with a capital of $10,000. Incorporators are Russell Errett, John P. Errett, F. W. Geiger and F. P. Gloeb.

The Uhrig Coal Co., Nelsonville, has been chartered with a capital of $15,000 to mine and sell coal in the Hocking Valley field by D. H. Armstrong, A. H. Schory, R. W. Maupin, O. P. Amann and P. R. Davis.

PENNSYLVANIA

The Lehigh Valley Coal Co. has filed an appeal in the Dauphin County Court from the tax levied against it under the anthracite tax law of 1921. The sum of $213,[illegible] is involved. The company has not only raised constitutional questions and attacked the system of the operation of the law but has protested against the actual valuation placed on the coal prepared for market. The company claims the valuation fixed is excessive and has raised the question of the sale of a considerable portion of its product in other states.

A new high mark in the payment of corporation taxes in Wilkes-Barre has been reached by the **Lehigh & Wilkes-Barre Coal Co.**, who will pay $224,775.48 in 1922 school taxes. **The Lehigh Valley Coal Co.** has paid school taxes amounting to $21,000.

Every day is moving day in Windber and to date more than 1,000 families have moved out of the district to the organized coal fields. United Mine Workers are making an effort to hold the men in the field and to continue their fight for recognition of the union but without avail. Eviction notices have been served on forty-five families at Cairnbrook by the **Loyalhanna Coal Co.**, and the heads of the families have requested the union to move them to other fields.

Seventy-five coke ovens which had been idle for a year and a half have been fired at the plant of the **Saxman Coal Co.**, at Peanut. At the Duquesne mine of the **Brudenville Coal & Coke Co.**, fifty ovens were fired recently.

WEST VIRGINIA

R. Dawson Hall addressed the Rotary Club at Charleston on Sept. 22 at one of its weekly sessions. His subject was "Some Misconceptions as to the Bituminous Coal Industry."

In the first serious accident at the Glen Rogers plant of the **Raleigh-Wyoming Coal Co.**, in Wyoming County, five men were crushed and killed on Sept. 23 when a skip, loaded with stone, in the 700 ft. shaft fell upon the men at work in a sump below the coal level. A sixth miner, who escaped death saw his comrades killed. The dead are: John Jasparac of Calumet, Mich., Steven Marlanko, of Mohawk, Mich., W. C. Vaden of Ironton, Va.; Lewis Cowlings of Baden, Ala., and David Johnson.

C. A. Hammond has been appointed resident manager of the Tidlestey Coal Co., of Cincinnati, at Williamson, and will be the company's buyer in the Thacker field, having his headquarters at Williamson.

P. A. Grady, who has been in the employ of the Sullivan interests for some time as mine inspector, has severed his connection and has accepted the position of general superintendent for the [illegible] interests controlled by A. J. King, of Huntington.

The Dominion Fuel Corporation of Morgantown has been organized for the purpose of engaging in the coal business in Monongalia County, this concern having an authorized capital stock of $[illegible]. It was organized by Frank Tropf, Margaret Tropf, Frank L. Bowman, Pearl S. Bowman and Anna M. Tropf, of Morgantown.

WASHINGTON, D. C.

Donald B. Conn of Minneapolis, has been appointed manager of the Public Relations Section, Car Service Division of the American Railway Association effective Oct. 1. He takes the place made vacant by the resignation of **A. G. Guthelm**, who left to practice law. Among Mr. Conn's duties will be those of making special studies from time to time, of such subjects as may require special attention on the part of the Car Service Division such as the movement of coal, grain, or any other of the important and seasonal commodities. Mr. Conn recently served as assistant to Conrad E. Spens, federal fuel distributor.

R. H. Sargent, A. A. Baker and J. R. Mertie, Jr., of the United States Geological Survey, have returned after the season's field work in Alaska.

S. B. Stone, of the staff of the Bureau of Mines, will have charge of the press relations division of the federal fuel distributor's organization.

A revised list of the various chapters of the **Joseph A. Holmes Safety Association**, together with the names and addresses of each secretary, is as follows: Delta safety chapter, Clyde DeWitt, Delta, Mo.; Newcastle chapter, J. P. Jones, Newcastle, Ala.; Dante No. 1 chapter, Orbital R. E. Hall, Dante, Va.; Dante No. 2 chapter, [illegible]; T. W. Wagner, Dante, Va.; Wilder No. 1 chapter, [illegible]; Wilder, Va.; Pocahontas Mines chapter, H. Crouch, Dante, Va.; Coal Valley Mines chapter, W. H. Shell, Lower Moon Run, Va.; Cabin Creek chapter, Charles Smith, Cabin Creek, W. Va.; South Fork chapter, James Graham, South Fork, Pa.; Cherry Consolidated Local Union chapter, H. J. Schlappich, Cherry, Ill.; Lancaster chapter, Charles Lees, Lehigh Valley, Pa.; Peasley chapter, Charles F. Sommers, Peasley, Pa.; Pilot, Virginia chapter, W. T. Lucas, Pilot, Va.; Duncan chapter, Jesse Hargrave, Duncan, Va.; Clearfield chapter, J. Frank Taylor, Clearfield, Pa.; Penn Furnace chapter, H. F. Coulter, Penn, Pa.; Mapple chapter, Robert Moore, Madera, Clearfield County, Pa.; [illegible] chapter, George Pinto, [illegible], Pa.; Mark Simmons chapter, Mark Simmons, Monson, Pa.

Traffic News

Publications Received

Annual Report of Coal Mine Inspection and Mine Rescue Departments. 1921. 60 pp. John D. Cunning, Commissioner of Labor and Mines, Montreal. Mine Inspector for the Province of Quebec. Pp. 101; 8 x 9 in. Illustrated.

Geology and Mineral Resources of the La Harpe and Good Hope Quadrangles by F. H. Kay and M. L. Mabel. Bull. of Engineering and Scientific Ser. of the Illinois Geological Survey Co-operating. 60 pp. Reprint from Bulletin 41. Pp. 7 x 10 in. Illus.

Geology and Mineral Resources of the Avon and Canton Quadrangles by T. E. Savage, Chief, Div. of Geology, and Edward Sauer, Geologist, Illinois Geological Survey, Urbana, Ill. 1921. 46 pp. Reprint from Bulletin 41. Pp. 7 x 10 in. Illus.

Second Annual Report of the Minerals and Industrial Research Council of Alberta. Can. Pp. 44; 7 x 10 in. Illus.

Annual Report of the Mines Coal Mine Inspectors of Wyoming [illegible] pp. 1 and 2 of the Fifth Meeting [illegible] 31, 1921, by Frank Hadsell and Percy E. Henderson. Pp. [illegible]; 6 x 9 in.

Geology and Mineral Resources of the Rockwood Quadrangle by T. E. Savage, Chief, Div. of Geology, and Edward Sauer, Geologist, Illinois Geological Survey, Urbana, Ill. 1921. 46 pp. Reprint from Bulletin 41. Pp. 7 x 10 in. Illus.

Further Investigations of Illinois Fire Clays by C. W. Parmelee and C. H. Cady. Univ. of Illinois and Illinois Geological Survey, Urbana, Ill. 1921. 46 pp. Reprint from Bulletin 41. Pp. 7 x 10 in. Illus.

Failure by the Spontaneous Combustion of Coal. By C. P. Hall, Bureau of Mines, Washington, D. C. Technical paper 311. Pp. 27; 6 x 9 in. Illustrated. Describes the mine fire investigations of coal at time of explosion.

Application of the Geophone to Mining Operations. By Alva Ellsworth Reeves, Bureau of Mines, Washington, D. C. Technical paper [illegible]. Pp. 27; 6 x 9 in. Illustrated. Describes the use of the instrument in mining, especially in regard to mine-rescue and recovery.

Association Activities

National Coal Association

The Government Relations Committee of the National Coal Association is composed of the following, appointed June 1, 1922: Bradley, J. G. (chairman), president, Elk River Coal & Lumber Co., Dundon, W. Va. Barker, G. H., vice-president, Maynard Coal Co., Columbus. Benham, Walter, treasurer, Pacific Coast Co., 50 Church Street, New York City. Benson, C. E., president, Clearfield Coal Corp., New York City. Bevan, J. C., president, Quemahoning Creek Coal Co., Somerset, Pa. Cunningham, W. H., president, Cunningham, Miller & Eccles, Huntington, W. Va. Gallagher, Michael, general manager, M. A. Hanna & Co., Cleveland. Heiner, Moroni, vice-president, U. S. Fuel Co., Salt Lake City, Utah. Hoge, W. H., president, Victor-American Fuel Co., Denver. Mahan, E. C., president, Southern Coal & Coke Co., Knoxville, Tenn. Mahood, A. J., vice-president, Chicago, Wilmington & Franklin Coal Co., Chicago. Megrath, W. F., president, Roundup Coal Mining Co., W. O. W. Bldg., Omaha. Quealy, T. J., president, Gunn-Quealy Coal Co., Kemmerer, Wyo. Taylor, H. N., vice-president, Central Coal & Coke Co., Kansas City, Mo. Yerkes, S. L., vice-president, Offner Coal Sales Agency, Birmingham, Ala. Davis, T. R., president, Island Creek Coal Co., New York City. Brennen, Everett, president, West Virginia Coal & Coke Co., Elkins, W. Va. Field, W. K., president, Pittsburgh Coal Co., Pittsburgh. Huff, Julian L., president, Latrobe Connellsville Coal & Coke Co., Philadelphia. Ord, W. D., president, Empire Coal & Coke Co., Landgraff, W. Va. Shillingford, G. Webb, secretary, Empire Coal Mining Co., Clearfield, Pa. Twas, R. C., president, R. C. Tway Coal Co., Louisville, Ky. Wright, F. P., general manager, Crescent Coal Co., Bevier, Ky.

The Foreign Trade Committee of the association, appointed as of June 1, 1922, is composed of the following members: Wilmore, F. W. (chairman), vice-president, Consolidation Coal Co., New York City. Benson, C. E., president, Clinchfield Coal Corp., New York City. Brophy, J. S., president and general manager, Piedmont & Georges Creek Coal Co., Frostburg, Md. Cunningham, W. H., president, Cunningham, Miller & Eccles, Huntington, W. Va. Hoge, Moroni, vice-president, U. S. Fuel Co., Salt Lake City, Utah. Hutchinson, S. [illegible], president, Westmoreland Coal Co., Philadelphia. Watkins, T. H., president, Pennsylvania Coal & Coke Corp., New York City. Moore, W. C., president, Atlantic Bank & Norman Birmingham, Ala. Cannon, Lemuel, president, Castner, Curran & Bullitt, Inc., New York City. Calloway, A. W., president, Jewett Coal & Coke Co., Philadelphia. Copeland, G. H., president, New River Coal Co., Charleston, W. Va. Coleman, C. D., Tom's Creek Coal Mining Co., Philadelphia, Pa. Dexter, Geo. H., president, Dexter & Carpenter, Inc., New York City. Farrell, T. F., general vice-president, Pocahontas Fuel Co., Inc., New York City. Gross, R. H., president, New River Co. & Consolidated Smokeless Coal Co., Boston. Hood, [illegible], general manager, Houston Coal Co., Houston, Texas. Jacobs, Charles, vice-president, Widener & Kemmerer, Philadelphia. Keith, E. H., vice-president, Stonega Coke & Coal Co., Philadelphia. Puckett, [illegible], Clinch Valley Consolidated Coal Co., Tazewell, Va.

Recent Patents

Pulverized-Fuel Carburetor and Feeder. William H. Wheeler, Shelbyville, Ill., assignor to American Mechanical Fuel Co., Shelbyville, Ill. 1,414,034. July 27, 1922. Filed Oct. 3, 1919; serial No. 414,926.

Flotation Apparatus. H. C. Colburn, Leal K. A. Colburn, Denver, Col., assignors to The Colburn Flotation & Engineering Co., Denver. 1,414,344. May 9, 1922. Filed Jan. 2, 1919; serial No. 269,517.

Loading Machine. Wm. Schluter, Jr., Bellaire, Ohio, assignor of one-third to C. H. Duckworth and one-third to G. W. Duckworth, Bellaire. 1,414,458. May 2, 1922. Filed March 20, 1921; serial No. 454,724.

Rock Drill. Wm. A. Smith, Phillipsburg, N. J., assignor to the Ingersoll-Rand Co., Jersey City, N. J. 1,414,497. May 16, 1922. Filed Aug. 15, 1920; serial No. 403,353.

Mine-Loading Machine. James P. Mosier, St. Francois and Ernest R. Campbell, Desloge, Mo., assignors to the National Lead Co., New York City. 1,416,050. May 16, 1922. Filed March 15, 1920; serial No. 366,168.

Coal Chute. Henry Steinbach, Scranton, Pa., assignor to John J. Steinbach, Scranton. 1,416,073. May 16, 1922. Filed Nov. 5, 1919; serial No. 335,967.

Utilizing Coal Slimes. Heinrich Brune and Heinz Horst, Frankfort-on-the-Main, Germany. 1,416,546. May 16, 1922. Filed June 30, 1920; serial No. 393,212.

Operating Mechanism for Automatic Stokers. E. B. Bryant, Philadelphia, Pa., assignor to the American Engineering Co., Philadelphia. 1,416,547. May 16, 1922. Filed July 11, 1919; serial No. 310,237.

Mining and Quarrying Machine. Fred Oldroyd, Cincinnati, Ohio. 1,416,742. May 23, 1922. Filed June 16, 1921; serial No. 478,090.

Check-Holder for Mine Cars. James E. Whewell and Harley I. Yoder, Hollsopple, Pa. 1,417,006. May 23, 1922. Filed Dec. 14, 1920; serial No. 430,811.

Mine Car. Walter A. Dorsey, Columbus, Ohio, assignor to The Bonney-Floyd Co., Columbus. 1,417,043. May 23, 1922. Filed March 6, 1918; serial No. 220,792. Renewed Aug. 11, 1921; serial 491,560.

Mine-Car Wheel. Charley Malt, Irwin, Pa. 1,417,085. May 23, 1922. Filed June 1, 1921; serial No. 474,306.

Mine Car. Emmett L. Bailey, Williamson, W. Va., assignor of one-half to Robert L. Bailey, Williamson. 1,417,131. May 23, 1922. Filed July 24, 1919; serial No. 312,887.

Mining Machine. Frank Cartlidge, Claremont, N. H., assignor to Sullivan Machinery Co., Chicago. 1,417,716. May 30, 1922. Filed June 24, 1918; serial No. 241,723.

Mining Car. Wm. Kirchman, Van Buren, Ark., assignor to The Engineering Works, Van Buren. 1,417,834. May 30, 1922. Filed April 19, 1921; serial No. 462,632. Renewed April 18, 1922; serial No. 555,234.

Coming Meetings

Kentucky Mining Institute will hold its annual meeting Nov. 3 and 4 at Seeback Hotel, Louisville, Ky. Secretary, Elizabeth C. Rogers, Lexington, Ky.

The National Industrial Traffic League will hold its annual meeting Nov. 15 and 16 at the Hotel Commodore, New York City. Secretary, J. H. Beek, Chicago, Ill.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

American Mining Congress. Twenty-fifth annual convention and exposition of mines and mine equipment will be held at Public Hall, Cleveland, Ohio, Oct. 9-14. Executive offices, the Hollenden Hotel; E. C. Porter, convention manager.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Gas Association will hold its annual meeting Oct. 23-28 at Atlantic City, N. J. Secretary-Manager Oscar H. Fogg, 130 East 15th Street, New York City.

Canadian Institute of Mining and Metallurgy, annual Western meeting Nov. 15-17, at Vancouver, B. C. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Can.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, *Editor*

Volume 22 NEW YORK, THURSDAY, OCTOBER 12, 1922 Number 15

The Railroads and Coal

ADEQUATE coal for this winter in this country depends on the railroads. The deficiency in anthracite cannot be made up by calling on the mines for extraordinary production, for these mines have no surplus capacity and are short of mine labor. But soft coal can and must be substituted for hard coal. The soft coal that will be required for this purpose and to fill empty bins and stockpiles, supply the Northwest and meet current requirements may be had and still more if the railroads are able to supply the empty cars, haul them to market when loaded and return the empties.

The President, Secretary Hoover and Federal Fuel Distributor Spens have joined in saying that transportation is the key to the coal situation this winter. The shortage, whatever it may be, is due to the coal strike, for which the railroads were in no way responsible, and to the rail strike, for which the coal miner may have had a degree of responsibility. The fact remains that, whoever may be at fault for the present lack of coal, the limitation of transportation is the only bar to recovery of that lack.

What right has the public or the coal industry to ask that the railroads give coal preference, to set aside other and more profitable freight in favor of coal? If the question be turned only on the basis of a fair proportion of annual transportation, the coal industry is warranted in demanding unusual preference at this time. In the first nine months of this year the total loading of freight was some 2,000,000 cars in excess of the same period of last year. Grain and grain products, live stock, coke, forest products and ore all show small increases, and loadings of merchandise and miscellaneous freight were nearly three million cars in excess of last year. The only commodity shown by the figures of the American Railway Association to have declined is coal, which stands a million cars below 1921.

While portions of the coal industry were at a standstill other industries were at work. In the first nine months of 1920 and 1921 coal cars represented 20.3 and 21.7 per cent respectively of the total; this year but 15 per cent. The ratios for 1920 and 1921 may be taken to show the relative proportions of total business sustained by coal when things are in balance. When one-fifth of the cars of freight loaded contain coal, then industry is marching ahead, four abreast. Coal stumbled this year; it is not in step with the rest of the country. Business cannot proceed normally until coal catches up in the procession.

One way to make up the arrears is to let the railroad business proceed as usual, coal getting what transportation it can and coal-consuming industry bidding for the available supply, shutting down when it cannot pay the price—a disorderly and unnecessary method. Or the railroads can hold back the other marchers, giving to coal the preference that will bring its percentage of the whole from the present 15 to the needed and normal 20. This is the sensible, orderly process—the one that President Harding has urged on the railway managers.

If the carriers will conscientiously divert motive power and cars to the movement of coal they can raise the level of production to 12,000,000 tons per week of bituminous coal and possibly 2,000,000 tons of anthracite. Then, if the commercial interests will call off their buyers' strike and take the extra tonnage into storage, the situation can be tranquillized.

Unsatisfied demand can be impounded for a time, but eventually the dam will break. The machinery of the Fuel Control Act will be found insufficient to handle the flood when the dam breaks. From now forward the responsibility is the railroads'.

Ohio Tries Price Fixing

PRICE fixing by law is a doubtful enterprise at best and full of possibilities for failure; but Ohio is attempting it. The ambition is laudable enough, but there is an insurmountable difficulty. The state can fix mine prices on Ohio coal but it cannot interfere if Ohio producers choose to sell all their coal outside the state, or in whatever available market pays best, leaving Ohio dealers to buy outside coal wherever they can at whatever prices prevail. The fixing of retail prices within the state would be no material protection of the public in a case such as this, for if they do not allow a fair margin above mine price plus freight and cost of handling, then the dealer simply withdraws, leaving the Ohio public without coal.

Naturally there are substantial and conscientious producers in Ohio who will consider it good business to look after the most urgent needs of their old reliable trade in Ohio, whatever the prices, but this will not be meeting the coal demands of Ohio. That state may suffer more by its own weapon of protection than it would have suffered had it not armed. Indiana made a fruitless effort of the same sort in 1920.

Encouraging Signs at Cleveland

NO ONE need be surprised that immediately after concluding arrangements at Cleveland for negotiations for a new wage contract next year, the United Mine Workers let it be known that they would demand a continuation of the present scale for two years from next April, the six-hour day, and five-day week. To maintain their prestige it is essential for the officers of the union to convey to their constituents that their interests have not been forgotten, that there is something to look forward to next time.

The union that met the operators in Cleveland last week is the same that won the strike this summer; it has had no change of heart. The provisions in its constitution demanding the "full social value" of its labor and the six-hour day and five-day week have not been

cancelled. The union is no less militant for its victory.

Encouragement is found, however, in the fact that at Cleveland last week the operators came in from the crossroads and bypaths to a common avenue of approach to the problem of meeting the miners. They were able and did agree to do certain things on which a few weeks ago it seemed to many they would never reach common ground. The most important of all is that they have almost to a man met and carried forward the spirit of the original Cleveland agreement. The simple fact of having started the processes of future wage negotiations on what now appears to be a sounder basis than ever before is a matter for congratulation all around. The militancy of the miners is a part of their usual play. The real test of their good faith will come when actual negotiations are undertaken.

How Shall the Public Be Protected?

IN THE current issue of the *Atlantic Monthly*, Director Smith of the Geological Survey, writing to the thinking consumer on "What Coal Means to Us," says: "It is society that gives value to coal and opportunity to the coal industry." At our invitation he expanded that thought in an article in Coal Age last week (Oct. 5, page 525), in which he charged that the coal operators have been blind in one particular—"They have failed to see their duty to the general public." In large measure this is the burden of thought of present-day critics of the coal industry.

The production and distribution of coal is still private enterprise. Management, whose voice is the expression of the industry, owes certain obvious duties to stockholders, to customers and to labor. If in the sale of its product the coal company charges only such price as will return a reasonable wage to labor and a reasonable profit to stockholder, then that company is most assuredly a desirable member of society. Transgression of any of these duties brings its own measure of censure. For the industry as a whole the part of the consumer is taken by the general public.

The majority of coal producers and distributors so conduct their business that they maintain the good will of their customers, if for no other reason than that this good will is their chiefest asset in business. Every stable coal company has its back log of steady, dependable trade, served year after year, zealously guarded, protected and satisfied. In these individual relations of seller and buyer there is a minimum of violation of the tenets of good citizenship. But the relation of the coal industry to the public is the sum of all relationships and in this whole there are many variations from the general rule. It is largely the advantage taken by the intermittent producer, and by the regular producer with his transient trade, during disturbed market conditions that has given color to the charge that the coal industry has failed in its duty to the general public. The many are called on to account for the transgressions of the few.

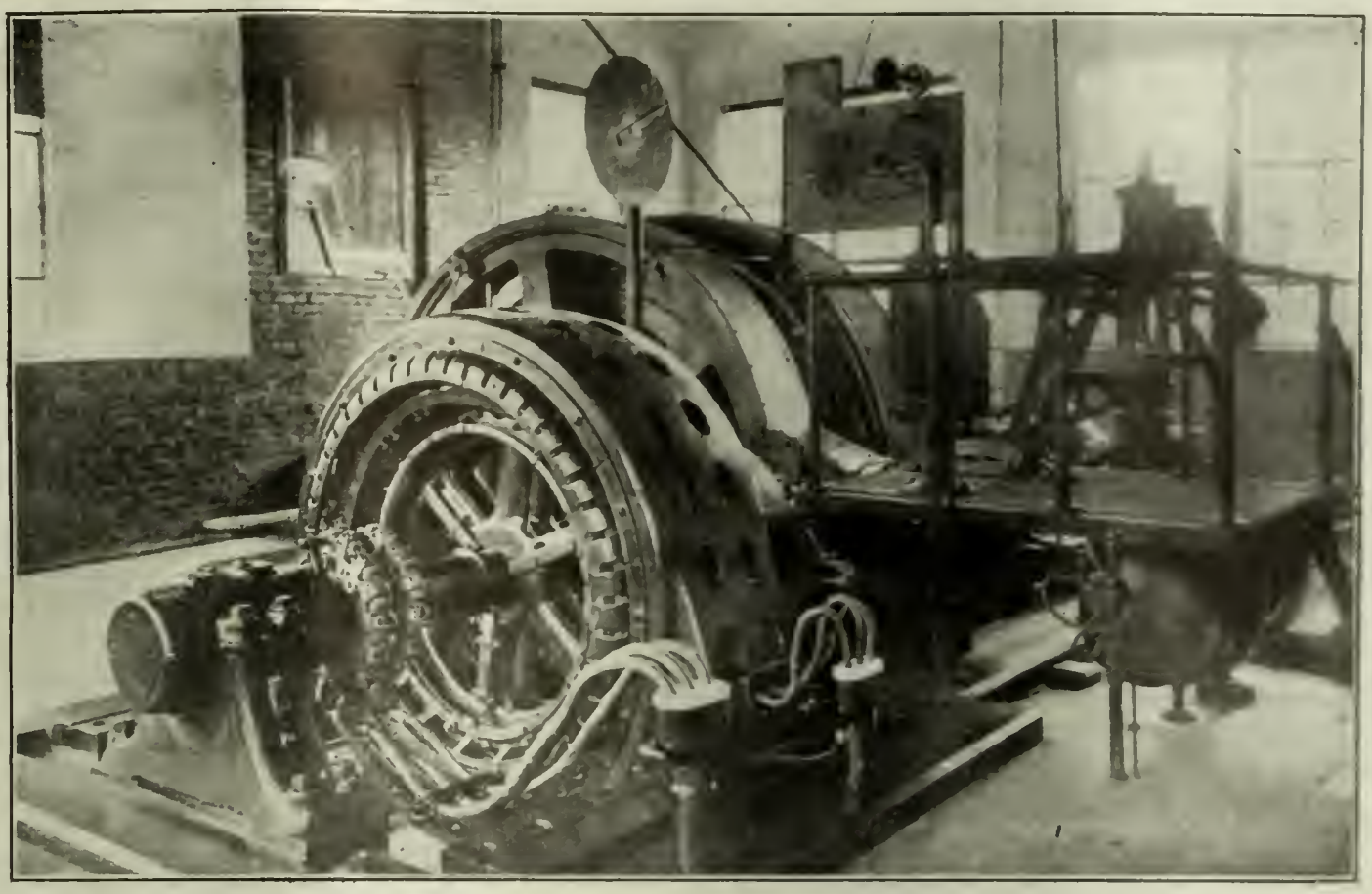
Price and supply are the two points of contact of the public with the coal industry. In the last 25 years there have been four marked peaks in the price curve, corresponding to shortages in supply, excluding, of course, the periods of war control of both. Two of these have attended protracted strikes of coal-mine labor (in 1906 and 1922; one was an after-effect of a coal strike accentuated by a railroad strike, in 1920, and the other was the development of extraordinary demand when stocks were low in 1917. In the intervening periods the bituminous-coal industry has served the general public with ample coal at the lowest prices in the world. Three of these upheavals have been in the past 6 years, a part of the war turmoil that has, and is yet, shaking the world.

If the production and distribution of coal were public business the peaks of high prices and corresponding profits would be leveled off and the more frequent hollows of low prices and corresponding losses filled up, at public expense. Can it be that the duty of the coal industry to the general public is to wipe out its best profits and continue to absorb its major losses? That certainly is not in the public interest in the long run. It is plainly of far more advantage to the coal producer than to the coal consumer to maintain steady operation at moderate price and profit than to "vibrate between bankruptcy and high profits." What Mr. Smith and others charge as the duty of the coal industry to the general public is first of all the duty of the coal men to their own industry.

We cannot but conclude that it is not the blindness of the coal operator but his impotence that prevents him from making his industry function in a more ideal manner. There is no such thing as majority rule in either the soft- or the hard-coal industry. The Sherman law, which regulates the coal industry, is more stringent than any proposed by modern reform legislators. It says that no two in the business shall get together in any way to regulate the trade, either for or against the interests of the public. There is no method, either direct or devious, by which the "good" operator or wholesaler can control the "bad." There have been occasions, not without notable results, when the organized voice of the coal industry has been raised to stop the rising price of coal.

Summed up, Director Smith's indictment of the coal industry rests on the assumption that coal is a public utility and that without being so declared by law it should function as such. We submit that it is too much to expect that some ten thousand individuals engaged in the private business of mining and distributing coal should march up to the counter every time the price of their product passes a certain profitable point, and voluntarily rebate to the public the increment of profit, large or small, as it may be, that is offered by circumstances not of their making. Considered as a whole the reputation of the industry in profit taking has not always been creditable, but if one will but examine individual records he will find that many—the majority as respects tonnage if not numbers—have a definite sense of responsibility toward that part of the general public with which they have contact—their customers—and that they have lived up to that responsibility even as Director Smith would have them do.

Coal operators are fast developing a national consciousness of their collective relationship to society; they are learning self-government. For four years they have been on the defensive against "an unfriendly press, a distrustful public, and the threat of socialistic legislation." We have no doubt that every honest-minded coal man will agree with Herbert Hoover in his New York address of Sept. 12, that "When these various rights [to strike, to lockout, to work or not to work, etc.] infringe upon the public right, then the dominant right is the public right." The points yet to be decided concern the methods by which the public right shall be protected without socializing a basic industry.



Calculation of Horsepower Required for Unbalanced Uncounterweighted Hoist in Shallow Shaft*

Radius of Gyration and Radius of Drum and Their Relations—Average Moments—Frictional Resistance—Acceleration and Retardation Moments and Horsepowers—Horsepower Torque—Energy in Hoist and Check on Result

By F. L. Stone†
Schenectady, N. Y.

IN THIS article will be elaborated the main calculations for the selection of the machinery for hoisting in a shallow shaft unbalanced and without counterweight. Under the classification of "shallow shaft" may be included all those which have hoists the total travel of which is 300 ft. or less. The hoist thus to be considered is what would ordinarily be termed a "supply" or "man-and-material" hoist.

The capacity of this machine will be based on its ability to raise rock, and, as stated, the assumption will be that it is to be operated unbalanced and without a counterweight. A later article will deal with the same hoist using a counterweight and when serving a double-compartment shaft with cages in balance. The following conditions are assumed:

Total lift	250 ft
Weight of cage	9,000 lb
Weight of car	2,100 lb
Weight of rock	8,000 lb
Trips per hour	60
Rest, top and bottom	each 7 sec
Rope	1¼ in. diameter, weight 2 lb. per ft.
Drum, cylindrical	6 ft. diameter with 2 ft. face
Weight of rotating parts at rope center	17,000 lb

It might be well at this point to discuss in some detail the various ways in which the weight of a rotating mass may be manipulated. The radius of gyration is such a radius that if the entire weight as recorded by the scales could be located at its extremity this weight multiplied by the square of its velocity $(2\pi rn)^2$ when rotating about its axis, and divided by $2g$ would represent the stored energy in foot pounds.

The formulas for determining the radius of gyration of bodies of most ordinary shapes may be found in almost any standard engineering handbook. For example, consider a plate wheel weighing 10,000 lb. and 8 ft. in diameter. The radius of gyration of such a wheel $= \sqrt{\frac{r^2}{2}} = 0.707r$ where r = the outside or extreme radius. In the example the radius of gyration would be $4 \times 0.707 = 2.828$ ft. This means that if a ring of no thickness could be made 5.656 ft. in diameter and weighing 10,000 lb. it would have the same stored energy when rotating as has the plate wheel.

The wr^2 of such a wheel would be

$$10{,}000 \times 2.828^2 = 80{,}000 \text{ ft.-lb.}^\ddagger$$

*Other articles on hoist design by F. L. Stone may be found in *Coal Age*, Vol. 8, p. 316, and Vol. 9, p. 923.

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‡This figure is based on the more accurate factor for 2.828 which in the calculation is carried to an indefinite number of decimal places instead of only three.



MOVEMENT IN FOOT-POUNDS—OVERHAND HOISTING

Times are plotted on the basis of cycle of the drum. Areas above the zero line represent the total movement and considering the lowering and unloaded movement being so large that the calculations may be considered here little effect on the total.

The wr^2 is of great value when considering rotating masses, for, having this quantity, the effective weight at any radius may be determined by dividing the wr^2 by the square of the radius at which the effective weight is required. Thus, in the drum under consideration in the above problem, the effective weight is given as 17,000 lb. at the rope center. The wr^2 of this drum is

$$17{,}000 \times 5^2 \text{ or } 153{,}000 \text{ ft.-lb.}$$

This, incidentally includes the gear

The radius of gyration of a cylindrical hoist drum, brake tread and gear is about 50 per cent of the outside radius, and 80 per cent of 5 is 2.4, therefore the actual weight of the drum and its attached parts as registered by the scale would be about

$$\frac{153{,}000}{2.4} = 26{,}500 \text{ lb.}$$

As an illustration of the accuracy of the above calculation assume that the drum and parts are turning at 100 r.p.m. or 1.6666 r.p.s. The stored energy then will be

$$\frac{mv^2}{2} = \frac{wv^2}{2g}$$

v being the velocity in ft. per second at the radius at which the weight is taken.

$$\frac{17{,}000 \times (12 \times 3 \times 1.6666)^2}{32.2 \times 2} = \frac{17{,}000 \times 31.4^2}{32.2 \times 2} =$$

260,500 ft.lb.

Using the actual weight and the radius of gyration above found

$$\frac{26{,}500 \times (12 \times 2.4 \times 1.6666)^2}{32.2 \times 2} =$$

$$\frac{26{,}500 \times (25.15)^2}{32.2 \times 2} = 260{,}500 \text{ ft. lb. approximately.}$$

The above is, of course, elementary and intended only to refresh the memories of those who have not used these fundamental formulas for years. It shows how, given the wr^2, the effective weight can be found for any radius without knowing the actual radius of gyration.

To proceed with the calculation:

The time required for one round trip $= \frac{3600}{60} = 60$ sec.

Rest, top and bottom $= 7 + 7 = 14$ sec.

Total running time up and down $= 60 - 14 = 46$ sec.

Running time one way $= \frac{46}{2} = 23$ sec.

Assume 6 sec. acceleration and 6 sec. retardation

$$\text{Number of turns of drum} = \frac{250}{6\pi} = 13.26$$

Consequently the revolutions per second or v at full speed

$$= \frac{D}{t - \frac{t_a}{2} + \frac{t_r}{2}}$$

where D = the distance travelled or total turns of drum; t = total running time; t_a = time of acceleration; t_r = time of retardation.

This is derived as follows:

$\frac{vt_a}{2}$ = space passed over during acceleration.

$\frac{vt_r}{2}$ = space passed over during retardation.

$D - \left(\frac{vt_a}{2} + \frac{vt_r}{2}\right)$ = space passed over at full speed.

$T - (t_a + t_r)$ = time of full-speed running.

Then

$$\frac{D - \left(\frac{vt_a + vt_r}{2}\right)}{T - (t_a + t_r)} = v$$

$$D - \frac{vt_a + vt_r}{2} = vt - v(t_a + t_r)$$

$$2D - (vt_a + vt_r) = 2vt - 2v(t_a + t_r)$$

$$2D = 2vt - v(t_a + t_r)$$

$$D = vt - \frac{v(t_a + t_r)}{2}$$

$$= v\left(t - \frac{t_a + t_r}{2}\right)$$

$$v = \frac{D}{t - \frac{t_a + t_r}{2}}$$

In the present case as $D = 13.26$ turns

$$23 - \frac{6 + 6}{2} = \frac{13.26}{17} = 0.78 \text{ r.p.s.}$$

The number of turns passed over during acceleration

$$= \frac{vt}{2} = \frac{0.78 \times 6}{2} = 2.34.$$

Similarly the turns passed over during retardation

$$= \frac{0.78 \times 6}{2} = 2.34.$$

The moments will be determined as follows: Rock. 8,000 lb.; car, 2,300 lb.; cage, 9,000 lb.; total, 19,300 lb.

Turn 0	19,300 × 3 = 57,900 ft.-lb.	
Turn 13.26	19,300 × 3 = 57,900 ft.-lb.	
Rope (1¼ in. at 2 lb. per lineal foot)		
Turn 0	250 × 2 × 3 = 1,500 ft.-lb.	
Turn 13.26	0 × 2 × 3 = 0 ft.-lb.	
Turns	0	13.26
Load	57,900 ft.-lb.	57,900 ft.-lb.
Rope	1,500 ft.-lb.	0 ft.-lb.
Total	59,400 ft.-lb.	57,900 ft.-lb.

The value to be assigned to friction will have to be assumed, as there are no reliable test data available to my knowledge. Experience has shown that 80 per cent of the average net moment (for single gear reduction) is sufficient. In the case of an unbalanced hoist this efficiency probably is a little low but safe.

(57,900 + 59,400) ÷ 2 = 58,650 = average moment

58,650 ÷ 0.8 = 73,300 = average moment including friction. Deducting the average moment, which is 58,650, leaves the friction, which is therefore 14,650. Net moments including friction then become:

Turns	0	13.23
Load	59,400 ft.-lb.	57,900 ft.-lb.
Friction	14,650 ft.-lb.	14,650 ft.-lb.
	74,050 ft.-lb.	72,550 ft.-lb.

Acceleration and retardation are calculated as follows:

The revolutions of the drum at full speed = 0.78 per sec.

Velocity in feet per second of moving parts at end of acceleration = $0.78 \times 6 \times \pi = 14.68$ ft. per sec.

Force = mass × acceleration

Acceleration $(a) = \frac{v}{\text{Time}}$; Mass $= \frac{w}{g}$; $a = \frac{14.68}{6} =$ 2.446 ft. per sec. per sec.

As the drum is cylindrical and its weight is given as the effective weight at the rope center, all the moving parts may be considered as a whole and the acceleration force calculated at one operation.

Cage	9,000 lb
Car	2,300 lb
Rock	8,000 lb
Rope (250 ft. in shaft and 200 ft. between the cage and the drum when the cage is at the top of the shaft)	900 lb
Total	20,200 lb
Drum	17,000 lb
Head sheaves	7,000 lb
Total	44,200 lb.

Accelerating force $= \frac{44{,}200}{32.2} \times 2.446 = 3{,}360$ lb.

As this force is applied at the drum surface, the moment will be

$$3{,}360 \times 3 = 10{,}080 \text{ ft.-lb.}$$

Retardation is to be accomplished in the same length of time and, as the v of all parts is the same, the retardation force and moment will be the same as that of acceleration, except that, as energy is being given up, the value will have a minus sign.

FINAL MOMENTS

Turns	0	2.34	2.34	10.92	10.92	13.26
	74,050	73,790*	73,900*	72,800*	72,810*	72,550
	10,080	10,080	—	—	10,080	10,080
Total moment	84,130	83,870	73,900	72,800	62,730	62,470
Horsepower	750	747	658	648	559	556
Time, sec.	0	6	6	17	17	23

* From plotted curve.

Having determined the moments and plotted their values it is necessary only to change the moments to horsepower and plot against time.

The horsepower may be determined by substituting in the equation

$$\text{HP.} = \frac{2\pi \times \text{r.p.s.} \times \text{M.}}{550}$$

This formula is derived as follows:

$$\text{HP.} = \frac{\text{Force} \times \text{velocity in feet per sec.}}{550}$$

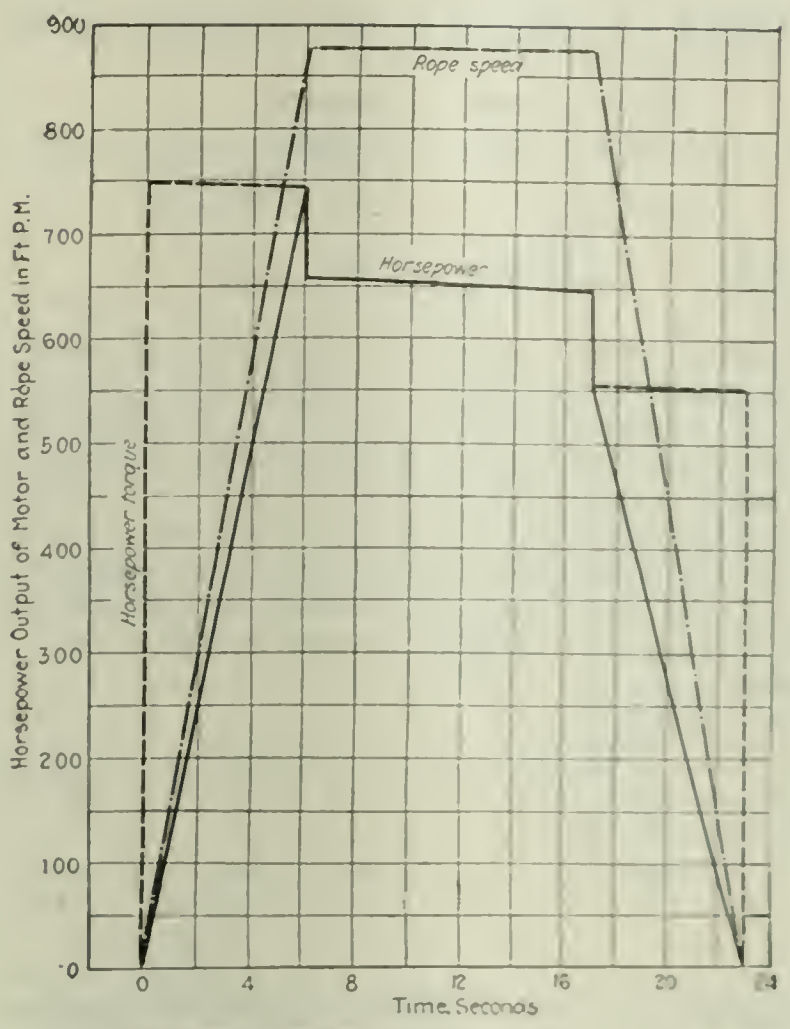
$$= \frac{\text{Force} \times 2\pi r \times \text{r.p.s.}}{550}$$

$$\frac{\text{Force} \times r \times 2\pi \times \text{r.p.s.}}{550}$$

$$\frac{\text{M.} \times 2\pi \times \text{r.p.s.}}{550}$$

Turns	Time, sec.	Horsepower
0	0	750†
2.34	6	747
2.34	6	659
10.92	17	650
10.92	17	553
13.26	23	550†

†These values are not actual horsepower, as the speed is 0 at these points, but they indicate values proportional to the torque. This value is, therefore, called horsepower torque. In other words, the motor must develop such a torque that if it were running at full speed it would produce this horsepower.



HORSEPOWER-TIME CURVE OF DUTY CYCLE. HOIST NOT BALANCED

The horsepower used and the horsepower demanded are different quantities, for at the start the horsepower used is zero, but the hoist must be designed with that point in mind, for the horsepower torque at that point is at a maximum.

Having plotted the curves of moments and horsepowers it might be well to consider what they mean. The moment curves are self-explanatory and mean that at each turn of the drum an indicated torque must be applied to the shaft. The horsepower curves, however, mean a little more when analyzed. As a help in discussing the duty cycle the following definition of terms used may be in order.

Force is pressure, pull or resistance to motion in the line of motion and its unit is the pound. Velocity is the rate of motion and its unit is one foot per second. Work is the product of force in pounds, resisting motion, multiplied by the distance traveled in feet, the unit being the foot-pound. Energy is the ability to do work. It may be potential, that is, the energy stored in a body due to its position, such as a weight carried to an elevation; or it may be kinetic, or that due to the motion of the body. The unit is foot-pounds as in the case of work. The formula for the stored energy in a moving body is $\frac{mv^2}{2} = \frac{wv^2}{2g}$. Power is the rate at which work is done. The most common unit is the horsepower, which is equal to 550 ft.-lb. per second. Thus, if 10,000 ft.-lb. of work is to be done in, say, 5 seconds at a constant rate, this rate will be 2,000 ft.-lb. per second or $\frac{2{,}000}{550} = 3.64$ hp. If the same work is done in 2 seconds it will have to be done at the rate of 5,000 ft.-lb per second or

$$\frac{5{,}000}{550} = 9.1 \text{ hp.}$$

In the problem just solved we have made a duty cycle, plotting horsepower against time.

In lifting the cage, car, rock and rope we have expended much energy; that is we have raised a weight

of 19,300 lb. up a distance of 250 ft. and 500 lb. of rope up an average distance of 125 ft.

$$19{,}300 \times 250 = 4{,}825{,}000$$
$$500 \times 125 = 62{,}500$$
$$4{,}887{,}500 \text{ ft.-lb.}$$

or we have expended

$$\frac{4{,}887{,}500}{550} = 8{,}879 \text{ horsepower seconds}$$

This was done at a mechanical efficiency of 80 per cent.

Therefore, $\frac{8{,}879}{0.80} = 11{,}087$ horsepower seconds, which should represent the actual foot-pounds expended at the motor coupling.

The duty cycle just made shows the rate at which this energy is expended. Its area, however, independent of what its shape may be, must be the same as that given above, i.e. 11,087 hp. seconds. This may be checked as follows:

In acceleration

$$\frac{748.5 \times 6}{2} = 2{,}243.5 \text{ horsepower seconds}$$

In full-speed operation

$$654.5 \times 11 = 7{,}199.5 \text{ horsepower seconds}$$

In retardation

$$\frac{551.5 \times 6}{2} = 1{,}654.5 \text{ horsepower seconds}$$

Total energy in one hoist

$$= 11{,}098.5 \text{ horsepower seconds}$$

Average weight

$$19{,}300 + 250 = 19{,}550 \text{ lb.}$$

Total energy in one hoist

$$\frac{19{,}550 \times 250}{550 \times 0.8} = 11{,}100 \text{ horsepower seconds}$$

Which may be considered a check within the limits of accuracy of the slide rule.

The duty cycle shows more clearly than anything else the way the demands come on the motor, and from it the rating of this machine may be determined.

The data selected for this example call for a rather large motor and would hardly be considered a practical operating condition. If such a quantity of material was really to be taken out of a shaft, the hoist without doubt would be provided with a counterweight.

The head piece to this article shows a 700-hp. 400-r.p.m., 2,200-volt hoist installed at the plant of the Union Collieries Co., of Pittsburgh, Pa.

Eight-Ton Cars Will Be Built for Mines

For many years past, the railroads of the United States have continually increased the size of their rolling stock. They have built larger and larger locomotives and cars. Back in 1870, only about fifty years ago, coal was not infrequently shipped in small four-wheeled cars, each holding about five tons. Today steel hoppers of 140,000 lb. capacity are not uncommon. This increase has been made necessary by the larger and ever larger tonnage that must be carried over one set of rails.

To a lesser extent the same tendency is manifest in the mines. The output of individual operations has been continually increased. Almost every mine is now producing more coal than in the past. To meet this increased output, mine locomotives of various types have been designed, each succeeding model being capable of pulling a greater number of cars at a higher speed than its predecessors, thus adding capacity to the haulage roads already existing. Mine cars likewise have increased in size. With a larger car it is unnecessary for the mining company to furnish each man with as many wagons as were formerly required, thus reducing the number to be gathered and hauled in any one mine in order to maintain a given capacity and reducing the number of times during any one day when the miner must wait for cars.

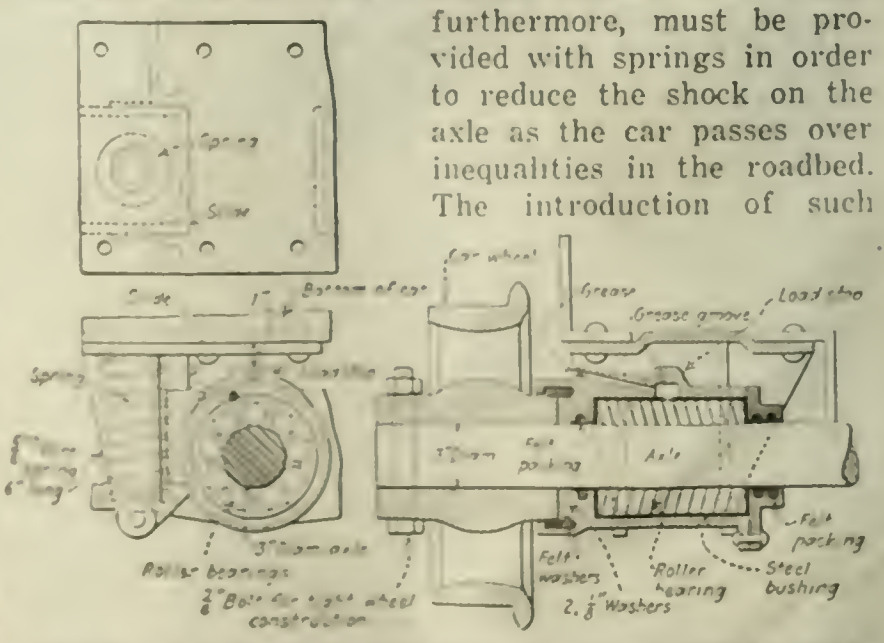
Size of Equipment Dependent on Conditions

Certain considerations, however, limit the size of equipment that can be used in any particular mine. With railroad equipment the size is not so definitely fixed, but in mining, as most of the haulage roads are underground, and as many of them were laid out years ago, when the equipment was small, the limitations to the size of cars are sometimes unavoidable.

Many, if not most, mine roads have been driven within the coal bed itself, the height of the bed thus dictating the height of the car. It is, of course, not possible to use a car that is the full height of the bed unless the bottom is to be lifted or the top brushed. Consequently a car must be so designed that room for the miner to load it with ease is readily available. It is well to make this space between the top of the car and the roof as large as is conveniently possible.

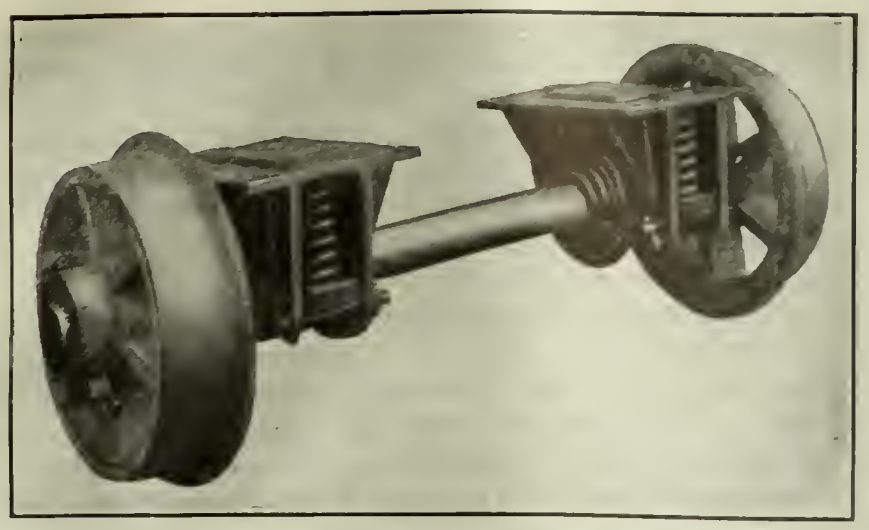
In addition to the height of the car, its length and width also are limited. The length and wheelbase are fixed by the degree of curvature of the tracks that must be traversed. The width is limited by the width of the heading and the requirements of the state mining laws. As a result, any device or arrangement of car that will permit a greater carrying capacity in a given size of coal bed is of more than passing interest to the whole mining profession.

The Chicago, Wilmington & Franklin Coal Co., of Illinois, recently desired to use, in one of its mines, larger mine cars than any hitherto designed. It accordingly requested Allen & Garcia, of Chicago, to prepare plans for a new mine car that would have a capacity of 8 tons of coal, and about 10 to 12 tons of rock. The great weight of the material to be carried necessitated a specially designed truck. This truck, furthermore, must be provided with springs in order to reduce the shock on the axle as the car passes over inequalities in the roadbed. The introduction of such



WHEEL, ROLLER BEARING AND SPRING FOR NEW CAR

Despite weight of the car and its contents the diameters of the wheels are only 14 and 16 in. as so far constructed. The roller bearings measure 3 x 7 in.



SPRING BOXES AND WHEELS FOR EIGHT-TON CAR

Diameters of axles of wheels have been kept down to 3 in. by using steel of 30 to 40 points of carbon, heat-treated to a hardness of 240 to 250 Brinell. Springs are 6 in. long and made of ⅝-in. round steel.

springs, however, must not increase the height of the car when it is loaded. To meet the conditions imposed, J. R. Fleming & Sons Co., Inc., of Scranton, Pa., have designed a special truck.

This is being tested out at the coal company's mine. It is designed to carry a load on each axle of 4 tons in addition to the weight of the car itself. The axles are 3 in. in diameter and the journals are 3x7-in. Hyatt roller bearings. The spring pedestal is so arranged as not to increase the height of the car. Two springs are employed at each journal box, one on either side of the axle. When the car contains its maximum load, the springs will be so compressed that the load will just miss the stop on the top of the bearing.

Axles Are Made of Heat-Treated Steel

Wheels of 14 to 16 in. in diameter are employed. It being advantageous to use as small an axle as possible on these cars, the diameter of the axle has been made only 3 in. The steel is of 30 to 40 points of carbon, heat-treated to a hardness of 240 to 250 Brinell. Heat treating in this manner raises the tensile strength to from 135,000 to 140,000 lb. per square inch.

Aside from the special arrangement of the truck and bearings, these journals are similar to the regular Fleming-Hyatt self-aligning roller-bearing journal boxes. Use of these bearings eliminates all bending and cutting of the axle.

With the use of springs the load can be handled with greater ease. Shocks to a certain extent will be removed from the drawbars or drawheads, and these will not be pulled out as frequently as sometimes happens around the mines or on railroad equipment. The roadbed also will be relieved of shock, and a decrease in low joints and bent rails should result. The springs in like manner relieve the axle and wheels from shock, and, consequently, there should be fewer bent axles and broken wheels.

These advantages will permit higher hauling speeds, while the cars will take curves easier and derailments will be fewer. This should reduce appreciably the frequency of wrecks on the haulage road, thus saving much valuable time as well as permitting a freer movement of traffic. Higher speed, larger car capacity and a decreased liability to wrecking will mean greater mine output with less rolling stock.

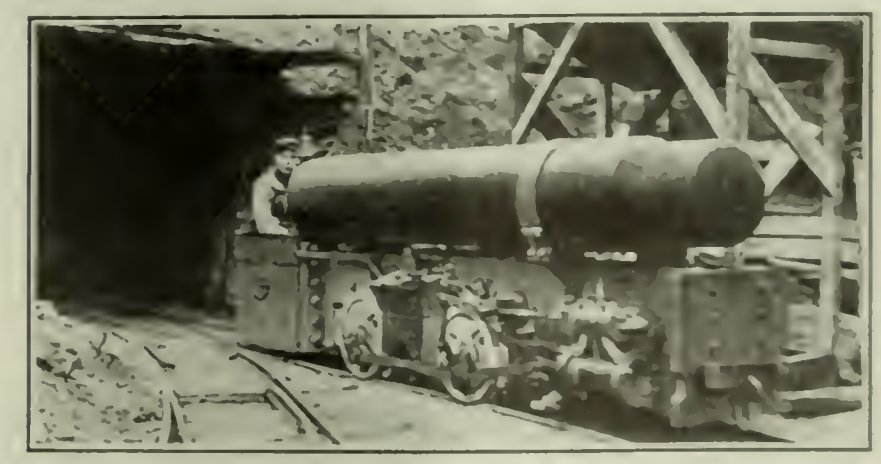
Much interest attaches to the actual use of spring journal boxes of this kind in the mines. If they are successful, it is probable that similar equipment will be employed in the future, and much of the present rolling stock may be subject to overhauling. In installing such equipment the mines are merely taking a step that the railroads found it advisable to take many years ago.

France Makes Much Use of Compressed-Air Locomotives in Coal Mines

By Francis P. Mann
Paris, France

French regulations forbid the use of electric or gasoline locomotives in all mines or underground work where firedamp would cause explosions, so that compressed-air locomotives have been much used in France. For other reasons also they are often preferred for certain classes of work. For instance the Paris subway, which is always under extension, is now making use of an up-to-date locomotive of the Renault type. The latter has been designed in general for all classes of tunnel or mining work, and runs upon a 24-in. track. It is made in three principal parts, vehicle frame, air tanks and back cab, and these can be dismounted so as to be let down separately into a mine. The engine is of a new type which is claimed to be quite an improvement over those which have preceded it.

A high-pressure cylinder is disposed on one side of the vehicle and a low-pressure cylinder on the other side, the wheels being driven as shown in the illustration. Above the cylinder is the slide valve, which in this type is cylindrical. Air from the tanks first goes through the pressure reducer and then through a heater, and reaches the high-pressure cylinder. The exhaust from this cylinder is sent into another heater and then into the low-pressure cylinder. Two air tanks are shown on this locomotive, but if desired a third can be added on the top. The total length over the buffers is 12 ft. 4 in. and the width is 4 ft. 2 in.



COMPRESSED-AIR LOCOMOTIVE WITH HIGH- AND LOW-PRESSURE CYLINDERS

This locomotive runs on a 2-ft. track. The air is heated before it is used and is heated again before being admitted to the low-pressure cylinder.

In large-scale blasting in coal mines it is customary to fire many shots simultaneously. The electric detonators usually are connected in series and are fired either from a power circuit or from a blasting machine with large capacity, operated by hand. When firing with a blasting machine, trouble with missed shots has been frequently experienced. Under these circumstances the shots that fail to fire often are a group in the center of the series. Various explanations have been given as to the cause of the failures. Details of tests made by the electrical section of the U. S. Bureau of Mines which may be helpful in understanding the probable cause of the misfiring of center shots are given in Serial 2384, just issued.

How to Make Portable Electric Cable Last*

By H. M. McCulloch†

[illegible] cost per ton for portable electrical cables used on underground mining machinery can be greatly aided by attention to five vital factors, which are as follows: (1) Use of conductors of proper size; (2) proper working voltage; (3) proper use of operating reels of correct size for the spooling of cables; (4) proper stranding of the copper conductor; (5) care in the handling of cables.

Let us consider first why it is important that all conductors should be of proper size. Practically all portable underground cables have Para rubber of varying percentages of vulcanization next to the copper. This rubber starts to deteriorate when the vulcanizing temperature is reached. For this reason the temperature of the copper must be kept at less than 220 deg. F. This cannot be done unless the conductor is of the proper size.

From actual tests made by the manufacturers of all-rubber cables having a high percentage of Para rubber the operating temperature of such cables is less by about 25 per cent than the same size of braided cable carrying the same currents. This is because of the greater heat conductivity of the high-grade rubber. Table I shows the size of conductors recommended for various mine locomotives and mining machines operating at both 250 and 550 volts direct current. The recommendation is based on the maximum allowable copper temperature.

TABLE I—SIZE OF CABLE FOR LOCOMOTIVES AND COAL CUTTERS

	250 Volts Size of Cable	500 Volts Size of Cable
Locomotives		
4 Ton	No. 2	No. 4
5 Ton	No. 3	No. 6
6 Ton	No. 4	No. 6
Mining machines		
35 Hp.	No. 2	No. 4
25 Hp.	No. 3	No. 6
20 Hp.	No. 4	No. 6

The difference in cost between any two sizes of cables is only 8 to 12 per cent and the larger size of cable has 25 per cent more copper than the next smaller size and will outlast it from 30 to 50 per cent, so that an actual saving in dollars and cents is made by using the proper size. This is particularly true on the all-rubber cable, as the rubber is hard to cut while cool, but cuts more readily when the temperature rises.

As to the proper working voltage, attention may be called to the fact that the work done by any direct-current electric motor is the product of volts and amperes. When the voltage goes down the amperage goes up—not in exactly the same ratio but depending on the way in which the motors on the various kinds of equipment are wound. This tendency to draw increased current from the line on low voltage is greater on series-wound motors, as the entire current is carried around the field of the motor. Practically all mine locomotives have motors of this kind and over 50 per cent of the winding on the compound-wound motors of the mining machines in general is in series. Therefore the cables may be expected to heat up when, owing to low voltage, they have to carry an excess of current.

Now as to the size and method of operating reels for spooling cable, the larger the diameter of the reel, the less the copper conductor is bent and the less likelihood there is, therefore, of breaking the component wires. Of course, there is a practical limit to the size of reel to be used, but the manufacturers could greatly improve their reels in this respect.

The method of operating the reel is even more important than its size, for a mine locomotive while gathering frequently reels and unreels its cable one hundred times per day. When doing such work it is easy for the cable to get foul of any of the many obstructions in the mine. If there is no protective device on the reel to slip and protect the cable from excessive tension when it thus becomes entangled, the copper wires are likely to be stretched and reduced in diameter, thereby decreasing their conductivity, if not actually breaking some of them. Soft-drawn copper will stretch about one-quarter of its length before it will part.

As to the correct stranding of copper conductors, nearly all manufacturers regard the seven-strand cable as standard. Now the number of wires in each strand should be sufficient to give the cable enough flexibility for the service intended. As locomotives reel and unreel their cable three to four times as often as mining machines the cable used on mine locomotives must necessarily be much more flexible if it is to have long life. The standard practice now with reliable manufacturers is to put at least 19 wires to each strand for locomotive cables, giving a 7x19 cable or 133 wires all told, and on the mining machines a 7x7 or 49-wire cable is found to give good results. A 49-wire cable will not have as long a life on a locomotive as would a 133-wire cable, yet the difference in cost is only 5 per cent.

Life of Cable Depends on Careful Handling

Another important factor in the life of cable is the manner in which it is handled. This is a problem for each individual operator and in the main depends on the experience of the motorman or machine runner who handles the cable. Green men invariably abuse the equipment they handle, but with proper supervision they can be made to take care of their cables; some really remarkable records in fact have come to my notice.

For your information and also a mark to shoot at I will give you herewith a record of an all-rubber-covered cable in use at No. 2 mine of the Clinchfield Coal Corporation at Dante, Va. Mr. Booker, chief electrician of this company advises that he put a No. 3 all-rubber cable on a 5-ton locomotive Sept. 8, 1921. This locomotive gathered coal in the daytime and handled a mining machine at night. The current for this machine was fed through the same locomotive cable, giving a day-and-night service.

Up to Sept. 15, or in a little over one year, this locomotive has hauled 42,300 tons of coal and the machine has cut 47,000 tons of coal, giving a total hauled and cut of 89,300 tons of coal. The first cost of the cable was $70 and 7 splices in that time will add $3.50, or a total cable cost of $73.50.

Dividing this sum by 89,300 tons gives a cost per ton of $0.0008 or $\frac{8}{10}$ of one mill. This is about $\frac{1}{4}$ of 3 mills, which was the cost per ton of braided cables given by C. E. Rogers in the excellent paper[1] of his committee on gathering locomotives.

*Part of a discussion of a report of the Committee on "All-Rubber-Insulated as Compared with Ordinary Braid-Covered Cables for Portable Entrance Locomotive Cable and Mining-Machine Cable" presented at the West Virginia-Kentucky Association of Mine Mechanical and Electrical Engineers. This report may be found in this issue of Coal Age.

†Simplex Wire & Cable Co.

[1] *Coal Age*, Sept. 14, 1922, page 403.

Rubber-Covered Vs. Braided Cable for Mine Work*

Beware of Short Cotton Fiber in Braid—Kink Test—Though Rubber Covered Cable Lasts 75 to 100 Per Cent Longer, Mines Getting Ten Months' Service Out of Braided Cable Should Not Abandon It

ONLY such cables will be considered in this article as are used for connecting conductor-cable-reel gathering locomotives, coal-cutting machines, loading machines, portable lamp cords and other mining equipment to trolley wires. Until recently rubber-covered cotton-braided cable was in general use. Approximately two years ago all-rubber-insulated cable made its appearance, and for mining service it quite largely has replaced cotton-braided cable.

For a long time the question as to the kind of cable to be employed usually was left to the discretion of the salesman. The order called merely for No. 3 or No. 4 locomotive or mining-machine cable, as the case might be, and the conductor thus loosely specified often gave unsatisfactory service. In some cases the cable lasted only two or three months and sometimes an even shorter period, whereas the average life should be from six to eight months.

All cables of the braided type have a rubber insulation and a woven covering of cotton, either single, double or triple braided. This braiding is saturated with an insulating compound, the purpose of which is to keep water out of the cotton, thus preventing the fiber from loosening or rotting. It also gives to the cable a certain degree of slickness which helps it to resist abrasion. The chairman of this committee has made extensive tests on different forms of this type of cable and has found that some manufacturers use an inferior grade of cotton in their braid. The fibers are short and hard, and the life of cable of this kind is, of course, not as long as it should be.

Beware of Cable Compounds That Peel Off

The braid in some cable is not fully saturated with compound. Other cables show a beautiful glossy surface, giving the appearance of having plenty of impregnating materials, but the compound will chip off when the cable is bent. Consequently the braid becomes bare and presents a dull and ragged appearance. When this type of cable is used on gathering motors or mining machines the cotton braiding soon breaks and unravels and much tape is necessary to keep the conductor in service until at last so many splices have been used that renewal becomes necessary.

The chairman of this committee has had manufacturers submit samples of different makes of cables to which he has applied various tests in order to ascertain the strength of the cotton braid and rubber insulation. Among others he has used a "kink" test, in which the cable is bent into a short loop and then pulled out straight again.

None of the cables with ordinary woven braid would resist this test, as the insulation would tear under the stress. Most of the cables where the covering was of cord construction would come through the test in good condition. Some of the manufacturers are insulating their cables with heavier rubber than is found on ordinary braided cable, and when they do so the cable gives better service than any of the other cotton-covered cables.

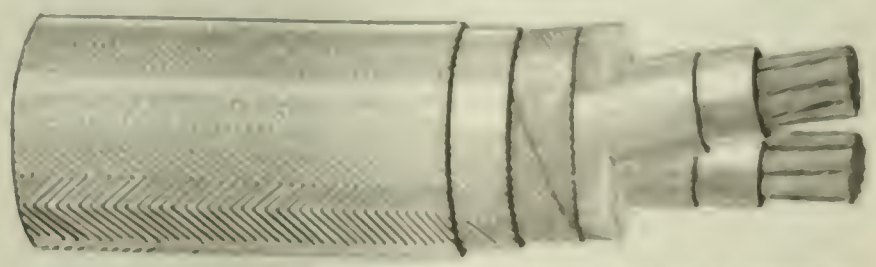
In making a choice between all-rubber-covered cable and braided cable, attention should be paid to the fact that all-rubber-covered cable costs from 75 to 150 per cent more than cotton-braided cables with the braiding of either weave or cord construction. Therefore, a cable with all-rubber insulation should have at least twice the life of ordinary braided cable.

For any mine which is getting from 8 to 10 months of service out of ordinary cotton-covered cables a change to all-rubber-covered cable is not advisable. The life of a cable as used on gathering reels on mine locomotives or loading machines, etc., usually ends when an excessive number of splices has been made, and it has been observed that a cable which with very careful handling would have only three splices after 8 months in service, would require, after that time with the same careful handling, to be spliced not less than once a week. After 10 months' service it would need splicing so frequently that to avoid loss of time it would be advisable to install new cable.

Number of Reelings Determines Life

It is apparent, therefore, that the life of the insulation and of the copper itself is limited by the number of times the cable has been reeled, especially if it is subjected to long hauls and is bent around sharp corners. Another factor which enters into the life of the cable is the voltage which is maintained at the entries on which the equipment is working. If the voltage is not kept within a reasonable range of the normal rating of the machine the cables are subjected to heavy currents and consequently to heating. This is likely to make the copper brittle. Furthermore, if the cable gets too hot so that the insulation warms up, the rubber separates from the copper strands, and on braided cable the insulating compound also melts out.

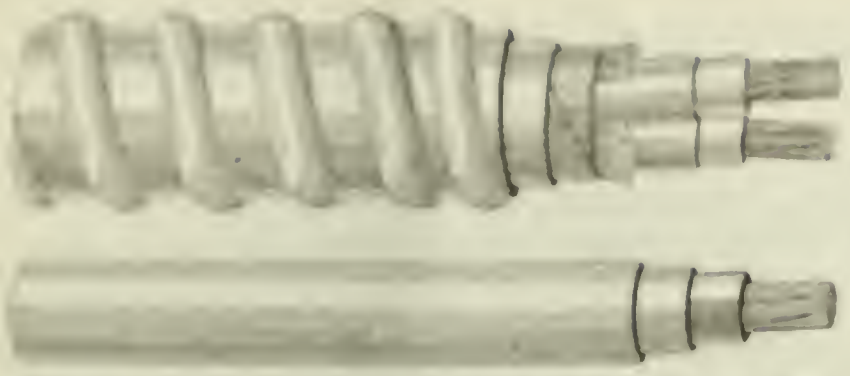
The life of cables subject to such treatment is very short, but under such conditions life proportional to value cannot be obtained from either type of cable. Another factor entering into the life of such conductors, especially on gathering locomotives, is the type of reel in use. At this point I would call the attention of manufacturers of gathering locomotives to the fact that



BRAIDED CABLE WITH TWO STRANDED CONDUCTORS

This cable has each conductor separately covered with rubber and braid, the two conductors with their covering being twisted. Jute fillers give the whole a circular cross-section. The cable thus rendered round is covered with tape and one or more interwoven braids.

*Report of Committee on "All-Rubber Insulated as Compared with Ordinary Braid-Covered Cables for Portable Extensions, Locomotive Cable and Mining-Machine Cable," presented at the Huntington meeting of the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers, Sept. 21. Committee consists of F. M. Reigher (chairman), H. H. Pickrell and E. S. Stickel.



while they have made wonderful progress in the development of the reel type of gathering locomotives, the development of the reel itself has not kept step, and the cable reel is a subject which should have further consideration from the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers.

On some locomotives the spooling device will not accommodate No. 2 cables even when properly spooled, and in consequence toward the end of the spooling the cable is wedged and crossed on the reel. This injures the insulation and the stranding of the cables just as it injures the strands of a hoist rope when it is not wound properly or evenly.

The manner in which the cable is handled by the motorman when gathering has much to do with the length of its life, as the men often get too much slack and then run over the cable and jerk or whip it. This is done when the men are either not familiar with the type of reel in use or are not cautioned as to the proper operation of the reels. It also occurs on some types of reels if the clutch has not been set at the proper tension.

The main fault in the types of all-rubber-covered cable now in general use is that the insulation stands up very well. After the cable has been run over or kinked severely the copper strands will part when subjected to strain, yet the rubber insulation will show almost no sign of injury. To find such a place in a 500-ft. cable will consume from one to three hours of a man's time. If he found it in less time he would be fortunate indeed!

When such gathering locomotive is required to haul a certain quota of cars every day, the motorman cannot reach this quota if he is delayed by an ineffectual search for breaks in his cable. The men at the Stonega plant for this reason look with a dislike to all-rubber-covered cable that at one time a braid over one was found all chopped to pieces. For this reason the claim that all-rubber-covered cable reduces frequent and expensive interruptions cannot be substantiated. It will seldom take a motorman more than 10 minutes to find and repair a break in braided cable. For this reason the Stonega Coal & Coke Co. has hesitated to accept all-rubber-covered cables as standard in its various operations. Another reason for not standardizing on this cable is that the Stonega Coal & Coke Co. is getting an average life of 6 to 10 months out of cord-braided cables.

At the last convention and industrial mining exposition the chairman of this committee told some of the representatives of the cable manufacturers that cable of No. 3 conductivity and cost was wanted with the tensile strength of No. 2 and cable of No. 4 conductivity and cost with the tensile strength of No. 3. To obtain this I recommended the use of a steel or similar reinforcement of high tensile strength.

Some of the manufacturers of all-rubber-covered cable are following this suggestion and have brought out during the last two months different types of reinforced locomotive cable. At the present time a cable of this type has been in service approximately two months and the results obtained are quite satisfactory. The Stonega Coal & Coke Co. will receive in the near future cables of various kinds all thus reinforced and will continue its experiments on this type of cable.

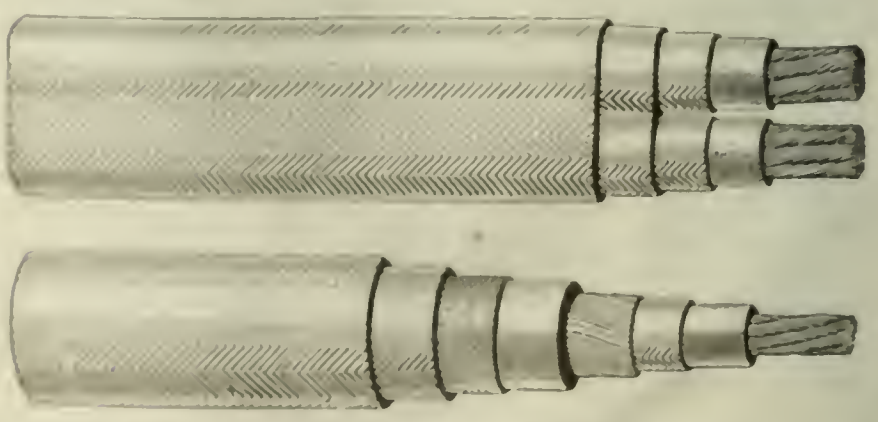
For extension cords around mines and mine shops all-rubber-covered cable should be used. The wire should be of not less than No. 14 gage, for the majority of electricians break or injure the fine strands when skinning the wires and thus reduce the carrying capacity of the cable and its ability to withstand the pulls and strains to which extension cords are subjected.

The committee would suggest to the manufacturers rubber-insulated cable from No. 4 to No. 1 gage should have 133 wires. For ordinary braided cable up to No. 3 size the limit should be set at 49 wires, as the danger of puncturing the rubber insulation with the finer sizes of stranding would be too great. For the larger sizes No. 2 and No. 1, 133-wire cable is necessary to insure flexibility. On the cables where the braiding is of cord, the strands for No. 3 can contain either 133 or 49 wires. Not more than 49 wires should be used, however, in No. 4 cable.

The committee would suggest to the manufacturers of all-rubber-covered cable that they reduce the cost of their cables so that they will come closer in line with the cotton-braided cables, as it believes that in many cases the additional service obtained from the all-rubber-covered cable over the braided cable does not warrant from the 75 to 150 per cent higher cost.

It believes that all-rubber-covered cable is a step forward to a better insulated and more serviceable cable and would like to see wires and cables of this and similar construction manufactured for installation work, as it believes that it will give excellent service in conduit, where the cable is subjected to much vibration, as in tipples and breakers. It also thinks that fire hazards will be greatly reduced by the use of this type of cable, as rubber is not as easily ignited as a cotton weave saturated with compound which is at present used to insulate wires and cables for installation work.

Though this paper does not mention the multiple-conductor mining-machine cables, attention is called to the fact that all that has been said in regard to the insulating and wearing properties of the cable as used



TWIN MINING-MACHINE AND CONCENTRIC DUPLEX CABLE

The twin cable is flat and made up of two stranded tinned conductors each insulated with rubber and one weatherproof braid. These are laid up parallel. Over them are wound two or three weatherproof braids.

by gathering locomotives applies also to this cable. There remains the question whether to use concentric or twin cables, but the opinion of all who use cable for this purpose is so greatly divided that no conclusive arguments can be brought forward to decide the question, because, after all has been said, each one uses the type of cable, concentric or twin, that meets his own peculiar conditions best.

Engineers Detail Experience with Machine Cable, Resistors and Insulating Oils*

AT THE third session of the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers, on Thursday, Sept. 21, F. M. Reigher, of the American Coal Co. of Alleghany County, Bluefield, W. Va., made the report for the committee on cables. Mr. Reigher proved a firm advocate of braid-covered cables, not so much on the ground that they were better than rubber-covered cables, which he did not claim, but because the latter were more expensive and would have to be cheaper to receive his indorsement. He asserted that the wires inside a rubber-covered cable were likely to break, and when they did it was sometimes extremely difficult to ascertain just where the defect occurred.

Reuben Lee, of the Elkhorn Piney Coal Mining Co., Stanaford, W. Va., said that cars could be run over rubber-covered cable without any trouble of the kind described. He himself would use nothing else. His company had used that type of cable for seven or eight years. N. A. Johnson, of the Buffalo-Eagle Coal Co., Braeholm, W. Va., declared that he had no trouble with concealed broken wires. At his mine he had never been able to get, like Mr. Reigher, seven or eight months of service out of braid-covered cable. He preferred an all-rubber coating. He found difficulty in holding enough cable of adequate size on certain types of reels.

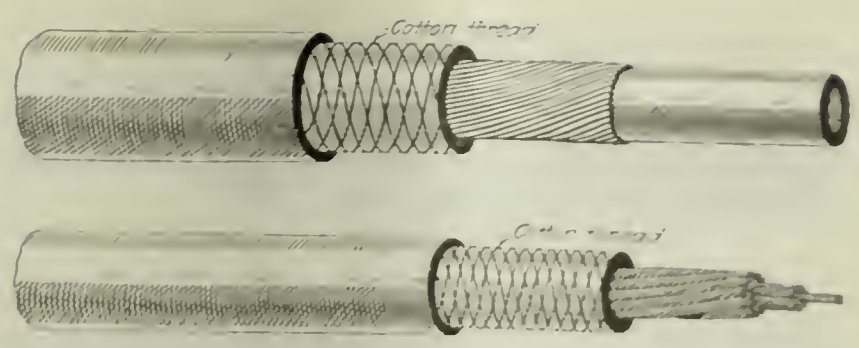
C. E. Rogers was afraid that the rubber of rubber-covered cable would deteriorate before he would get sufficient life out of it to justify its greater expense. He found that foremen and superintendents were quite willing to pay the greater cost if thereby they could get better service out of the cable, certainty in operation being in their belief more important than ultimate length of life. Mr. Johnson said that the saving in splicing reduced delay and justified the higher cost.

Deterioration Vs. Wear Factor in Cable Life

Mr. Reigher stated that in estimating the life of a cable consideration should be given not merely to days of life but to the number of reelings and unreelings during that period. Some men reeled out the cable twice as many times a day as other men, thus inevitably shortening the life by increasing the daily service. A. Fred Phelps, of the Post Glover Electric Co., said that rubber-covered cable would last two or three times as long as cable covered with braid, but nevertheless it might not last ten months where the conditions of service were peculiarly trying.

Mr. Reigher urged that 133-wire cable was made up of excessively small wires and said that such wires punctured the covering. He believed that rubber-covered cables with steel reinforcement in the rubber could be guaranteed for twelve months. He could not see that rubber-covered cable could be expected to last long

*Conclusion of report of meeting at Huntington of the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers. See also issues of Sept. 28 and Oct. 5.



TWO TYPES OF ALL-RUBBER INSULATED CABLES

The top cable is a concentric duplex cable with rubber between the two conductors. Around the outer conductor is a covering of rubber, on which two cotton strands are wound in opposite directions. This is covered again with a coating of rubber. In the lower illustration is a single conductor with a covering similar to that of the outer conductor in the duplex cable above.

enough to make the investment profitable. Mr. Phelps said that no guarantee of the life of a cable should ever be given because a "short" might at any time overheat the wires and insulation. Furthermore at some places cables would last eighteen months and at others not more than thirty days.

H. M. McFarland, of the Simplex Wire & Cable Co., said that much depended on how the strands were disposed. He found seven and nineteen strands better than nineteen and seven. Mr. Reigher remarked that he was opposed to the use of such fine stranding for a No. 4 cable, whatever might be used in those that were larger. Mr. Phelps amplified his previous statement by saying that the compensation rules in Pennsylvania made favorable insurance provisions wherever fuses were provided in the cable. One objected, however, that fuses were useless, as machine men would take ample care that the fuse was provided with a conductor that would not fuse at any lower current than that which would melt the wire in the cable. For this reason fuses would be little or no protection.

Cable Larger Than No. 4 to Have 133 Wires

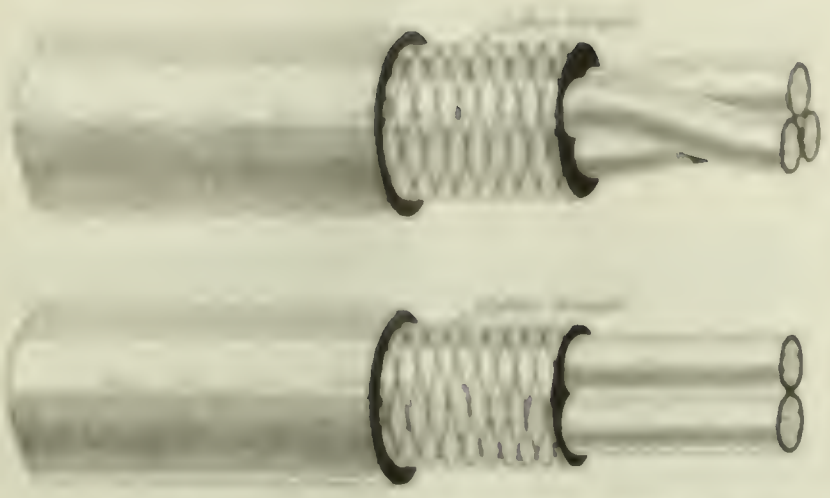
E. S. Simkins, of the Standard Underground Cable Co., declared that the whole matter had been discussed at a hearing held by the Bureau of Mines and it had been decided that 133-wire cable should be used for the larger cables but that No. 4 and smaller should have only 49 wires.

Mr. Lee said that the grades at Stanaford were so heavy that the cables heated and the rubber came off on the braid-covered cable. Someone remarked that the insulation in braided cable varied greatly and some specification should be made as to the amount of rubber used. Mr. Simkins said that every kind of insulation was used by unscrupulous manufacturers. Some of it, he jokingly asserted, was a mixture of Jersey mud and molasses.

He said that when reeled in three layers cables had only about one-half their unreeled capacity. The mine locomotive builders admitted that their reels were too small for an adequate size and length of cable, but with that admission they rested. They had done nothing to increase the size of their reels.

Roscoe Woltz, for the committee on the use on mine locomotives of resistance grids made of rolled steel plate as compared with cast grids, made a report on that subject, as published in the issue of *Coal Age* of Sept. 14. Mr. Reigher declared himself a believer in the steel grid. Nevertheless he said he had cast grids in use that had lasted six years.

Mr. Phelps said that the steel grids would occupy no more space than cast grids and that standard grids



could be so assembled as to fit whether the space was narrow or wide. The grids for the first point were assembled with spaces of ¼ in. On the last point the spacing was increased to from ½ to ¾ in. apart. It was always a surprise to him how little experimental knowledge there was about the design of grids. His company was experimenting, but there was still much more to be learned.

He said that the 4 per cent silicon-steel grids rusted on the surface, but the rust formed a protective coating, preventing any further deterioration. George Suiter, of the Wheeling Coal Co., a member of the committee, volunteered an indorsement of Mr. Phelps' statement that a steel grid was just as readily repaired as one of cast resistors. He had eighteen out of thirty mine locomotives and several mining machines fitted with steel grids and he had no difficulty in repairing them.

In the enforced absence of W. C. Shunk, general superintendent of the Sturgeon Coal & Coke Co., R. Dawson Hall read Mr. Shunk's paper on "How Mechanical and Electrical Men Can Increase Their Usefulness and Therefore Become More Important Figures in the Organization." In discussing the paper J. H. Edwards, the president, electrical engineer for the Elkhorn Piney Coal Mining Co. and other companies, declared that electrical engineers need more system so that they can the more readily tabulate experience and costs. He declared that a little clerical experience was an asset to any electrical engineer. A. B. Holcomb, of the Corbin Caffrey Co., remarked that it had been stated at a meeting of steel engineers that with maintenance cost sheets it was often possible to show that a machine that was giving excellent service might profitably be scrapped with a saving in upkeep expense sufficient to pay for the new machine in two or three years to the company which then dispensed with it.

On Friday, Sept. 22, a paper was read by M. W. Crenshaw, of the wireless department of the Banks Supply Co., of Huntington, W. Va., on "The Wireless Telephone." A. F. Brosky made some brief remarks about the experiments carried on by the United States Bureau of Mines and the Westinghouse Manufacturing Co. in a mine near Pittsburgh. It was found that the rock intercepts the waves at depths exceeding 50 ft. and that the receiving instruments that gave the best results on surface work were not as successful underground as others that were regarded under ordinary conditions as being less desirable.

R. R. Webster, chairman of the committee on the "Proper Handling and Care of Insulating Oils," read the report on that subject. This report appeared in *Coal Age* in the issue of Sept. 28. The chairman said that the subject was one of considerable importance, as many transformers had been in use now for quite a few years and the oil had not been changed or filtered. He also read the following statement:

"The following are tests on the oil of three General Electric 65-kva. 2,300 206-volt single-phase transformers, used inside a mine substation to supply a synchronous converter. The two tests are about two years apart, the oil not being filtered or renewed in the meantime. The day load on these transformers has been averaging approximately 60 per cent of full load. However, the short-time peak loads often exceed 175 per cent of full load. A temperature test taken during the summer, when these transformers were reported to be running warm, showed the oil to be 114 deg. F. Note that the decrease in the dielectric strength of the oil during the two years is considerable:

Transformer Serial Number	Test Sept. 25, 1920 Oil From Bottom	Oil From Top	Test Aug. 28, 1922 All Oil Samples From Top Sample 1 No. 1	Sample 2 No. 2	Dielectric Strength In Percentage Of First Test
1,573,264	14,250	18,000	13,000	13,500	73.5
1,573,280	19,000	23,000	16,000	12,000	61
1,573,263	....	10,500	10,500	....	100

NOTE: The laboratory which made the test of Aug. 28, 1922, reported no sludge in oil, described the color as "lemon" and recommended "filtering for moisture."

"The following is quoted from an article by J. L. R. Hayden and W. N. Eddy which appeared in the July, 1922, issue of the *Journal of the American Institute of Electrical Engineers*. It is a tabulation of the average per cent error that might be expected for (1) a single test, (2) three tests, or (3) six tests on oil if the mean of 500 successive breakdowns is taken as the correct dielectric strength and any variation from that as the error.

	Air	Long Sphere Gap In Oil Per Cent	Short Sphere Gap In Oil Per Cent	Needle Sphere Gap In Oil Per Cent
Single breakdown test				
Average error	1 1	7 8	7 8	8 4
Maximum error	6 7	48 5	34 1	44 8
Maximum error except 3 readings	4 0	33 0	31 8	35 0
Three breakdown tests				
Average error	0 8	5 2	4 9	4 9
Maximum error	4 0	22 4	19 7	19.1
Six breakdown tests				
Average error	0 6	2 7	3 5	4 1
Maximum error	2 9	17 5	15 0	14.3

Mr. Crenshaw wanted to know how the "sweating" properties of a steel transformer differed from those of one made of cast iron. He was told that a transformer case if properly prepared by drying for the reception of the oil would not permit of an accumulation of sweat, providing the oil itself was free from moisture.

It being learned that the Coal and Industrial Exposition would not be held in Huntington next year, the association concluded not to set any place for the next meeting until it was ascertained where the exposition would be held.

THE U. S. BUREAU OF MINES does not make life tests of batteries used on electric lamps, but the performance of the batteries is studied during a short period while the lamp bulbs are being tested for life and uniformity. Also, field inspections are make by the bureau's electrical engineer, and reports are obtained from both users and lamp manufacturers. As a result of this general information the bureau believes that lead cells will give 300 shifts of 12 hours each, and alkaline cells 600 such shifts, without plate renewals.

Ventilation of Mines with Flexible Conduits

Brattice Cloth, Sollars, Windboxes, Metal and Flexible Pipe as Means of Ventilating Blind Entries—Method of Suspending and Coupling Pipe and Erecting Ventilating Machinery

EVERY coal mine requires some sort of ventilation. As a rule the circulation of air through the various headings and rooms of ordinary workings is not difficult, as every mine is, or should be, laid out with this end in view. When it becomes necessary, however, to ventilate long stretches of single heading or various other dead-end operations a more serious problem is introduced.

Common means of carrying air to dead-end faces include the brattice, the sollar, the windbox, and various kinds of pipe, either rigid or flexible. The brattice is well known to all coal miners. It consists of a partition built up of boards or canvas, or both, extending throughout the length of the place to be ventilated, dividing it longitudinally into two sections or compartments. In one of these the air travels inward and in the other outward.

A large volume of air may be handled by the brattice. It is nevertheless subject to may shortcomings. In the first place it is always liable to more or less leakage. The brattice itself as well as the joints at floor and roof seldom can be made tight. If carried to a point near the face it is subject to injury from shooting. This is particularly true if the passage to be ventilated is in rock which must be blasted from the solid, this of course necessitating heavy loading. It also reduces the width of the roadway unless the place driven is specially widened for that purpose.

Dividing the Airway by Horizontal Brattice

Sollaring air to the face as a rule is more expensive and less satisfactory than bratticing. Whereas the brattice divides the heading or driven passage vertically the sollar divides it horizontally. Thus a bratticed heading contains two compartments side by side, while the sollared heading has two passages one above the other. The sollar has all the shortcomings of the brattice so far as leakage is concerned with the added disadvantage that it is applicable ordinarily only where timber framing such as post sets are used.

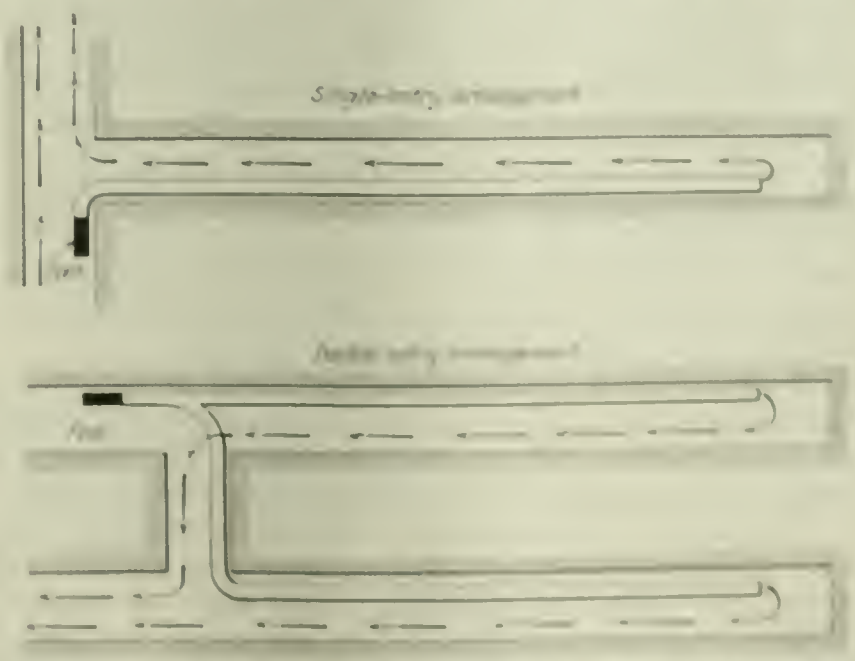
The windbox is a modification of the sollar. Here air is carried into a working by means of a wooden box laid, usually, on the floor at the side of the driven passage. Such a box, even though effective, is difficult to make airtight and requires much lumber, as a rule being made of tongued-and-grooved flooring. It also adds appreciably to the fire hazard and is not an efficient means of carrying air, as the frictional resistance is considerable.

Sheet-iron pipe often is used to convey air to the remote faces of headings and rooms. This may be either black or galvanized and usually ranges from 8 to 24 in. in diameter. Though fairly tight and losing much less air from leakage than any of the devices previously mentioned, it is somewhat difficult to handle, as it cannot be collapsed in any way. The maximum length that can be transported conveniently is about 10 ft., so that many joints have to be made in its erection. In addition to all this the sheets from which such pipe is made are thin and subject to rapid corrosion. Galvanizing will protect them from water but not from acid, which many, if not most, mine waters carry in solution. Consequently such pipes, though affording excellent results for a time, are as a rule short-lived. Another disadvantage of such pipe is that it becomes dented, causing a loss in carrying capacity, and if this occurs near the joints the leakage is considerable.

During recent years another form of piping that possesses many advantages over the devices previously mentioned has come into more or less extensive use. This is a tube of canvas or fabric that is marketed under various trade names. Such tubing is manufactured by at least three makers—two in this country and one in England. Thus the Bemis Bro. Bag Co., of St Louis, Mo., manufactures a canvas tube known as Flexoid; E. I. du Pont de Nemours & Co., Inc., of Wilmington, Del., makes a fabric tube similar in many respects to the product just mentioned but known as Ventube, and the Telephos Co., Ltd., of Vaughan Road, West Harrow, Middlesex, England, manufactures a canvas pipe known as Ventwal.

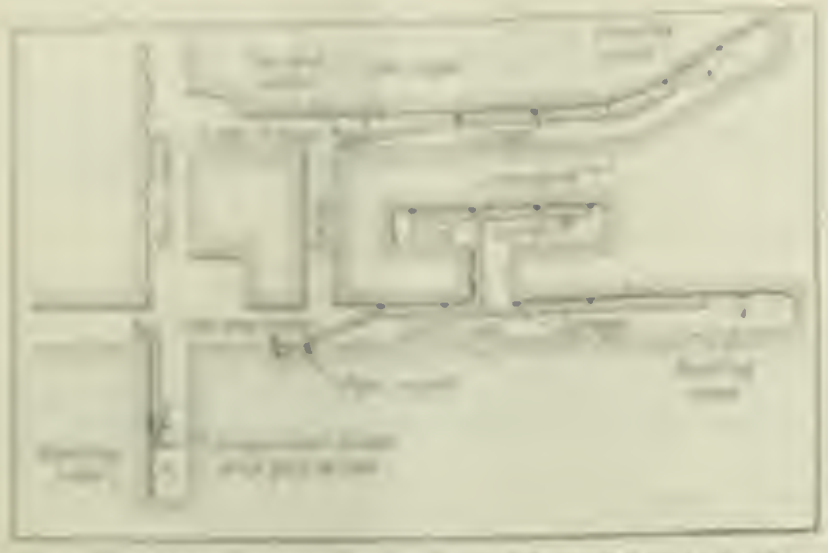
All the tubes manufactured by the above firms are circular or elliptical in cross-section. An Australian device of similar nature is made with a rectangular section. Inasmuch, however, as this shape does not lend itself readily to manufacture at low cost and as a conduit of this section must be supported by a framework of light wood or metal this device has not met with extensive application. The circular forms also oppose less resistance to the air current.

In ventilation by means of flexible conduit the joint between sections has always presented difficulties. In the Flexoid and Ventube pipes this has been overcome by fastening a light spring-steel slightly collapsible ring at either end of each section of tubing. In joining two sections together one of the end rings is slightly



METHOD OF USING FLEXIBLE PIPE IN SINGLE AND DOUBLE ENTRY

With these arrangements liberal ventilation can be afforded the faces of entries, thus driving out gas and smoke. At the time workmen are waiting for the clearing away of the bad air from a single shot a line of flexible conduit could be hung from the crosscut to the face, making bad air unnecessary.



DIFFICULT PROBLEMS IN VENTILATION BY STEEL TUBE

rolled and pushed sidewise through the ring on the other section. It is then turned so that it is parallel with the mating ring and the two section ends pulled from each other until the joint is made tight.

In the Ventubal tube a slightly oval steel ring is sewed into the end of each section or length of pipe. When in proper position the end of one tube may be readily inserted within the end of the other. Then turning one tube or section through an angle of 90 deg. and pulling the joint tight locks the two ends securely and makes a junction that is practically airtight.

How to Hang Where Cars Cannot Injure It

To assemble any of the above joints the sequence of operations is merely reversed. In any case no tools are required, neither is any particular skill necessary. Any ordinary workman can soon learn to make or break joints with ease and precision.

One great advantage enjoyed by tubes of this kind is the ease with which they can be disposed within a mine passage whether this be driven in rock or coal. In most instances such tubing is suspended at the side of the heading or room and near the roof and in this position it does not interfere with haulage. Messenger wire is first strung and drawn taut. The method of suspending this wire will depend on conditions. If the passage is timbered this wire may be stapled to the roof beams every 12 to 15 ft. If such roof beams are not available, sprags may be wedged between the ribs near the roof or, if the roof is irregular and arched, between irregularities occurring in the roof.

If the room is wide and the roof level or flat, holes may be drilled in the rib into which short iron rods may be inserted. These should project out from the rib a distance equal to at least one-half the diameter of the canvas tube, and upon them the messenger wire may be hung. Wooden rods may be placed in such rib holes, to which the messenger wire may be stapled. Cross-pieces may be nailed between posts, to which the wire may be attached, or short pieces of boards may be nailed to the posts, extending out to one side a sufficient distance to permit the tube to hang free. In any case, suspension of the messenger wire is comparatively easy. Another method is to set plugs in the roof and hang the messenger wire from these. No. 8 B. & S. galvanized wire is recommended.

Attachment of the tubing to the messenger wire is made by means of hooks spaced at about 2½ ft. intervals. In shafts, winzes or raises suspension collars are placed on the tubing every 50 to 100 ft., depending upon its size and consequent weight. These are fastened by means of wires to the side walls or timbering so as to take all the weight of the tube section to which the suspension collar is attached. Excessive weight upon any joint or coupling is thus avoided.

The manufacturers of Ventube claim for their fabric a chemical stability that enables it to resist the acid and gaseous conditions encountered underground, as well as attack from fungous growths of various kinds. It is also waterproof and of great toughness and tensile strength, as proved by an eighteen months' test in mines where the conditions were unusually severe. The stitching of the tubes is made with specially treated thread.

Tube Can Be Patched Like a Rubber Tire

A special cement is used for patching, the part to be patched being deflated and the torn section to be covered being carefully cleaned with gasoline. Two coats of cement are placed on the pipe and on the patch and left to dry. When completely dry the cemented portions are hammered together on a flat surface, giving instant adhesion. For temporary repair underground a small patch can be sewed on, and this usually will give entire satisfaction.

"Fittings" for this kind of tubing are exactly analogous to those available for wrought-iron or steel pipe. They include elbows, tees, wyes, reducers and the like as well as a connection to join the tube to the rectangular discharge nozzle of a fan or blower. A blasting piece also is sometimes used next to the face if heavy charges are to be fired. This is drawn back before the shots are detonated, and pulled forward again after the blast, thus avoiding the injury to the fabric which frequent removal and dragging over the ground would inevitably cause should the end tube be unhooked every time before a shot was fired.

As a rule a fan or blower will be used to furnish the air current. Where compressed air is available, however, a small jet may be led within the outbye opening of the pipe and a ventilating current induced on the principle of the injector. Tests made in South Africa some years ago showed that 5 cu.ft. of free air per minute escaping under pressure from a ⅛-in. nozzle opening induced a current of 210 cu.ft. per minute; 80 cu.ft. of free air escaping under pressure from a ¼-in. opening actuated a current which delivered 1,080 cu.ft. of air. These experiments were conducted on a 538-ft. length of 9-in. pipe, and the figures on the resulting current just given were the discharges measured at the outlet opening and included, of course, the input of compressed air.

In most cases, however, as above stated, a fan or blower will be employed. This may be mounted either permanently or temporarily. For a permanent foundation no material, all things considered, appears to equal concrete. Brick or stone masonry may, however, be employed to advantage. In emergencies or in cases where the fan and tubing are to be used for only a short time a wooden foundation may be employed. This can be built up of mud sills and cross-pieces, bolted, drift-bolted or spiked together. Any timber that is

convenient, such as posts, ties, chock lumber and the like may be used, provided an even foundation surface is secured. Sawn lumber, of course, is preferable. If properly made a fan may be operated on a foundation of this kind for a long time.

In work of this nature the motor and fan, if possible, should be direct-connected. If this is done both elements may be bolted on a common base, which in turn is bolted to the foundation as a unit. For large volumes of air, however, belt or chain drives have their advantages, as the motor and fan may then be readily separated and moved into place with greater ease than if joined rigidly together. This arrangement, however, necessitates two foundations. Many companies manufacture fans suitable for this kind of work. Many motors also are available.

Although ventilation by this means will hardly be used in the ordinary operation of a well-regulated coal mine it may advantageously be resorted to for special work or in time of emergency. Thus it will find application in driving long passages, such as drifts or slopes from one bed to another, under streams and the like. The accompanying illustration shows some of the dead-end faces that can be ventilated by this means.

So far as coal mining is concerned it is in time of emergency that this type of ventilating equipment will be found most valuable. Its light weight—one man can carry 100 ft. of 16-in. tubing without serious inconvenience—and the rapidity and ease with which it may be erected are considerations of high value after a disaster, such, for instance, as an explosion. Furthermore, in fighting mine fires it may in many cases be used to good effect. This will be particularly true in those instances where the exact location of the fire is unknown and where it is desired to attack it from above. Under such circumstances sometimes thousands of feet of narrow passages must be driven. As every mining man knows, these are extremely difficult, if not impossible, to ventilate by ordinary means.

In such emergencies also time is, or may be, an all-important element. No man can do his best in an atmosphere depleted of its oxygen or vitiated by smoke or explosive fumes. Pure air in adequate volume delivered at or close to the working face will not only promptly clear away powder smoke and the like but will assure a maximum of effort from the workmen employed. With an outfit of this kind such an emergency can be met without delay.

Reports and Investigations State Geological Surveys and Mining Bureaus

Coal Reserves of Cambria County, Pa.

By John F. Reese

CAMBRIA County, Pennsylvania, has six coal beds that are now of economic interest. In order of their present importance as shipping coals these are the Lower Kittanning, Upper Kittanning, Lower Freeport, Upper Freeport, Clarion and Brookville.

The many mines working the Lower Kittanning bed and exposures of its outcrop have furnished many measurements of its thickness, thus making possible an accurate and reliable computation of the quantity of coal contained. The "B-Rider" coal of the Bens Creek area has been computed along with the Lower Kittanning coal in this report.

The Lower Kittanning is the most persistent bed, contains the greatest coal reserve and is the largest producer within the county, yielding more than 8,100,000 tons annually.

A fair amount of information as to the thickness and persistency of the Upper Kittanning bed is available. This measure is best suited for mining in the Patton, Portage, South Fork and Johnstown areas.

A fairly accurate estimate of the quantity of coal in the Lower Freeport bed is made possible by many measurements at mines and outcrop. This measure attains its best development for mining in the Barnesboro-Spangler area.

The extensive outcrop of the Upper Freeport bed throughout the county, and its mine development in various localities, furnish a fair number of measurements for an accurate estimate of its quantity. It is mined most extensively in the Barnesboro, Hastings, Gallitzin and Cresson areas, where it attains its best thickness.

The Clarion or A coal has been computed as of economic interest in Reade and Richland townships, where it has been mined. Little is known of its thickness and extent, and only areas surrounding mining developments or proven ground have been computed.

The Brookville or A coal bed has been considered as of interest in five townships, namely, Adams, Cresson, Dean, Gallitzin and Richland. Only areas surrounding operations or proven ground have been computed, as little is known of the extent and persistency of this coal.

Cambria County has a total area of 697.4 square miles. The result of computing the coal reserves in this county based on the latest maps, engineering data, and methods is shown in the accompanying table. The figures are here given as computed. It should, however, be distinctly understood that while the acreage of each of the beds has been accurately calculated, the reliability of the average thickness of the coals employed in the computation of tonnage decreases for the various beds in the order following: Lower Kittanning, Upper Freeport, Lower Freeport, Upper Kittanning, Brookville and Clarion. Thus, while the figures for the Lower Kittanning bed are conservative and probably reliable, those for the Clarion coal may be much too small or many times too large.

Detailed tables of the coal reserves in each township have been prepared and will appear in printed form in a report now being written on the bituminous-coal fields of the state. They can be consulted in the office of the Topographic and Geological Survey; or figures for a single township will be mailed from that office on request.

COAL RESERVES IN CAMBRIA COUNTY

(In Net Tons)

Bed	Original Deposit	Mined Out	Recoverable
Upper Freeport	1,016	14	715
Lower Freeport	1,337	85	1,252
Upper Kittanning	922	80	842
Lower Kittanning	2,616	271	1,344
Clarion	32	1	31
Brookville	64	(13)	61
Total	5,183	458	4,239

Valuation of Coal Land Leaseholds In Tax Returns

By W. R. Ross
[illegible]

IN EVERY coal field there are operations on leased land. Many companies mine both from leaseholds and from land owned in fee, but not all of those who work under leaseholds appreciate the value of the lease or realize that they are entitled to establish on their books and before the Income Tax Bureau a proper value for this form of property. In particular those operators who had substantial earnings prior to March 1, 1913, or who have preferential royalty rates or favorable conditions are in position to profit by taking advantage of this feature of the tax law and regulations.

Under the revenue acts of 1918 and subsequent years the value of a lease may be amortized. The procedure is comparatively simple. The Treasury Department has a Form R, rather formidable it is true, but one that most companies find it necessary to file. The facts necessary for a basis to establish the value of a leasehold are assembled when Form R has been filled out. But the Treasury Department does not make the deduction in tax that corresponds—the lessee must set up his claim.

Whatever value was vested in the ownership of any property on March 1, 1913,* must in the event of a subsequent sale of that property be recognized as capital, and is entitled to the return free from income tax, regardless of the fact that that value may have been in excess of its cost. Consequently revenue legislation has provided that profit in the sale of such assets shall be ascertained by taking the fair market value as of March 1, 1913, as the basis of value. Therefore, it has always been recognized that the taxable profit from the sale of a mining lease shall be its value in excess of the March 1, 1913, value. This being the case, the importance of establishing such values in the case of the sale of such property is obvious.

Supreme Court Ruling Awaited with Interest

It would have seemed natural for Congress to provide for deduction of depletion, or, more strictly speaking, for the amortization of such leasehold values as allowable deductions in ascertaining taxable income under the various revenue laws, but it was not until the passage of the act of 1918 that proper consideration was given to this situation and an allowance provided to the lessee. The Supreme Court has decided that under the 1916 law the lessee is not entitled to such a deduction. No doubt before long a specific ruling by the same body will also be had as to the status of such deductions under the law of 1917.

Full recognition of the rights of the lessee operator to recover his equity in such property by appropriate deductions for depletion based on cost or the value at March 1, 1913, was first given in the 1918 tax laws. Of course it was always in order that the actual cost of acquiring such a lease might be amortized, but the appreciation in value was not therefore recognized.

*The sixteenth amendment to the Constitution of the United States provides: "The Congress shall have power to lay and collect taxes on incomes, from whatever source derived, without apportionment among the several states and without regard to any census or enumeration." This amendment was ratified by a sufficient number of states by Feb. 25, 1913, to become its effective date for purposes of ascertaining leasehold values. March 1, 1913, is referred to in succeeding legislation as the date upon which the previous legislation of Congress in the matter became operative.

The Bureau of Internal Revenue has issued voluminous regulations as to how values may be established. They may be summarized as: cost; sales or transfers of similar properties; royalties and rentals; values for capital stock or local taxation; records of litigation; probate court inventories; disinterested appraisals, and present value of eventual earnings.

Because comparatively few representative transfers of operating coal-mining property took place around the basic date of valuation, March 1, 1913, and because the other methods offer little for comparative value most valuations in this field are determined by the present-value method. This method is one generally recommended by the engineering profession and is equitable in that it gives recognition to the value of management as a factor. Two properties may be of apparently similar nature, yet one be a failure and the other a success. As a former official of the Internal Revenue Bureau put it: "A dollar of capital which will earn a quarter is worth more than a dollar which will earn a nickel."

R. V. Norris Defines "Present Value"

A leasehold is a property right and to appraise its present value requires first a knowledge of the proper method and second certain basic facts. R. V. Norris' defines present value as follows: "The total value of a property at any date is the value of the future earnings of such property discounted to that date. The value of the mineral in the ground at any date is the total value of the property as above, less the value of the present and prospective expenditure for plant, development and equipment necessary to recover such mineral discounted to the same date."

The Treasury Department has held that taking into consideration the hazards of mining and marketing, a fair basis of valuation in the bituminous coal industry is obtained by using a discount factor of 8 per cent with a sinking fund provision of 4 per cent. Many engineers, however, will not agree with this basis.

Let us illustrate the theory of the valuation of a leasehold on the basis of earnings in the period prior to March 1, 1913. Assume that in the period prior to 1913 the average earnings† were 30c. per ton, that the life of the reserves after the date of valuation was twenty years and that the average annual production is 100,000 tons. This would give an annual profit of $30,000 and prospective profits in twenty years of $600,000. The present worth of the eventual earnings, $600,000, discounted on the basis of 8 per cent and invested in a sinking fund at 4 per cent is found, by using Hoskold's formula, to be $264,126. If from this is deducted the cost of plant, present and prospective, assumed here to be $125,000, we find the present value of the leasehold to be $139,136. On the basis of the 2,000,000 tons unmined at date of valuation, this gives 6.956c. per ton, which may be deducted as depletion. If the annual production is 100,000 tons we have $6,956 allowable deduction and therefore a decrease of that amount in the taxable income.

Using the 1918 income tax rate for corporations of 12 per cent, plus 65 per cent, the highest bracket of the

†"The Federal Income Tax," R. V. Norris, Columbia University Press, page 229.

‡The proper figure for average earnings here is obtained after deducting as "cost" the things defined by Article 206 of Income Tax Bureau Regulations 62, as those in connection with producing, preparing and marketing the mineral product sold, exclusive of federal income and profits taxes, allowable capital additions and provisions for depreciation and depletion, but including cost of repairs and replacements necessary to maintain the plant and equipment at its rated capacity and efficiency.

excess profits tax into which many of the coal companies rates ran, we have possible a 77 per cent tax. Taking 77 per cent of our $6,956 we have $5,556 as the maximum saving through proper valuation of leasehold. Of course if the earnings in the period before 1913 were higher than the assumed average of 30c. or if the life of the coal is less than twenty years the per ton value would be correspondingly higher and the saving greater; if lower, the reverse would be true.

If the lease have a preferential rate of royalty as compared with neighboring properties made under similar conditions and at approximately the same date, values may be assigned upon the basis of such preferential values, without the necessity of proving on the basis of earnings.

It is possible that at times a value may exist in a leasehold for the purpose of invested capital. These cases are the most difficult to establish, but if the lease was a proven tract and was turned over to a corporation in exchange for capital stock of the corporation, the value of the lease may be "paid in surplus" within the meaning of the law and be capitalized as such at its value at date of acquisition, subject to the limitations, for the year 1917, of the par value of the stock or shares specifically issued therefor.

Recloses Instantly Circuits Temporarily Short-Circuited or Overloaded

AUTOMATIC reclosing equipment for use on direct-current circuits of 300 and 500 volts has recently been designed and constructed. Its function is to protect apparatus in case feeders become short-circuited or overloaded, and at the same time to insure a continuity of service when the trouble is only temporary.

This equipment, which is constructed by the General Electric Co., is designed for use on circuits employing stub-end feed, a combination of stub-end and multiple feed, or in combination with a sectionalizing switch or sectionalized feeder.

The manner of its operation on a stub-end field—that is, one where the load is supplied by current from a single source—is so typical that once described the reader will have a clear idea of the manner in which the apparatus functions under other circumstances. The various devices that go to make up the equipment are a shunt contactor, an instantaneous overload relay, a reclosing relay, a control power switch and a load-indicating resistor. These devices are connected in accordance with the accompanying wiring diagram.

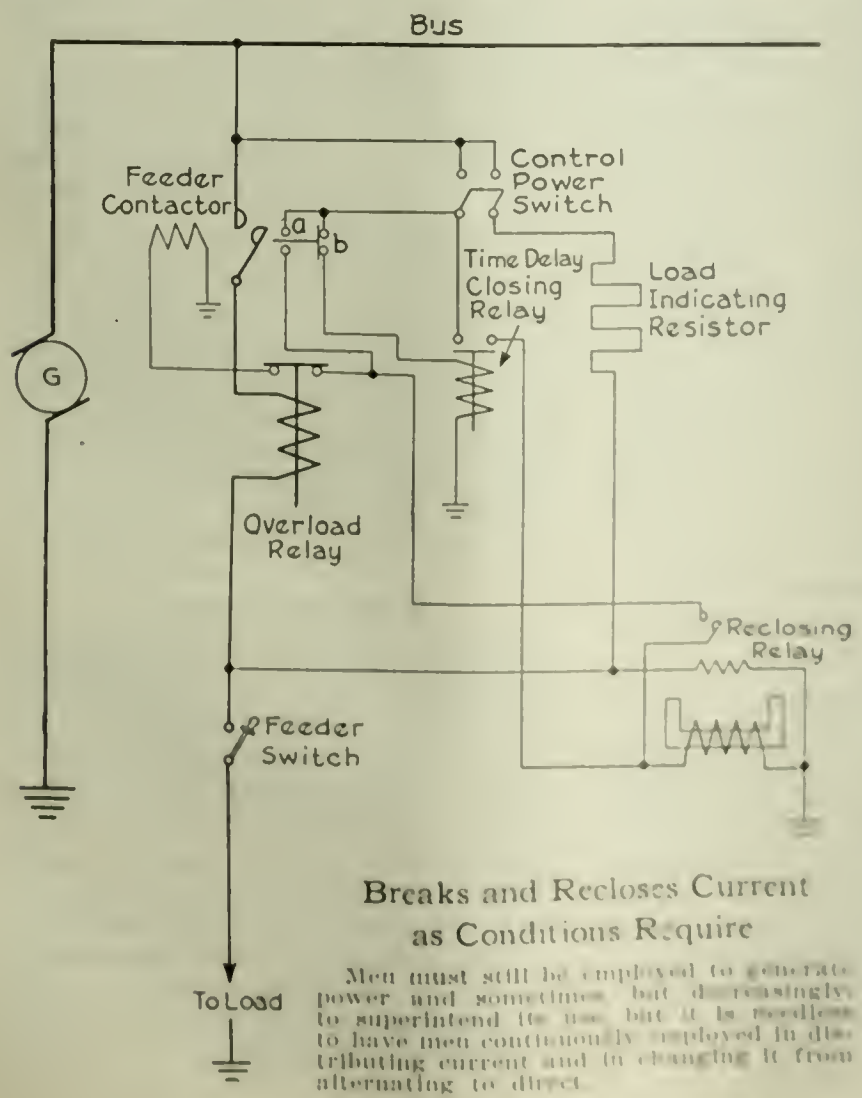
The sequence of operation of the equipment in case of a short-circuit or heavy overload on the feeder is as follows: The overload relay opens its contacts, thus de-energizing the coil of the contactor, which opens instantaneously, disconnecting the load from the power supply. When the contactor opens it closes the auxiliary switch (*b*; see diagram) which energizes the coil of the time-delay circuit-closing relay, which starts to close. The time delay is inserted at this point in the sequence in order to allow conditions on the feeder line to become stable. Closure of this relay completes the circuit through the lower coil of the reclosing relay.

Operates Somewhat Like a Voltmeter

The reclosing relay has two coils, both of which must be energized before the device will function. Its operation somewhat resembles that of a voltmeter, the lower coil being analogous to the permanent magnet of the meter while the upper one furnishes excitation to the movable element on which the contacts are mounted. The relay contacts will close only when the voltage drop across the load, with which the upper coil is in parallel, is enough to cause that coil to excite the movable elements sufficiently to close them. When the load resistance is zero, as in case of a short-circuit, there is no voltage across the upper coil, but when the load resistance is infinite or when open-circuit conditions exist, practically full voltage is impressed across the upper coil, because its resistance is much greater than that of the load-indicating resistor. Consequently it is possible to obtain an intermediate point and calibrate the reclosing relay so that, with a definite value of resistance in the load-indicating resistor, the equipment will not close on a load in excess of a predetermined value.

As long as the trouble on the feeder continues the reclosing relay will remain open, even after the time-delay relay has closed, because the voltage across the load is not enough to close the contacts. As soon as the trouble has cleared, however, and the load resistance has passed the predetermined point, the relay will close, energizing the coil of the feeder contactor which then closes, in turn closing the auxiliary switch (*a*) which seals it in. Closure of the contactor reconnects the load and de-energizes the time-delay relay which opens its contacts.

The equipment for circuits having a combination of stub-end and multiple feed makes use of a contact-making voltmeter to indicate when the potential difference between the feeder and the source of supply has fallen to a safe reclosing value. When the voltage has so decreased, the feeder contactor recloses in the same sequence as in the former instance. A relay connected in parallel with the contact-making voltmeter determines whether the equipment is to operate on multiple or a stub-end feed.



Breaks and Recloses Current as Conditions Require

Men must still be employed to generate power and sometimes, but decreasingly, to superintend its use, but it is needless to have men continuously employed in distributing current and in changing it from alternating to direct.



Problems of Operating Men

Edited by James T. Beard



Examples of Successful Gravity Planes

Three-Rail System, Top to Bottom of Plane, with Four-Rail Passing Tracks — Arrangement Wholly Eliminates Switches—Tipple Set on One Side of Incline as a Safeguard Against Runaway Cars

REFERRING to the inquiry of C. M. Shaffner, regarding his proposed installation of a gravity plane, *Coal Age*, Aug. 18, p. 311, kindly permit me to give a brief description of an incline that has been in successful operation for some time, at one of our mines.

In using this, I will refer only to a few of the general features that have a particular bearing on the successful operation of the plane. Without knowing the exact conditions that surround the situation to which reference was made in the inquiry, it is clear that any plan proposed would have to be modified in detail to fit the case in hand.

Three-Rail System Affords Many Practical Advantages

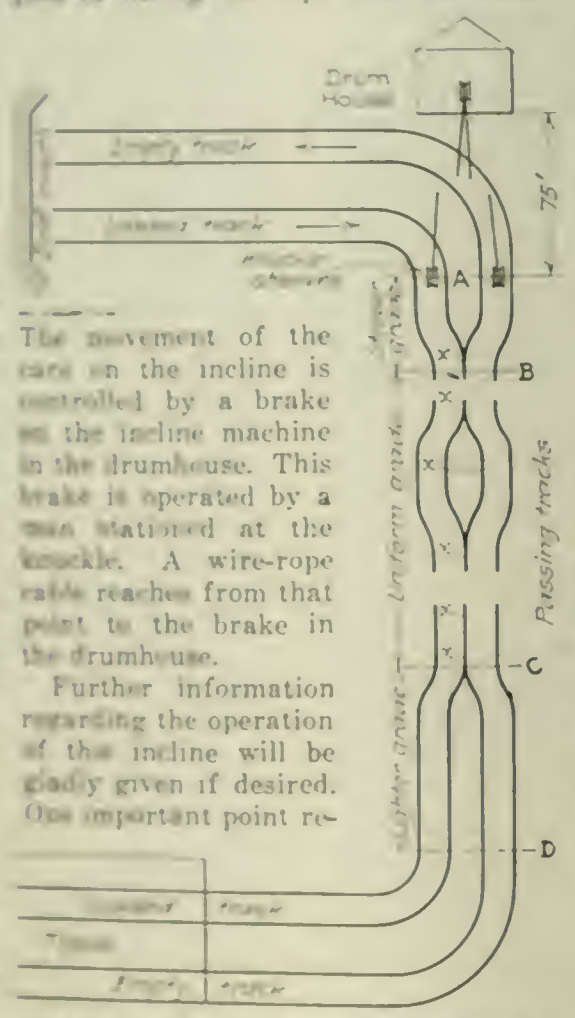
With this premise, let me say I would heartily recommend a three-rail system, extending the full length of the incline, except for the passing tracks midway of the plane, where there must naturally be four rails provided.

The important advantage of a three-rail system is that such an arrangement wholly eliminates the need of switches at any point on the incline. It provides separate loading and empty tracks to be used exclusively by the loaded and empty cars, respectively. This is made possible by the installation of a vertical type of incline machine in the drumhouse, which is located from 50 to 75 ft. above the head of the incline, as indicated in the accompanying figure.

Equipment, Grades and Track Arrangements

There are different types of these machines, adapted to suit different conditions, and a machine should be selected of suitable size and kind to correspond to the weight of cars to be handled and the service intended. This is an important consideration among the forty or fifty different styles and sizes of these machines now on the market.

Referring to the figure, starting at the knuckle, at *A*, for a short distance to *B*, the grade is made steeper than the uniform grade of the incline reaching from *B* to *C*. Then, from *C* to *D* the grade is made much lighter. This is an important feature, as the loaded cars descending the steeper grade *AB* serve to overcome the inertia and accelerate the



The movement of the cars on the incline is controlled by a brake on the incline machine in the drumhouse. This brake is operated by a man stationed at the knuckle. A wire-rope cable reaches from that point to the brake in the drumhouse.

Further information regarding the operation of this incline will be gladly given if desired. One important point remains to be mentioned and that is the setting of the tipple to one side of the incline, in order to safeguard the lives of the men at the foot of the plane, in the event of a runaway car, which is liable to happen at any time. This arrangement also obviates the necessity of providing a safety switch or dropping at the foot of the incline.

RICHARD MACDOUGAL,
Supt., Crafton Branch, No. 8 Mine.
Pittsburg, Pa.

GRADE OF THREE-RAIL SYSTEM FOR A GRAVITY PLANE

ANOTHER LETTER

IN connection with the suggestion offered by D. S. Allison, *Coal Age*, Sept. 14, p. 415, regarding the use of three rails to replace the single track, above the passing point, on a self-acting incline, it may be of interest to state that such a system has been installed by the American Manganese Mfg. Co. of this place, at one of their mines.

At the head of the incline is located a set of tandem wheels, or gravity sheaves, of the type commonly known as "Figure 8." This machine is placed directly under the tracks leading into the mine. As has been stated the three-rail system is only used above the point where the cars pass each other halfway up the incline. Below this point a single track is used.

Plane Equipped with Permanent Cars and Automatic Switch

The automatic switch, at the lower end of the passing tracks, in this case, is operated by a weighted lever that keeps the switch set for the empty track, except as it is forced open by the loaded cars passing down the plane.

On this incline, there are but two permanent cars used, which are attached to the two ends of the rope, respectively. These cars are equipped with drop doors, at their lower ends. As a car reaches the foot of the incline the door is automatically raised by an attachment and the car dumps its load, after which the door again closes, locking with a spring catch.

At the upper end of the incline each car passes under a bin, located at the entrance of the mine, where it is loaded and is then ready for another trip. While only a small car is used at the present time, this arrangement is capable of handling an output of 500 tons in 8-hr. Its operation has given complete satisfaction.

Dunbar, Pa. JOHN STANNIS.

Room Timbering

Cantilever action of roof follows extraction of coal — Permanent posts should not be carried too close to the face — Temporary posting there will often avoid breaking of timbers— Systematic timbering advised.

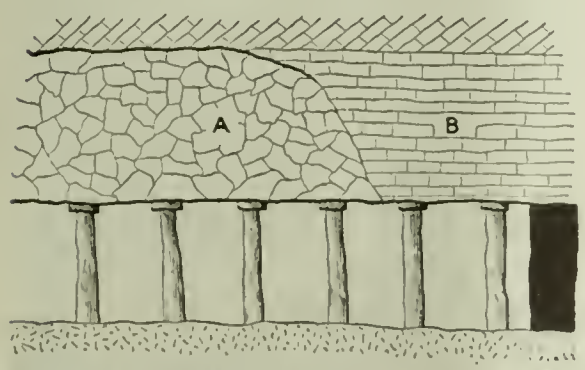
REFERRING to the question asked by "Timberman," *Coal Age*, July 27, p. 136, asking the best method of timbering rooms in a 6-ft. seam under 250 or 300 ft. of cover, with a good roof and bottom, I would like to make the following suggestions:

It is important, of course, to use timbers of a suitable size. In this 6-ft. seam the small diameter of the posts should not be less than 6 in. Good cap pieces from 3 to 4 in. should be used over the posts, but it will not be necessary to use foot boards.

Assuming that these conditions have been complied with and that the rooms are driven systematically, the continued breaking of the posts under this cover would seem to indicate that there is a greater pressure operating than that due to the weight of the overburden alone.

Cantilever Action of Roof Follows Extraction of Coal

The extraction of the coal always develops a cantilever action in the roof. In my sketch I have tried to illustrate the effect of this action. The gradual settlement of the roof on the timbers causes the strata to break a short distance back from the face of the coal. In the figure the portion A represents



STRATA BREAKS A SHORT DISTANCE FROM FACE OF COAL

the area of complete settlement, while that marked B indicates where settlement is in progress.

As explained in the reply to this inquiry, the unbroken strata above overarches the opening, causing the weight of the overburden to rest on the ribs, and the weight of the loosened portion A above rests on the permanent timbers beneath it.

Posts at the Coal Face Must Not Be Set Too Tight

The point I wish to emphasize is that temporary posts should be set under the solid portion B close to the face. If these posts are set tight between the hard roof and floor they will be broken by the weight coming on them, being subjected to a much greater pressure than the permanent posts farther back from the face.

If the breaking of the posts is more pronounced and continuous within a limited distance of the face it would seem that the posts have been set too tight under that portion of the roof. On the other hand, if the breaking of the posts extends further back from the face we must look elsewhere for the cause.

It is a good plan to drive several rooms abreast of each other and at a uniform width and distance center to center and watch the effect in producing a more uniform distribution of pressure. It might be well to use a line of light cogs up the center of the room instead of the middle line of posts. This would be expensive, however, and can only be advised as a last resort.

Caps Being Crushed Show Posts Are Set Too Solid

From the statement that the caps do not appear to serve their purpose when the posts take the weight, I infer that the trouble occurs at the face rather than down the length of the room. I naturally conclude that the compression of the caps is not sufficient to allow for the settlement that must take place.

That being the case, it is not strange that the posts are broken since, as stated in the reply to the inquiry, the weight of the overburden is far in excess of the strength of the timber. Since this settlement is irresistible, the most practical course to pursue is to make the posting at the face temporary and not drive them tight.

The conditions described would also suggest the advisability of adopting a systematic method of posting by which the roof pressure will be more equally distributed.

I. C. Parfitt.

Washington, D. C.

Testing of Safety Lamps

Every lamp must be tested—Opinions differ in regard to character of test—Use of lamps approved by the Federal Bureau—Blowing test effective if properly made.

IN HIS letter regarding the testing of safety lamps, *Coal Age*, July 13, p. 60, Joseph Cain raises the question as to whether the method of testing a lamp by blowing against it, as he has described, should not be adopted at all mines where such lamps are in use. Mr. Cain also asks whether it is possible to tighten a lamp to such an extent as to endanger the breakage of the glass through expansion due to the heating of the lamp.

It requires no argument to prove that a safety lamp should be tested for any defects, either of construction or assembly, before being entrusted to a miner. However, the manner in which this testing should be done is a question on which all may not agree. Before the lamp is assembled, it must be carefully examined in every part to ascertain if they are in perfect condition and there are no defects that would render the lamp dangerous.

Purpose of Federal Bureau of Mines Testing of Safety Lamps

When a lamp has been assembled its further testing is for a twofold purpose: 1. To demonstrate that it will not pass the flame in a current of high velocity. 2. That it will not pass the flame by reason of an internal explosion, under any conditions that may reasonably be expected to arise in the daily operation of the mine.

As far as I have been able to observe, very few mines have facilities for making a test to demonstrate the first of the two conditions mentioned. In fact, such a demonstration is not necessary, inasmuch as all approved lamps have been subjected to such tests at the Federal Testing Station. The fact that they have been approved by the Bureau of Mines is evidence that they have stood those tests successfully.

My point is that no mine should be worked with any other than approved safety lamps, if safeties are required at all. Then, if these lamps are maintained properly, there will be no necessity of their being subjected to a further test to ascertain if they will pass flame in a current of high velocity.

Testing for Internal Explosion More Important

Personally, I consider the testing of a lamp, for the second purpose named, of far more importance in determining its safe condition. As a matter of fact, there are few mines in which the velocity of the air current is as great as that to which the lamp has been subjected in the Federal Bureau test. Such velocities, if they occur at all, would only be found on the main intake and return airways of a mine.

Now, regarding the blowing test mentioned by Mr. Cain, it might be said that custom has sanctioned this practice, which has been in use a long time, in most localities, chiefly owing to its thoroughness and reliability, which is apparent to everyone. My experience is that when a lamp has been properly examined and assembled there is little danger of its being unsafe, except that it may leak air around the asbestos washers and these gaskets should receive careful inspection.

Hardening of Gaskets

At times, the gaskets become hard from long use and continued compression, which gives them a glazed surface and makes them ineffective, particularly if they are dirty. To remedy such a condition, the washer should be scraped to remove the compressed dirt and produce a soft surface that will form a better contact with the glass; or new gaskets must be used in place of the old ones.

In regard to the flame of a safety lamp being extinguished by the carbon dioxide contained in the breath, as suggested by one writer, it should be remembered that the purpose of the blowing test is to ascertain if the flame is at all deflected by reason of the air blown against the lamp entering the combustion chamber. If the flame is at all disturbed or deflected, the lamp is unsafe. It seems to me that the extinctive effect of the breath is immaterial, in respect to ascertaining the security of the lamp.

Making the Blowing Test

In making this test, I have found that the lips should be placed in close contact with the lamp, at the suspected points. If the lamp is held even a short distance away from the lips, the air blown against it is deflected by the circular form of the lamp, and the effectiveness of the test is destroyed. This may not seem sanitary, but it makes

the last a safe one. For the purpose mentioned, I consider that the blowing test, if properly made, is one to be strongly advocated.

THROUGH THE LAMP

While I do not regard the tightening of the lamp, before it has become heated, as being particularly dangerous, I would not advocate the practice if there is any possibility of the lamp being strained for any length of time in a dust atmosphere charged with gas, such as a feeder will frequently encounter. Lamps burning a volatile oil are very susceptible to temperature changes. Such lamps should be light and only sufficiently to secure an air tight joint around the top and bottom of the glass cylinder, and this should not endanger the glass by reason of expansion through heating.

Washington, D. C. I. C. PAGETT.

ANOTHER LETTER

IN DISCUSSING the question of properly testing a safety lamp before entering the mine, some writers have claimed that when it is possible to blow out the light of a safety lamp, either the lamp has not been put together rightly or there is some defect in its construction.

It has always been my understanding that something is not right when a light can be extinguished by blowing into the lamp; but, today, many safety lamps can be put out in this manner. If anyone doubts that statement, let him blow through the orifices of his lamp, just below the glass.

CIRCULATION ABNORMAL

While it may not have a direct bearing on the subject matter of this discussion, I think it will be well to draw attention to two features that have not as yet been mentioned regarding the construction of safety lamps. The first has reference to the air entering the lamp at a point below the flame, so that the circulation within the combustion chamber and the chimney of the lamp will be economical.

It is well known that where the air enters a safety lamp through the lower part of the gauze chimney and above the glass, it must descend in order to reach the flame. This is the trouble with the old type of Clanny lamps. The descending and ascending currents thus formed within the combustion chamber always cause the lamp to smoke. Moreover, there is formed what I would call a wall of burnt air or "afterdamp" (CO_2) that settles around the flame. This wall of extinctive gases not only dims the lamp, but makes it impossible to test correctly for firedamp.

EFFECT IF CARBON DEPOSITS

It may be argued, and it is true to a considerable extent, that the presence of carbon dioxide in the combustion chamber will lessen the force of any explosion that might occur within the lamp, which is very liable to happen when the lamp is in the hands of a careless fireboss.

Owing to the relighting devices, in many safety lamps in use today, a fireboss is apt to be less careful in making tests for gas. He will often run the risk of an explosion within his lamp. However, most of the lamps equipped with relighting devices enter the air below the flame, thus creating an upward circulation within the lamp and clearing the combustion chamber of excessive gas. This construction, I believe, reduces the liability to danger from internal explosion.

PREFERENCE FOR SMALL LAMP

The second feature to which I want to refer relates to the size of the gauze chimney. To my notion, a small lamp is stronger and better able to stand hard usage. It occupies less space, is easier to handle and a thin layer of gas at the roof is more readily reached when the height of the lamp is reduced.

Present day practice, with a large number of our firebosses, is to carry an electric lamp in their cap, which gives a good light and helps to expedite their work. It is this custom that has given rise to a desire for small testing lamps.

Linton, Ind. W. H. LUXTON.

[The reference of this correspondent to the desire of some fireboss to use a small lamp recalls the attempt made some years ago to introduce a miniature Davy lamp, for the purpose of testing for gas in mines. When the knowledge of this came to the late James E. Roderick, then chief of the Department of Mines, in Pennsylvania, it brought from him a prompt protest against the use of such lamps, as being dangerous for many reasons.

STANDARD SIZE OF LAMP DETERMINED

First, the size of the lamp and the small space inclosed within the gauze chimney, it was claimed, made the little lamp a menace to safety when exposed to a body of gas in the mine. Again, its small size made it an object that would naturally be tucked away in the pocket of a fireboss or foreman, where it would accumulate dirt, be upset and leakage of oil would render it unsafe for testing.

As the result of protracted experiments, the eminent chemist Sir George Humphry Davy, found that the best results were obtained in the use of what has since become a standard gauze for safety lamps, containing 28 wires (No. 28 B.w.g.) to the inch, or 784 openings per square inch. Davy drew attention to the danger arising from the use of gauze chimneys of too large a size, as in the old Scotch Davy; or a chimney that was too high, as in the Pieler safety lamp. Similar danger also exists in the use of too small a gauze chimney, by restricting the volume within the lamp.—EDITOR.]

Inquiries Of General Interest

Use of Single and Double Cables for Electric Gathering Locomotives

Large Percentage of Single-Conductor Gathering Reels in Use — Track Requirements — Two Types of Double-Conductor Cables—Advantages of Single- Over Double-Conductor Cables

AFTER reading numerous valuable replies to inquiries that have appeared in *Coal Age*, I have decided to ask for a little information myself. We are developing a new mine in which we plan to operate gathering locomotives. Up to this time, however, we have been unable to decide whether it is better to use a single or a double cable to permit the locomotives to reach the faces of the rooms in the mine. My personal preference is for the single type of cable, for many good reasons that I will not take the time now to state. But our foreman says he has never used the single type of cable and is inclined, therefore, to favor using the double cable. One of these double cables has been and is still in use in our mine, and the foreman argues that it is well to let good enough alone and not experiment with a type of cable that we have not used before.

As I regard the situation, inasmuch as we expect to use several of these cables in the future, it is important to ascertain the views of *Coal Age* and others regarding the relative advantages of these two types of conductors, in gathering-locomotive haulage. My purpose in asking this information is to ascertain the most economical method of operating gathering locomotives equipped with reel and cable so they can reach the face.

Stillwater, Ohio. ELECTRICIAN.

In order to obtain first-hand information on this subject, we have asked Graham Bright, general engineer for the Westinghouse Electric & Mfg. Co., to give the readers of *Coal Age* the benefit of his knowledge and experience, regarding different types of gathering conductors. Mr. Bright writes, in substance, as follows:

"A large percentage of electric gathering reels are of the single-conductor type. In mines where the rails, on room entries and in the rooms turned off those entries, are laid with a fair amount of care and the fishplates bolted up so as to afford a good rail return for the electric current, there is no true reason why a single-conductor cable will not give satisfactory service.

The double-conductor cable has been used largely, in the past, where wooden rails were laid in the rooms; or where iron rails were used but improperly laid and the fishplates loose or missing. Under these conditions, it is quite evident that a single cable could not be used to advantage, if at all. Today, most of the mines realize the importance of keeping their tracks in fair condition, as derailments are not only expensive but affect the output to a very considerable extent.

There are two types of conductor cables; namely, the twin-conductor cable, consisting of two parallel wires bound together to form a single cable, and the concentric type of cable. I regard the latter as being much superior to the former. Most of the double-conductor cables manufactured have been of the twin-conductor type, which is very difficult to reel up evenly, and makes the operation even harder of accomplishment when it becomes necessary to use a cable that has been spliced.

During the last few years, I have been recommending the concentric type of double-conductor cables, wherever it is necessary to use a double cable owing to poor track conditions. The concentric type has the advantage that it reels much more evenly than the twin-conductor cable. In the concentric type, the ground side being outermost, no particular damage is done if the outside layer of insulation becomes worn off in operation. Though, in the use of this type of cable, repairs may be a little more difficult, this disadvantage is more than counterbalanced by the advantages gained.

Allow me to advise that wherever possible the single-conductor cable should be used, with a type of reel having a small inertia in the drum, which will insure easy winding and prevent the heavy stresses caused by a type of drum having a large inertia. It is my belief that money spent in providing a fair rail return, on side entries and in the rooms, will more than balance the extra cost of double-conductor cables and the consequent high cost of maintenance and additional delays.

Examination Questions Answered

Indiana Mine Bosses' Examination Indianapolis, 1922

(Selected Questions)

QUESTION—*Discuss the subject of mine ventilation, setting forth the purposes; mechanical devices and their uses; quality of air required and how determined; quantity of gas and how determined; humidity and temperature, how determined; mine gases, how detected; their danger and how prevented; and give the law respecting mine ventilation.*

ANSWER—Briefly stated, the purpose of ventilation is to furnish pure air throughout the mine, by conducting an air current in one or more splits so that it will sweep the working faces, in quantity and velocity to dilute and carry away the noxious gases that accumulate in the workings.

Many small, non-gaseous mines are ventilated by a furnace constructed near the foot of the air shaft. In all the larger and up-to-date mines, however, either a centrifugal or a disk fan is used to force the air into the mine or exhaust it from the mine. In either case, a free circulation of air is produced in the airways and throughout the workings.

The Indiana Mine Law requires the circulation of 100 cu.ft. of air per minute, for each person, and 300 cu.ft. per minute, for each mule, employed in the mine. The air is measured by means of an anemometer, which shows the velocity of the current, and that multiplied by the sectional area of the airway gives the volume of air in circulation.

The percentage of gas in the return air current is first estimated by observing the height of the flame cap in a safety lamp exposed to the current. Taking this percentage of the total volume of air in circulation gives the quantity of gas generated in the mine.

The humidity and temperature of the mine air are ascertained by observing the readings of the wet-and-dry-bulb thermometer. This instrument is often called a hydrometer or psychrometer. The reading of the dry-bulb thermometer determines the temperature of the air.

Mine gases are detected mostly by observing the effect of the gas on the flame of a safety lamp. Methane or marsh gas causes a flame cap, while carbon dioxide makes the lamp burn low or puts it out entirely. Carbon monoxide is generally detected by observing its effect on small birds or mice confined in a cage. Hydrogen sulphide is detected by its smell.

Carbon dioxide is dangerous when accumulated in low and badly ventilated places in mines, because the gas contains no available oxygen for the support of life, and its presence depletes the oxygen of the air, causing suffocation and death. The other three gases named are inflammable and form explosive mixtures with air.

These dangers are prevented, as far as possible, by providing an ample ventilating current to sweep them from their lurking places in the mine.

The Indiana Mine Law (Chap. 258, Sec. 11) requires that 100 cu.ft. of air, for each person, and 300 cu.ft., for each mule, be kept in circulation, in all main and cross-entries and working places in the mine, to an extent to keep it free from standing gas and in a fit state for work. The law further provides for the examination of the mine by a competent fireboss using a safety lamp, the examination to be made before each shift.

QUESTION—*Discuss haulage tracks in mines with respect to bed, gage, weight of rails, ties and nails, fishplates, curves, grades, switches, ballast, drainage; and give the law respecting wide entry and refuge holes.*

ANSWER—All tracks on haulage roads must be well bedded and drained by a suitable ditch at the side of the road. Main roads should be well ballasted with good material. The gage of the track, weight of rails, ties, nails and fishplates must be determined by the size and capacity of the mine cars used. This is largely modified by the height of the seam as determining the headroom on the roads. In general, in locomotive haulage, a 3 or 4½ ft. track gage is used, with rails varying from 40 to 60 lb. per yard, fastened by 4½-in. spikes to 6- or 8-in. ties and bolted together with fishplates to fit the rails.

The grades on the main roads, as far as possible, should favor the movement of the loaded cars, a 1 per cent grade being preferred where this is practicable. Sharp curves in the track should be avoided and all switches must be carefully laid by competent trackmen.

The Indiana Mine Law (Chap. 197, Sec. 1) provides for a clearance space, on one or both sides of a road continuously, of not less than 2 ft., measured from the rail to the rib. This space must be kept free of all obstructions such as props, loose slate and other material. This does not apply to mines in the block-coal fields, working Seams 3 and 4, commonly known as the lower and upper veins, in Indiana. Chap. 258, Sec. 12 provides for refuge holes, not less than 3 ft. deep, measured from the side of the car, and 4 ft. wide, at distances not more than 20 yd. apart, to be constructed on all single-track haulage roads using power, and on all gravity inclines on which persons employed in the mine must travel often, in going to and from their work.

State of Indiana Mined Coal at $8.70 Per Ton During the Strike

Financial results from James A. Cooper, federal receiver for the Sterling Fuel Collieries Co., of Staunton, Ind., show that the cost of digging during the coal strike was $8.70 a ton, for which the state paid the company $4 a ton, a loss of $4.70 a ton accruing to the company for which it is making no reparation or indemnity. Attorney General Smith of Indiana said the cost of maintaining the 1,500 militiamen in the field was approximately $50,000. Approximately 1,064 tons of coal was mined under state protection, making the cost per ton about $47.00.

In a letter from Mr. Cooper it is set forth that the stockholders, bondholders and creditors of the company joined in heavy support of the law. He pointed out that a great deal of the apparent loss would have accrued to the company at any time it resumed its mines as the damage of the mines had wrought havoc to the equipment. The expenditure of maintaining the soldiers, Governor McCray points out, was made in the same spirit in which a city council appropriates a certain sum annually for the maintenance of the police department for the protection of its citizens.

Utah Coal Mining Feels Awakening In Western Steel Industry

Utah coal probably soon will be used in greater volume as one of the bases for the expansion into Utah of big new steel enterprises on the Pacific coast. Already the Columbia Steel Co., a $15,000,000 corporation formed in July, is getting ready to build the Carbon County R.R. to its coal fields near Sunnyside which are owned by the Utah Coal & Coke Co. L. F. Kaiser, president of the Carbon Coal Co., will be at the head of the railroad company. The other big move into Utah is being made by the newly organized Pacific Steel Corporation, which is a consolidation of coal properties up and down the coast owned by the Pacific Coast Steel Co. and the Southern California Iron & Steel Co., and of iron ore and coal properties in Utah owned by the Milner estate.

The ore bodies in Iron County held by this new merger total about 4,000 acres and the coal properties, largely in Carbon County, about 8,000 acres. About 25 miles of railroad will be constructed by interests allied with the new Pacific Steel Corporation.

Distillation of Coal from Oil Makes Rapid Strides in Great Britain

There has been a remarkable increase in the use of oil fuel in England during the last fifteen years. During this time the complete substitution of coal by oil fuel in the navy has been effected. In the mercantile navy the development has been slower, but during the year 1920-1921 58 per cent of the new vessels classed under Lloyds register were fitted for burning oil fuel.

The natural source of fuel in England is, of course, coal, followed at a considerable distance by peat and oil shale. Regarding the latter it is improbable that under present conditions the output of Scottish shale oils can be increased by an amount which will have any appreciable bearing on the problem. Since the great part of the heat units present in coal as mined appears in metallurgical coke it forms an excellent and absolutely smokeless fuel, and it is necessary for the commercial success of that process that domestic users appreciate its superiority.

The results of an investigation of the oil produced at East Greenwich by the distillation of coal in shallow trays in horizontal retorts show that from 12 to 18 gallons of oil can be obtained from a ton of dry coal. In this connection the experiments of Dr. Bergius on the hydrogenation of heavy oils and tars, and on bituminous coal, has opened up considerable new possibilities in the production of liquid fuels from coal. In this way the yields of petrol, diesel oil and fuel oil from coal can be enormously increased. In fact Dr. Bergius has actually succeeded in liquefying coal and in introducing oil into the coal to combine with the coal and produce the oil.

Preliminary Statistics of Production of Coal in Illinois in 1921

(Exclusive of product of wagon mines)

County	Loaded at Mines for Shipment (Net Tons)	Sold to Local Trade and Used by Employees (Net Tons)	Used at Mines for Steam and Heat (Net Tons)	Made into Coke at Mines (Net Tons)	Total Quantity (Net Tons)	Total Value	Average Value per Ton	Number of Employees — Underground — Miners, Loaders, etc. (a)	Underground — All Others	Surface	Total	Average Days Worked
Bond, Fayette and Wilson	344,183	12,[illegible]	9,633		365,664	$872,000	$2 38	293	131	52	476	160
[illegible]	429,482	40,121	33,946		556,671	2,101,000	3 78	1,226	389	162	1,777	126
Cass, Menard, Sangamon and Warren	148,938	13,937	12,113		174,950	468,000	2 67	159	42	20	221	187
[illegible]	2,[illegible]	[illegible]	[illegible]		2,950,910	6,305,000	3 78	1,762	892	401	3,055	152
[illegible]	[illegible]	[illegible]	[illegible]		802,228	2,006,000	2 50	933	309	124	1,366	98
[illegible]	11,[illegible]	[illegible]	411,235		11,947,539	36,842,000	3 08	7,873	4,358	1,689	13,920	169
[illegible]	[illegible]	[illegible]	[illegible]		1,471,137	4,247,000	2 89	2,313	771	312	3,396	107
[illegible]	[illegible]	8,538	7,276		145,618	347,000	2 38	220	85	59	364	85
[illegible]		[illegible]			6,959	25,000	3 59	23			23	108
[illegible]	171,[illegible]	[illegible]	14,642		202,926	826,000	4 07	314	96	44	454	193
[illegible]		[illegible]			6,546	33,000	5 04	17	2	2	21	185
[illegible]		[illegible]	[illegible]		26,029	102,000	3 92	63	5	7	75	185
[illegible]	[illegible]	[illegible]	[illegible]		1,113,612	3,295,000	2 96	944	445	173	1,562	161
[illegible]		[illegible]	434		31,206	94,000	3 01	61	6	6	73	158
[illegible]	[illegible]	[illegible]	[illegible]		384,813	1,585,000	4 12	828	223	140	1,191	125
[illegible]	[illegible]	[illegible]	2,[illegible]		97,910	403,000	4 12	166	37	40	243	155
Logan, Mahomet, Pawnee, Will, [illegible]	[illegible]	[illegible]	[illegible]		751,506	2,447,000	3 26	1,149	389	168	1,706	169
[illegible]		[illegible]			7,534	22,000	2 92	43	2	2	47	131
[illegible]	[illegible]	[illegible]	[illegible]		226,734	955,000	4 21	291	115	35	441	174
[illegible]	1,[illegible]	[illegible]	[illegible]		6,230,953	16,549,000	2 66	4,460	2,546	626	7,632	165
[illegible]	[illegible]	[illegible]	[illegible]		3,278,582	8,606,000	2 62	2,939	1,267	417	4,623	124
[illegible]	[illegible]	[illegible]	[illegible]		705,734	1,894,000	2 68	648	301	100	1,049	154
[illegible]	[illegible]	[illegible]	[illegible]		219,907	1,002,000	4 36	469	123	57	649	177
[illegible]	[illegible]	[illegible]	[illegible]		123,341	341,000	2 76	173	43	25	241	148
[illegible]	[illegible]	[illegible]	[illegible]		185,342	625,000	3 37	198	76	31	305	165
[illegible]	[illegible]	[illegible]	[illegible]		2,279,493	6,222,000	2 73	2,220	851	298	3,369	122
[illegible]	[illegible]	[illegible]	[illegible]		1,102,[illegible]	3,035,000	2 75	1,229	357	170	1,756	164
[illegible]	[illegible]	[illegible]	[illegible]		2,403,471	6,441,000	2 68	2,199	849	319	3,367	151
[illegible]	[illegible]	[illegible]	[illegible]		1,[illegible] 158	4,792,000	2 65	1,173	606	151	1,930	178
[illegible]		[illegible]			65,916	209,000	3 17	72	22	13	107	188
[illegible]	[illegible]	[illegible]	[illegible]		5,195,[illegible]	11,422,000	2 20	4,945	1,600	632	7,177	127
[illegible]	[illegible]	[illegible]	[illegible]		5,332,475	12,738,000	2 81	4,064	1,775	705	6,544	138
[illegible]	[illegible]	[illegible]	[illegible]		5,[illegible] 755	15,488,000	2 60	6,301	2,077	802	9,180	153
[illegible]		[illegible]			7,611	21,000	2 76	21			21	151
[illegible]	[illegible]	[illegible]	[illegible]		74,329	238,000	3 12	106	35	14	155	124
[illegible]		[illegible]			8,468	24,000	2 84	25	3	2	30	170
[illegible]	[illegible]	[illegible]	[illegible]		691,359	1,906,000	2 76	674	318	90	1,082	158
[illegible]	[illegible]	[illegible]	[illegible]		3,[illegible] 165	7,728,000	2 54	2,320	1,000	599	3,919	174
[illegible]	[illegible]	[illegible]	[illegible]		[illegible] 797	2,953,000	3 25	519	272	65	856	248
[illegible]	[illegible]	[illegible]	[illegible]		9,[illegible] 629	25,777,000	2 71	7,033	2,625	1,370	11,028	160
Totals	84,[illegible] 112	5,[illegible] 482	2,[illegible] 164		67,[illegible] 763	$190,986,000	$2 74	60,466	25,043	9,922	95,431	152

(a) Including also shaftmen. Statistics compiled by [illegible] Mann, U. S. Geological Survey, Sept. 20, 1922

Peace Prevailed to the End at Cleveland; Reorganization Committee Starts Work Nov. 14 at Chicago

What the Conference Did

Enabled operators to compose many violent differences and to discover much "common ground," leaving them more nearly unified than at any time in years.

Created a "reorganization committee" of two miners (one a district president) and two operators from each of the 15 districts whose operators attended the conference, with a vague understanding that other districts can come in.

Instructed this "two-by-two" committee to suggest a method for negotiating future wage contracts. It is understood that the committee is not to report until the new United States Coal Commission does and that nobody is bound to accept its recommendations, though all parties hope to.

Instructed this committee to organize in Chicago Nov. 14 and reconvene the joint conference again to hear its report on or before Jan. 3.

Did not set up a joint fact-finding board, thus studiously leaving the field clear for the United States Coal Commission, representing the people.

Operators declined to comply with Washington's request for twenty names suggested by the conference for the new federal commission. Miners suggested 10.

Miners' scale committee, after the conference, reaffirmed the platform of wage and conditions demands formulated at the miners' convention Feb. 14-17, 1922.

"Peace to the end" was adhered to with determination in the wind-up of the joint miner-operator conference in Cleveland, Ohio, last week, as forecast in these columns. The bitterness among operators on Monday, Oct. 2, the opening day of the meeting, was smothered into the background on Tuesday, a day of give and take, and on Wednesday the partly settled program of conference decisions was put through calmly and with doors open to the public. The fighting was all over.

So the conference proceeded to set up its joint committee to work out and suggest a method for future negotiations; it agreed not to comply with the Washington request for twenty names for President Harding to consider in appointing the United States Coal Commission, and it simply "omitted" to set up any joint fact-finding commission of its own because it was the desire of the conference to do no act that would appear in the light of interference with the people's investigation of the coal industry. Since the miners wished to supply President Harding with a panel of names, they were permitted to do so after the conference adjourned. But the operators, many of whom have already submitted lists in response to requests from the administration, declined.

When the conference adjourned, about the middle of the afternoon on Wednesday, both sides agreed that no such display of harmony between miners and operators, and among operators' groups had been seen in many a year. They all declared that a new era of good feeling might easily be starting from this conference. There was some difference in tone in some of the after-conference statements, however.

Watkins Commends Lewis' Conciliation Speech

T. H. Watkins, president of the Pennsylvania Coal & Coke Corporation, declared that the spirit displayed by both sides had been splendid and that he had never seen such harmony prevail in a joint meeting. He said the conciliation speech of John L. Lewis, president of the miners, on Tuesday morning, was a fine declaration and went a long way toward harmonizing the whole conference. Mr. Watkins felt very optimistic for the future of relations between miners and operators.

T. K. Maher, of Ohio, who with Mr. Watkins and W. H. Haskins, of Ohio, was largely responsible for the settlement of Aug. 16 with the miners, agreed that a fine spirit pervaded the meeting and that the conference was entirely satisfactory.

"There was carried out here," said he, "not only the letter but the spirit of the Cleveland agreement. The first factor that contributed to produce harmony was the speech to the operators by Mr. Haskins, in which he made it plain that the little group which first signed the Cleveland agreement intended to stand by it here, even if they had to do so alone. The second factor was Mr. Lewis' speech and the third was Mr. Watkins' able analysis of the problems that confront us and what this conference ought to do."

In the test of strength between the "small group" of operators who broke the strike in August and the majority there was much belligerence. Mr. Maher, of the "little group," finally was conceded the temporary chairmanship of the joint conference, but Phil Penna, of Indiana, was made chairman of the operators' separate sessions, with W. D. McKinney as secretary, and also was chosen permanent chairman of the conference.

There was difference of opinion as to whether the letter and spirit of the Cleveland agreement had been carried out. Many operators and groups who went to the conference uncommitted to take part, finally did so when it became apparent that no minority was to dictate policies as it did in the making of the Cleveland agreement and that therefore the spirit of this conference differed widely from that of the Cleveland meeting in August. They felt that the harmony of this conference was no result of bludgeoning by anybody but resulted from a realization by operators and miners alike that the only hope of doing business in the future lay in unity groups. Therefore the operators effected what chairman Penna called "a cohesion."

Common Sense, Not Threats, Did It

"Common sense, not threats, and Lewis' speech were responsible for our final harmony," said H. N. Taylor, president of the Central Coal & Coke Co., of Kansas City, a man who was an outstanding figure throughout the conference, "and the outcome of it all was most satisfactory." When he was asked how permanent he felt the new harmony was, he replied: "I think it is as permanent as the harmony effected in 1898. Operators went into that meeting with such hatreds that they didn't know each other. They made peace. It lasted for twenty years or even longer."

Said Phil Penna: "The operators never can be as united as the miners for they are competitors among themselves and have far more conflicting interests than any union groups have. However a real unity was accomplished among them here."

"Both sides saw the necessity for harmonious action," commented John L. Lewis, miners' president, "and I am heartily glad that it was taken. The manner in which the business of the conference was dispatched augurs well for the future of the coal industry."

Peace at the conference was so infectious that it pervaded even the relationships between President Lewis and Frank Farrington, recalcitrant president of the Illinois miners, whose bitterness against Lewis has been obvious for a long time. Farrington received committee appointments at the hands of Lewis and the two appeared to make it a point to meet several times and converse pleasantly in public.

The joint conference was called by President Lewis and by T. K. Maher, chairman of the August Cleveland meeting, thus following out the terms of that meeting. Under the agreement which ended the strike, the two main purposes of the joint conference were to choose a joint committee to set up machinery for future wage agreements and to name a joint fact-finding commission within the industry. If the conference failed by Oct. 10 to agree upon this fact-finding commission, then President Harding was to be asked to

operators on the committee are: District 6, Ohio, Michael Gallagher and James H. Pritchard; Iowa, E. C. Smith and George Heaps, Jr.; Kansas, W. L. A. Johnson and Ira Clemens; West Virginia, Joseph Purseglove and C. H. Jenkins; Arkansas, Oklahoma and Texas, M. McWilliams and one to be chosen; Wyoming, H. C. Marchant and one to be chosen; western Kentucky, C. W. Taylor and F. D. Rash; Michigan, R. M. Randall and Warren Pippen; Missouri, F. W. Lukens and H. N. Taylor; Indiana, Hugh Shirkie and M. L. Gould; Washington, J. H. Wallace and one to be chosen. Illinois, central Pennsylvania, Pittsburgh and Montana are yet to name their members.

On motion of President Lewis this "two-by-two" committee will have its first meeting at the Great Northern Hotel in Chicago at 11 a.m., Nov. 14.

Thus the main scheduled business of the joint conference was finished and the conference adjourned to be reconvened at the call of the "two-by-two" committee whenever that board is ready to report. It was the general understanding throughout the conference that that committee is to wait until the new United States Coal Commission produces some results before it completes its plan, for the whole feeling of the conference was that the federal investigation is to be given a clear field and that its recommendations are to be adopted as far as possible.

As Phil Penna put it: "Everybody in the coal industry has tried to put our own house in order in the past and failed. Now the people should be given a chance to do it for us."

It was also understood that whatever recommendations the "two-by-two" committee may make are not necessarily binding upon either miners or operators though everybody concerned gives evidence of hoping that the recommendations will stand. President Lewis of the miners said as a final word from his side that he "hoped" the committee would be successful in working out an acceptable plan.

Miners Stick to 1922 Demands; Lewis Almost Sure to Be Re-elected

Immediately after the "peace conference" of miners and operators in Cleveland, which ended Wednesday afternoon, Oct. 4, the policy committee of the miners' union assembled, conversed briefly and announced that the platform of demands for wages and conditions which was adopted at the Indianapolis convention in February, 1922, had been reaffirmed. Thus whenever the time comes for the presentation of demands for the next wage agreement the miners will demand a continuance of their present wages, as well as a six-hour day, five-day week, time and a half for overtime, double time for Sundays and a correcting of machine differentials and certain other elements of the existing working agreement. While this program was adopted early this year the miners have never presented it. The reaffirming of this set of demands eliminates the necessity of another miners' convention to formulate new demands.

It became known at the end of the Cleveland conference that President Lewis' re-election as chief officer of the International United Mine Workers was assured. Nominations for the next election, which are now in, made Lewis the choice of between 1,600 and 1,700 union locals, while George Mercer, statistician in District 12, generally referred to as a "Farrington candidate" of the rebellious element in the union, won the nominating votes of only about 128 locals. The names of Lewis and Mercer are the only ones to go on the ballot for the election. While a number of locals attempted to nominate Alexander Howat, of Kansas, to run against Philip Murray, of Pittsburgh, for vice-president, it was officially stated that Howat's name would not be permitted on the ballot because he is not recognized as a member of the union, never having been reinstated after his ejection with his entire group of Kansas officers nearly two years ago. William Green is guaranteed the nomination and election to continue as secretary-treasurer.

F. R. WADLEIGH, who now is devoting most of his time to matters connected with the office of the Federal Fuel Distributor, has been looking into the anthracite situation during a visit to Pennsylvania fields.

Fact-Finding Commission Should Seek Improvement of Coal Industry, Not Act as Tribunal

By Paul Wooton
Washington Correspondent of *Coal Age*

Washington, D. C., Oct. 9.—Developments of the last week have caused officials concerned with coal to take a much less encouraging view of the situation than at any time since the strike was settled. There is a general belief that the peak of production has been reached and that a decline in output may be expected. The public believes the shopmen's strike is over. As a matter of fact it is continuing on a number of roads and some of those roads are vital in effecting the maximum coal production. Even on those railroads where the strike is settled, unusual difficulty is being experienced apparently in effecting an equitable distribution of available cars. Car supply is spotty and uncertain. The non-union districts are suffering particularly. Their cars were sent broadcast over the country during the strike and great delays in their return are occurring. Incidentally as a result of that situation, Western mines have a proportionately better car supply. The fact that the surplus of empties has been exhausted and the increasing pressure of other freight along with the difficulties in obtaining compliance with service orders and car rules and regulations make for increasing difficulties in supplying mines with coal cars.

It is clear that the more critical part of the situation is to obtain the distribution of household fuel. Every effort is being made at the office of the Federal Fuel Distributor to meet that situation. It is known that there has been no extensive substitution of anthracite. It is recognized that that situation is one in which the operator can do little. It is entirely a problem of inducing the retailer to exert his influence with the consumer to induce him to lay in a supply of bituminous coal or coke.

While the coal strikes still in progress have only a small influence on coal production, they are having serious consequences in creating a shortage of gas coal and in their influence on beehive coke production. The strike in the Greensburg-Westmoreland district is chiefly responsible for the bad situation with regard to gas coal, while the strike in the Connellsville district is so limiting the output of beehive coke that there is no surplus, which was being counted on to substitute for anthracite.

There is general disappointment that production at its apparent peak fell short of the 10,000,000-ton mark. If no better showing was made in September under certain advantages that will not exist in October or again this year there is little hope of producing enough coal to meet the full requirements of the winter. The entire September production was necessary to meet current requirements. It is believed that very little of it went into storage. If surpluses are not made available in October the dangers of the situation are increased, particularly if severe weather conditions should occur during the late autumn and early winter.

Officials generally are pleased by the developments at Cleveland. To have had another commission studying the coal situation would have been embarrassing in many ways and would have been a distinct burden on the industry. At the same time the decision to study the wage-agreement problem meets general approval, as it is regarded as certain that the government's fact-finding commission will favor bargaining within the industry rather than the setting up of a coal labor board.

As is evidenced by several provisions in the act creating the fact-finding commission, the framers of the law—for the most part lawyers—could not get away from the idea of a court. Those officials closest in touch with the coal situation hope that the commission is not going to devote too much of its time to the calling of witnesses and the taking of testimony under oath. They prefer seeing the problem approached in a student-like manner with emphasis on the desire to give sympathetic attention to any proposal which has as its object benefit of the coal industry.

The hope also is expressed that the commission will not divide itself into two parts, one to consider anthracite and the other the bituminous situation. It is believed that the two industries should be studied together since the problems of one have their counterpart in the other. Anthracite, for instance, would be a most instructive exhibit in considering the overdevelopment of bituminous mines. There would be much gained by viewing the industries side by side, so that full advantage could be taken of their contrasts. It is also hoped that the commission will possess a sufficient aggregate of courage to recommend whatever drastic policy may seem best to meet the situation. It is being called upon to provide a constructive program for two generations to come. The thought is that few problems on the horizon are as important as that of coal. Heat is essential to life. Power is essential to industrial civilization. Each must be had in quantities sufficient to meet all requirements and must be cheap if the nation's prowess is to be maintained. There is much more before the commission than an effort to work out a plan whereby capital and labor may live in the same house without demolishing it as an incident to internecine strife.

Spens Simplifies Order on Daily Reports

Under date of Oct. 4, 1922, Fuel Distributor Spens modified his order No. 1 calling for daily reports of coal shipments. The modifications permit the omission of names and addresses of consignees and car numbers and initials by all who will keep such a record in their offices. Instead shippers are required to note the number of carloads of coal shipped to designated classes of consignees, as "steam railroad," "public utility," etc. Shipments to tidewater and the Lakes may be so designated.

Shipments to other than consumer, as to tide, to wholesaler, or to scales, must be reported as such and the producer is to be held responsible for the ultimate reports from the middleman as to the destination of the cars.

The order follows:

ORDER OF FEDERAL FUEL DISTRIBUTOR OCT. 4, 1922

Paragraph 11

(a) To facilitate reporting and assure the earliest possible receipt by the Federal Fuel Distributor of the most essential information immediately required, compliance with that provision of clause (b) of Regulation II requiring the daily report of names and addresses of all consignees, with car numbers and initials is hereby waived as to all producers who shall thereafter keep and preserve full and detailed records showing such data in such form as to enable them promptly to furnish such information as to any shipment if and when required in any particular case.

All such producers, when reporting upon the form prescribed by Regulation III may at their option—

Omit any entry in the columns headed respectively "Consignee" and "Office Address" and in the column "Car Nos. and Initials" state merely the number of carloads in each shipment.

The "Nature of Consignee's Business" should be designated, where applicable, as "Steam Railroad," "Public Utility," "Wholesaler," "Dealer, for Domestic Use," Industrial (such as "Iron and Steel," "Textile," etc.), and like designations.

In giving the "Destination of Shipment" state place of destination or "Tidewater" or "Lake," as the case may be.

(b) In all cases where the coal is shipped from the mine to scale, to tidewater or lake ports for transshipment, or to selling agents or other representatives of the producer for sale and reconsignment, the producer shall make daily report of all such shipments upon the form required by Regulation III, giving as to such coal all of the information required by such form so as to

Distribution of Lake Cargo Coal Loaded at Lake Erie Ports to Oct. 1*

	1922		1921		1920	
	Tons	Per Cent	Tons	Per Cent	Tons	Per Cent

Morrow and Callahan Resign as Officials of National Coal Association; to Form Selling Company

J. D. A. Morrow, vice-president of the National Coal Association, and John Callahan, its traffic manager, have resigned from these offices and will establish the Morrow-Callahan Coal Co., which will act as a selling agent for a few well-known coal producers who will be associated with the firm.

While it is believed that these officials of the National Association would have taken this step sooner or later, regardless of the situation within the National Coal Association, there is reason to think that they were influenced to embark in business for themselves at this time by the lack of support being given that organization.

At the present time the National Coal Association represents less than 50 per cent of the country's bituminous production. Mr. Morrow frequently has urged upon bituminous operators the necessity of having within the organization the maximum possible amount of the country's production. It always has been recognized as impossible to have 100 per cent of the production represented in any organization of operators. This is due to the fact that many mines are owned and worked by manufacturing concerns or other consumers as a mere incident of their business. Such operators of coal mines as public utilities or steel makers, for instance, are not immediately concerned with the welfare of other producers of coal. In many instances they are particularly anxious not to align themselves with the operators whose principal business is the production of coal. Nevertheless there is at least 75 per cent of the country's production which reasonably might be expected to join in a national association.

One of the outstanding results of the study of trade associations which has been made since the Supreme Court's ruling in the Hardwood case is that industry must have a practical point of contact with the federal government. Coal is too essential to the public welfare for the government to have to turn to several thousand individuals in an effort to secure information. It is admitted almost unanimously that there must be someone in Washington authorized to represent the bituminous industry. Such a representative must be supported by a staff.

Unwilling to Occupy False Position

Mr. Morrow is believed to have felt that the association is such an obvious necessity that it should have the unanimous support of no less than 75 per cent of the country's bituminous production. When it became apparent that this measure of support could not be obtained, Mr. Morrow is thought to have been unwilling to pose as the representative of the industry when as a matter of fact he was representing only the minority portion of production.

While it is admitted that Mr. Morrow's resignation has precipitated something of a crisis in the affairs of the National Coal Association there is every indication that the organization will continue. It is known that certain coal operators are so convinced of the need of the association that they would be willing to finance it themselves in order to keep it in existence. It is certain that there never has been a time in the history of the coal industry at which so great a need for the organization exists as at present. What the government has done in the way of regulating distribution and in the creation of a commission, which within a year will recommend legislation and other action of great moment to the industry, well may be the entering wedge for drastic federal regulation unless there is evidence that the coal industry is competent to work out its own salvation. With the industry confronting such a situation it is apparent that a point of contact with the federal government will continue to be maintained. It is fully expected that the resignation of Messrs. Morrow and Callahan will emphasize the need for a wider measure of support for the association.

Mr. Morrow first came to the attention of the coal industry in a national way when he wrote the report on coal for the Bureau of the Census, based on the returns of the 1909 census. He was on the point of leaving Washington after the completion of that job when E. N. Hurley was made chairman of the Federal Trade Commission. Mr. Morrow had formerly worked with Mr. Hurley and at his earnest request Mr. Morrow consented to remain to serve as personal assistant to conduct the initial research, which resulted later in the Webb-Pomerene Act, making legal combinations for purposes of export trade. By the time the export investigation was out of the way the coal situation had come in for serious attention, with the result that Mr. Morrow stayed with the commission to make a study of the bituminous-coal industry.

Organized Pittsburgh Producers' Association

Mr. Morrow left the Federal Trade Commission to organize the Pittsburgh Coal Producers' Association. In 1917 he was called to Washington to organize the National Coal Association. In January, 1918, he accepted an invitation from Fuel Administrator Garfield to reorganize the distribution division of that organization. He continued as head of that division until it was dissolved, when he resumed his position with the National Coal Association.

Mr. Callahan began his career in the train service of the Pennsylvania R.R. Promotions carried him into the traffic end of the work, where he specialized in the problems of coal transportation. His activities as traffic manager for the National Coal Association have brought him into the front rank of the country's traffic specialists.

Governer Davis Signs Order Fixing Coal Prices in Ohio at $3.56-$4.86 at Mine

A schedule of fair prices for coal mined in Ohio and sold to Ohio consumers has been formally approved by Governor Harry L. Davis following a week's investigation of the question by State Fuel Administrator Clarence J. Neal. The prices as announced by the administrator are based on those established by the Federal Fuel Administration in 1918. The new price list is to become effective Oct. 10.

The prices as fixed are for mine-run and provisions are made for a charge of 25c. per ton more for lump and 25c. per ton less for screenings and slack. Administrator Neal reports that the price list is to be considered only temporary and will be maintained until a study of the cost of producing and distributing coal now under way is completed, when it is purposed to issue a revised price list. Dealers' and jobbers' prices are likewise to be announced as soon as the necessary information has been compiled. The price list as announced follows:

District No. 1—Meigs County and Cheshire and Addison townships, Gallia County, $4.06.

District No. 2—Vinton Jackson, Lawrence, Scioto, Pike and all of Gallia County, except Cheshire and Addison townships, $4.56.

District No. 3—Hocking and Athens counties, Coal and Monroe townships, in Perry County, and Homer township, Morgan County, $3.75. Bailey Run or No. 7 seam coal, $4.24.

District No. 4—Washington and Noble counties, Morgan County except Homer township and Perry County except Coal and Monroe townships, $4.24.

District No. 5—Muskingum County $3.85.

District No. 6—Holmes, Tuscarawas, Carroll and Coshocton counties; Monroe, Franklin, Washington and Prospect townships in Harrison County; Washington and Yellow Creek townships, Columbiana County, and Brush Creek, Salem, Springfield, Rush and Knox townships, Jefferson County and operations in the 5A vein in Flushing and Union townships, Belmont County, $4.24.

District No. 7—Trumbull, Portage, Summit, Mahoning and Yellow Creek townships, $4.86.

District No. 8—Monroe County, Belmont County except Warren township and operations in the 8A vein in Flushing and Union townships; Washington and Prospect townships, and Jefferson county except Brush Creek, Salem, Rush Knox and Springfield townships, $3.56.

District No. 9—Guernsey County and Warren township in Belmont County, $3.75.

Special prices for coal mined by the Wayne Mining Co., $4.31.

Maryland Householders Balk at Price of Bituminous Coal for Domestic Use

In a communication from the Maryland Fuel Distribution Committee, offering the fullest cooperation to Federal Fuel Distributor Spens, the statement is made that no really acute emergency, as far as soft coal is concerned, exists in that state. The largest users of bituminous coal are said to be able to obtain practically sufficient supplies for their present needs. Dealers are said to be complaining, however, regarding high prices charged at mines for low-volatile bituminous suitable for domestic purposes. The claim is made that these prices are such that, even if slight margins are charged for handling and profit, the price to the consumer makes bituminous coal unattractive for household use. Because of this situation, the committee is experiencing difficulty in persuading Maryland householders to purchase early winter supplies of soft coal to make up for an expected shortage of anthracite during the next few months.

Governor John M. Parker, of Louisiana, states that no acute coal shortage exists in that state, due largely to the extensive use of fuel oil by industrial interests. Conservation measures are, however, being put into effect.

State Fuel Administrator Deprecates Move To Enact Coal Legislation in Michigan

Charles F. Dunn, Fuel Administrator for Wayne County, Michigan, thinks there is no necessity for calling a special session of the Michigan Legislature to regulate prices and distribution of coal in Michigan.

Governor A. J. Groesbeck issued the call Oct. 2, saying that his action was influenced by information from the Federal Fuel Administration that it would be unable to control coal distribution after shipments leave the mines. Governor Groesbeck believes present conditions indicate a serious coal shortage during the winter and he wants to prevent exorbitant prices.

The Detroit Coal Exchange supports the position of Mr. Dunn. One of the officers says Detroit dealers have done no profiteering thus far and would not seek to impose unfair prices on the public. Mr. Dunn, himself a dealer, expresses the hope that he and other dealers will be afforded a hearing before the Legislature or the committee that may be designated to draft the proposed legislation.

Willard Makes Suggestions to Railroads To Speed Up Distribution of Coal

At a conference held with Mr. Spens in Washington on Oct. 3 numerous recommendations for accelerating the distribution of coal throughout the country were unanimously decided upon by the advisory committee on transportation recently appointed by Federal Fuel Distributor C. E. Spens. In a letter to the executive heads of all the railroads, Chairman Willard gives a series of concrete suggestions which cover prompt unloading, discontinuance as far as possible of all maintenance and construction work requiring use of power and cars, use of all available forces to check yards and stations for delayed cars with a view to effecting not only prompt unloading but prompt movement; a vigorous campaign to reduce to the minimum bad-order locomotives and cars; prompt return of foreign coal cars to owners, and advice to coal operators that available coal equipment can be increased to the avoidance of sales that require abnormally long distance movement.

Lake Strike Does Not Halt Flow of Coal

The second week of the strike of sailors employed on the Great Lakes by the Lakes Carriers' Association opened with practically all vessels still on the docks, though the flow of coal over Lake Erie docks was not as heavy as in the previous week. Officials of the sailors' union protested to Secretary Hoover that vessels were leaving port undermanned and that deputy customs collectors refused their request for a muster of the crews of all outbound boats. The customs officers based their refusal on the law which requires the filing of affidavits bearing specific charges against a ship at least six hours before sailing time. They threatened to invoke against the union that clause of the seamen's act which provides a fine of $500 as penalty for the filing of a false affidavit. Ships were cleared in all cases where captains believed their boats to be sufficiently manned.

Locals of District 26 Protest Against New Wage Agreement

Phalen local of the United Mine Workers has formally protested at the wage agreement between the U.M.W. for District 26 (New Brunswick, Nova Scotia and Prince Edward Island) and the soft coal operators, principally the Dominion Coal Co. (British Empire Steel Corporation). This local was instrumental in starting the recent strike which ended in the agreement following the defeat for re-election of the old board of officers including Robert Baxter, president of the district, and Silby Barrett, for twelve years the international board member for the district. The Springhill local also is in the field against the agreement.

The United Mine Workers for District 26 are leading in an attempt to found a labor college. If the college is opened it probably will be built in either Glace Bay or Sydney. The officials of the district assert that such a college is a necessity. The labor college, say the union chiefs, would preserve democracy and instruct in coal mining and other occupations.

DUE TO THE LARGE VOLUME of shipments by river, output of coal and coke in the Connellsville coke region is increasing in spite of the car shortage. All operating mines are increasing in man power and output. A couple of union mines on the river nearby in Washington County struck Oct. 4 — the Diamond mine of the Diamond Coal & Coke Co., because the men were ordered to load cars of the Mather Collieries Co., an open-shop operation, and the Lily mine of the Lily Coal & Coke Co., because they were asked to load barges for the Pittsburgh Steel Co., which operates open-shop mines. The miners tried also to get the Pike mine of the Diamond Coal & Coke Co. out, but failed, and the Diamond mine returned to work Oct. 5.

LOUIS D. TRACY, OF EDGEWOOD, PA., has been appointed superintendent of the central experiment station of the Bureau of Mines at Urbana, Ill. Mr. Tracy was educated at the Sheffield Scientific School and at Yale University. He holds degrees as both mining and civil engineer. He joined the staff of the Bureau of Mines on July 15, 1918. Since that date he has served the bureau continuously as a coal-mining engineer. Mr. Tracy takes the position made vacant by the recent resignation of J. J. Rutledge, who now is chief mining engineer of the Maryland Geological Survey. J. L. Lamson has been transferred from the Geological Survey's New England district to the New York district, with headquarters at Albany. Harry I. Granger was at the same time transferred from Albany to Boston.

REPORTS REACHING WASHINGTON are to the effect that difficulties are being encountered in the burning of the British coal now being imported. The importers contend that this is due to lack of familiarity with the coal, but those who have purchased some of the British coal maintain that poor quality coal has been shipped to America. One of the British cargoes, 7,000 tons, was shipped to Norfolk, which is cited as the latest instance of carrying coals to Newcastle. As this is written, no determination has been reached as to what to do with the shipment.

VERY FEW PERMITS are being issued under Service Order 25. Outside of the Lake movement, only seven permits have been allowed. These cover less than 400 cars. Even these permits are limited to a comparatively small movement.

Mining Congress in Cleveland Is Laying Down National Program for Entire Mining Industry

The American Mining Congress, in session this week at Cleveland, is discussing problems vital to all branches of mining and its affiliated industries with the purpose of laying down a national or even international program for the coming year. The first general aim of the congress is to arouse a protest against "any further encroachment of governmental fraternalism in supervising and restricting individual enterprise in the development of mining." The second is to inaugurate a national policy of industrial co-operation which will help to solve the problem of relations between capital and labor and further eliminate needless waste caused by industrial strife. The third is to advance the cause of standardization in methods, processes and equipment.

The congress opened Monday evening in Cleveland's magnificent Public Auditorium with much formality, including an address by Newton D. Baker, Secretary of War in the Wilson administration and now president of the Cleveland Chamber of Commerce. Tuesday's program provided for a discussion of mining conditions throughout the country. Wednesday morning was devoted to coal. Thursday was to be national standardization day with parallel sessions on industrial co-operation. On Friday, the 13th, metal mining problems are to be foremost. The "silver anniversary banquet" of the congress Friday night is to be the final event of the convention.

All through the convention the program was shaped to eliminate "spread eagleism" and hold every session down to essential facts and matters of real importance to mining. As the convention opened it was predicted that more than 3,000 men who face mining's daily problems would attend and not an hour was to be wasted.

In all its 25 years the congress never met in more beautiful surroundings than in the new auditorium. The main arena or ground floor of the great building provides a floor 247 feet long and 120 feet wide without a post or obstruction of any kind and is illuminated largely through an 80-foot ceiling made mostly of glass. The permanent decorations are in a soft shade of gray with blue in the balcony trim and highlighted in gold. The same colors prevail in Machinery Hall, which is directly below and reached by a winding staircase and several ramps of easy grade.

The exhibits of machinery and equipment are shown artistically in this building. There are about 200 displays of one sort or another, including a demonstration by the Bureau of Mines of new breathing apparatus and other approved appliances, a working model of a Hudson Coal Co. anthracite mine and coal-preparation plant, a state exhibit by Colorado, a small display by the Mexican government and row after row of booths showing the most modern types of mine equipment.

Highlights in the entertainment of the week were the smoker and carnival of Wednesday night, daily organ recitals throughout the convention and much singing by the famous "anthracite sextet" which so often has entertained visitors underground in the Pennsylvania hard-coal region.

Union May Abandon District 29 Because of Partiality of Miners to Open Shop

Abandonment by the United Mine Workers of District 29, which covers the New River field and a small part of the Winding Gulf field, understood to be contemplated by the union organization, is regarded as the logical sequence to developments within the district during the last two years. The proposed relinquishment is due to the fact that there are now so few union miners in the district that a district organization can no longer be supported financially. If District 29 loses its identity as such, it will either be combined with District 17, of which C. F. Keeney is president, or the territory will be looked after by the International organization. The territory in District 29 is now an open-shop territory. By a contract between the operators and miners which became effective Sept. 1, 1920, it became closed-shop territory.

That it has not remained such is due to two factors. In the first place the check-off has never been popular among the miners. That was demonstrated by the opposition to that feature of the Sept. 1, 1919, contract when it was submitted to the miners in a referendum. It was freely stated at the time that a majority of the miners had voted against ratification but that the votes were counted for ratification. The other factor which has led New River operators to adopt the open-shop plan is the frequent strikes and lawlessness displayed by an element among the miners.

When the 1919 contract was agreed to by most of the operators President William McKell and other operators representing about one-tenth of the tonnage of the field refused to become a party thereto and continued to operate on the open-shop plan. Some of the more radical union miners in the district sought to prevent such operation by attacks on McKell plants and did succeed in closing down the Willis Branch Coal Co.'s mine after almost two years of violence. A number of union miners were tried and convicted for such violence and are serving terms in the penitentiary.

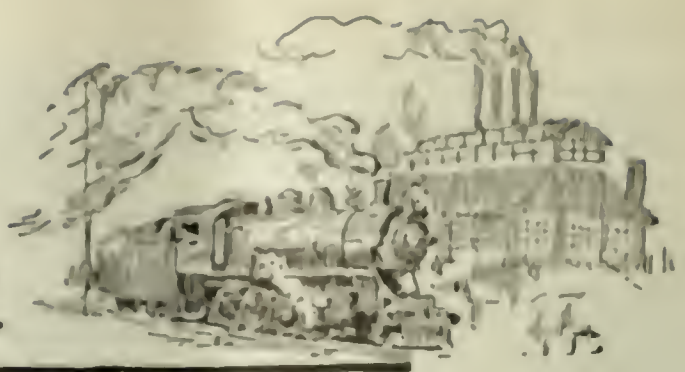
No sooner had the operators of the New River field signed the new contract than the men went out on strike on Nov. 1, two months after the new contract became effective. The miners themselves started the move for open-shop operations, early in 1921 asking the operators to resume on a wage scale lower than that of the union. Many of the miners at that time returned to work without any union agreement. Although some of them responded to the strike call of April 1, 1922, mines in the New River field continued at work throughout the strike under the protection of a federal injunction. When an agreement was reached elsewhere by the union no move was made to force the New River field operators to sign an agreement, simply because no sentiment existed among the miners and because they were receiving wages as high as those paid union men without having any agreement or without having to pay money to the union through the check-off.

SEVERAL IGNITIONS OF MINE GAS which might have led to explosions and at least one mine fire attributed to heated leg wires of electric detonators have occurred at mines in which outside shotfiring is practiced. Photographs taken at one mine indicated that the wires became red hot during firing. These results having been called to the attention of the electrical section of the U. S. Bureau of Mines, a series of tests were made at the Pittsburgh (Pa.) experiment station to determine, if possible, the cause of the ignitions and to aid in preventing future trouble of this kind. The investigation, which is considered preliminary, included tests to determine the conditions that cause gas ignitions from heated leg wires of electric detonators, possible remedies for such heating, and the relative behavior of iron and of copper leg wires. Details of these tests are given in Serial 2383, "Ignition of Gas by Electric Detonators," which may be obtained from the Bureau of Mines, Washington.

H. F. BELL, FOREIGN FREIGHT TRAFFIC MANAGER for the Erie Railroad Co., has been given a leave of absence at the request of Fuel Distributor Spens to assist his organization during the existing emergency. Mr. Bell was associated with Mr. Spens in his work for the Railroad Administration and also was one of the traffic staff of the War Industries Board during the war.



Production and the Market



Weekly Review

Buyers are on a concerted movement to stay out of the market until prices come down. Industrial coal is being sold on a hand-to-mouth basis, for immediate requirements only. Industries throughout the country have responded to the suggestion that business buy coal according to its current needs during the present emergency and the practice is now general.

The effect of the curtailed demand is read in the last two weeks' decline in spot prices of bituminous coal, as shown by Coal Age Index, which stands at 350 on Oct. 5, representing an average spot price at the mine of $4.60. This is a drop of 20c. as compared with the previous week and 66c. below the average price of $5.00 on Sept. 25.

Poor transportation conditions and the growing car shortage tend to modify the price break. Were it not for these factors the present market would range lower all around until the so-called buyers' strike had produced the price level which would tempt the consumer to enter heavier orders.

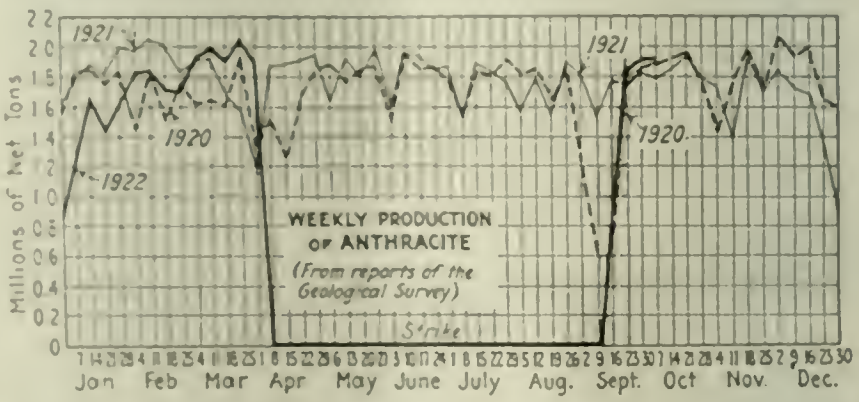
Importance to End Industrial Buyers' Strike

The coal industry has a very definite deficit to overcome before reserve stocks can be brought up to anything like normal. Right now current requirements are absorbing current production, but the approach of coal-burning weather with its attendant transportation difficulties always spells increased demand. If industries call off their buyers' strike and if the railroads give the preference to coal movement that the occasion demands this situation can be met without a reversion to the boom market of two years ago.

Warm weather has reduced the call for domestic coal. Dealers are now having trouble in moving supplies and are inclined to reduce their orders to the mines. Too many people are waiting for household coal to follow steam sizes down in price. The result is producers are feeling the pressure for a reduction on domestic mine prices.

New England is in the heaviest supply of any section of the country and the Northwest, of course, is the shortest. In the former market both all-rail and water-borne fuel is selling off and receipts are dropping. Lake business is very heavy, but the tremendous dock receipts of the past few weeks have so completely dispelled fears of a fuel famine that it has reduced consumer demand and threatens to affect the placing of additional orders at the mines.

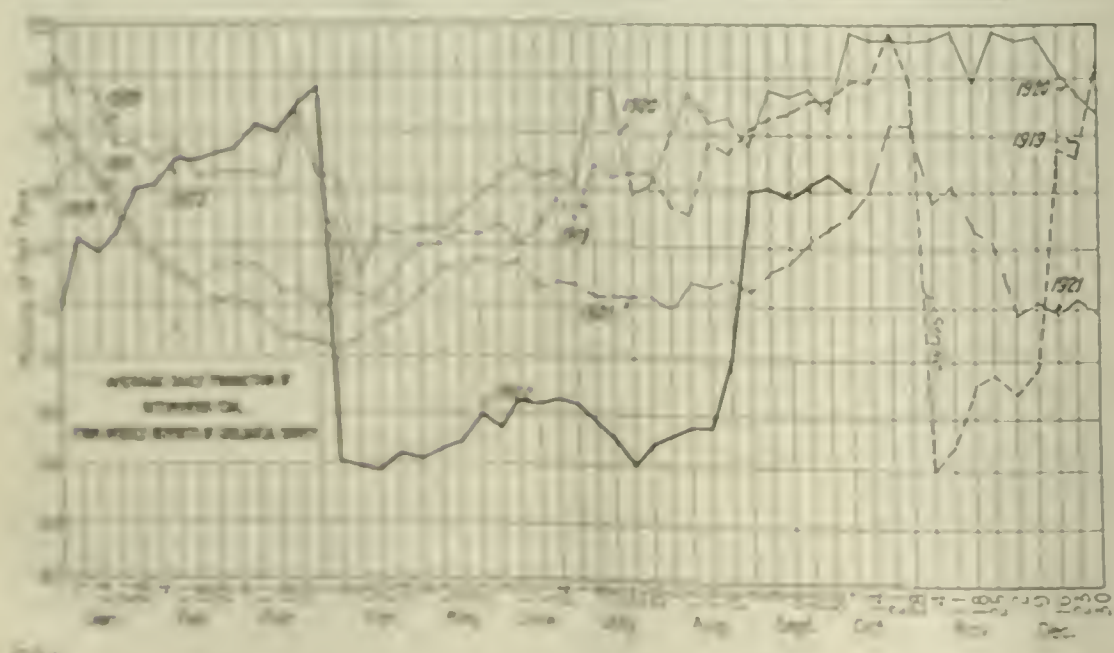
The second week of the strike of sailors employed on the Great Lakes shows practically all vessels still



on the move, although dumpings at the lower ports declined in the last week. The sailor's union has protested to Secretary Hoover that vessels were leaving port undermanned.

Breaks in the price of steam sizes of anthracite are reported from several of the larger markets. This is due to oversupply and large producers are running this coal to mine storage. Warm October weather together with the great quantity of soft coal flooding the market has been responsible for a remarkable shrinkage in orders for the smaller coals.

Demand for the larger sizes of hard coal is, of course,



Estimates of Production

(Net Tons)

	1921	1922
BITUMINOUS		
Sept. 16 (b)	8,187,000	9,737,000
Sept. 23 (b)	8,527,000	9,744,000
Sept. 30 (a)	8,890,000	9,776,000
Daily average	1,482,000	1,629,000
Calendar year	295,440,000	270,967,000
Daily av. cal. yr.	1,285,000	1,174,000
ANTHRACITE		
Sept. 16	1,749,000	1,107,000
Sept. 23 (b)	1,725,000	1,863,000
Sept. 30 (a)	1,802,000	1,947,000
Calendar year	69,302,000	27,178,000
COKE		
Sept. 23 (b)	70,000	137,000
Sept. 30 (a)	79,000	162,000
Calendar year	4,113,000	4,789,000

(a) Subject to revision. (b) Revised from last report.

rushing. This market, however, has been affected by the unseasonably warm weather and the inevitable rush to cover has been delayed at a time when dealers welcome every day's respite to enable them to get in more adequate supplies. Mines are handicapped by car shortage and rail delivery is very slow.

BITUMINOUS

"A slight decrease marked production of soft coal during the first week of October," says the Geological Survey. "For three weeks in succession the output had been slowly increasing, reaching 9,776,000 net tons in the week of Sept. 30. During last week (Oct. 2-7) the returns so far received indicate a total of about 9,600,000 tons.

"Although the aggregate shipments of soft coal have increased gradually during September, the shipments from individual producing districts have fluctuated irregularly. In Pennsylvania there was a slight decrease each week since Sept. 9, and last week was begun with shipments at a lower rate than the previous week. In Maryland and part of northern West Virginia there has been a steady increase, but in southern West Virginia there has been a steady decline. In Kentucky there had been little or no change up to last week, for which, however, a decline is indicated. In Alabama daily shipments have been falling off since the close of the first week of September. In Ohio, Indiana and Illinois there have been gradual gains, which now appear to be checked. West of the Mississippi shipments have in the main steadily increased."

New England is the target for heavy tonnage. Western congestion is diverting much coal eastward, forcing it on an unwilling market, with softening quotations. All-rail shippers are pushing sales in an attempt to keep up their production. During the week ended Sept. 30 there were 3,541 cars of soft coal forwarded through the Hudson gateways, as compared with 3,255 in the preceding week.

NEW ENGLAND COAL RECEIPTS
(In Thousands of Net Tons) *a*

	Anthracite			Bituminous			
	Tide	Rail	Total	Tide	Rail	Total	Aggregate
January	114	361	475	805	532	1,337	1,812
February	206	551	757	1,081	753	1,834	2,591
March	337	757	1,094	1,407	879	2,286	3,380
April	201	277	478	936	322	1,258	1,736
May	42	135	177	880	146	948	1,125
June	34	111	145	812	117	929	1,074
July	48	85	133	831	112	943	1,076
August *b*	43	43	86	1,061	209	1,270	1,356
Total	1,025	2,320	3,345	7,733	3,072	10,805	14,150

a Figures furnished by courtesy of the Massachusetts Fuel Administrator
b Subject to revision.

Westbound coal movement through the "Soo" during September was 2,364,550 net tons. Of this amount only 10,805 tons was hard coal.

Hampton Roads is in oversupply for the same reason and pier tonnage is increasing. Dumpings during the week ended Oct. 5 were 262,945 net tons as compared with 285,635

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Sept. 11 1922	Sept. 25 1922	Oct. 2 1922	Oct. 9 1922†
Smokeless lump	Columbus	$6.40	$6.65	$6.75	$6.50@$7.00
Smokeless mine run	Columbus	5.75	6.00	5.75	5.50@6.00
Smokeless screenings	Columbus	5.65	5.75	5.75	5.25@6.00
Smokeless lump	Chicago	6.10	6.50	6.35	5.00@7.50
Smokeless mine run	Chicago	6.00	5.85	5.85	4.75@6.50
Smokeless lump	Cincinnati	7.00	6.30	6.30	5.15@7.50
Smokeless mine run	Cincinnati	5.50	5.70	5.70	**4.90@7.00**
Smokeless screenings	Cincinnati	5.50	5.30	5.30	**4.60@7.00**
*Smokeless mine run	Boston	8.35	8.05	8.05	7.00@7.50
Clearfield mine run	Boston	5.00	4.50	4.50	4.00@4.50
Cambria mine run	Boston	5.50	5.00	4.75	4.25@4.75
Somerset mine run	Boston	5.10	4.75	4.60	4.00@4.60
Pool 1 (Navy Standard)	New York	.....	5.75	5.50	4.75@5.75
Pool 1 (Navy Standard)	Baltimore	.....	5.90	5.75	5.00@6.00
Pool 9 (Super.Low Vol.)	New York	5.25	5.00	4.85	4.35@5.00
Pool 9 (Super.Low Vol.)	Philadelphia	5.60	5.35	4.60	4.00@4.75
Pool 9 (Super.Low Vol.)	Baltimore	6.10	5.50	5.10	4.75@5.00
Pool 10 (H.Gr.Low Vol)	New York	4.80	4.65	4.65	4.00@4.25
Pool 10 (H.Gr.Low Vol.)	Philadelphia	5.30	5.10	4.25	3.75@4.00
Pool 10 (H.Gr.Low Vol.)	Baltimore	5.75	4.85	4.75	4.15@4.40
Pool 11 (Low Vol.)	New York	4.35	4.10	3.85	3.50@3.75
Pool 11 (Low Vol.)	Philadelphia	4.85	4.60	4.00	3.25@3.50
Pool 11 (Low Vol.)	Baltimore	4.85	4.35	4.25	4.00@4.10
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	5.15	4.70	4.15	3.60@4.50
Pool 54-64 (Gas and St.)	Philadelphia	4.60	4.60	4.25	3.75@4.25
Pool 54-64 (Gas and St.)	Baltimore	4.60	4.75	4.15	4.00@4.15
Pittsburgh se'd. (Gas)	Pittsburgh	.....	.....	5.40	5.25@5.50
Pittsburgh mine run (St.)	Pittsburgh	4.65	4.50	4.25	3.50@3.75
Pittsburgh slack (Gas)	Pittsburgh	.....	.....	4.00	3.75@4.25
Kanawha lump	Columbus	6.40	6.40	6.75	6.00@7.00
Kanawha mine run	Columbus	6.00	5.75	5.90	4.00@5.35
Kanawha screenings	Columbus	5.75	5.65	5.90	4.00@6.00
W. Va. Splint lump	Cincinnati	7.00	6.50	6.25	**6.00@7.00**
W. Va. Gas lump	Cincinnati	7.00	6.50	6.25	**6.00@7.00**
W. Va. mine run	Cincinnati	5.65	5.35	5.25	4.00@5.00
W. Va. screenings	Cincinnati	5.40	5.10	4.75	3.75@4.50
Hocking lump	Columbus	6.25	6.25	6.25	5.00@5.00
Hocking mine run	Columbus	5.65	4.75	4.90	3.25@3.75
Hocking screenings	Columbus	5.40	4.25	4.50	3.25@3.75
Pitts. No. 8 lump	Cleveland	5.75	5.00	4.85	4.50@5.25
Pitts. No. 8 mine run	Cleveland	$5.10	$4.60	$4.40	$4.25@$4.50
Pitts. No. 8 screenings	Cleveland	5.10	4.35	4.10	4.00@4.10
Midwest					
Franklin, Ill. lump	Chicago	5.40	5.40	5.40	5.25@5.50
Franklin, Ill. mine run	Chicago	4.75	4.75	4.75	4.25@4.75
Franklin, Ill. screenings	Chicago	4.90	4.10	3.85	3.50@3.90
Central, Ill. lump	Chicago	4.95	5.10	5.10	5.00@5.25
Central, Ill. mine run	Chicago	4.50	4.55	4.55	4.25@4.50
Central, Ill. screenings	Chicago	4.30	3.35	3.35	3.25@3.50
Ind. 4th Vein lump	Chicago	5.25	5.25	5.25	5.00@5.25
Ind. 4th Vein mine run	Chicago	4.85	4.85	4.85	4.25@4.75
Ind. 4th Vein screenings	Chicago	4.60	3.85	3.85	3.50@3.75
Ind. 5th Vein lump	Chicago	5.10	5.10	5.10	5.00@5.25
Ind. 5th Vein mine run	Chicago	4.65	4.65	4.65	4.25@4.50
Ind. 5th Vein screenings	Chicago	4.40	3.85	3.60	3.50@3.75
Standard lump	St. Louis	4.65	4.90	4.75	4.50@4.90
Standard mine run	St. Louis	2.85	3.90	3.75	3.50@3.90
Standard screenings	St. Louis	3.35	2.50	2.35	2.25@2.50
West Ky. lump	Louisville	4.75	4.90	5.50	5.00@5.50
West Ky. mine run	Louisville	4.25	4.25	3.85	3.75@3.90
West Ky. screenings	Louisville	4.00	4.00	3.55	3.50@3.75
West Ky. lump	Chicago	4.25	4.25	4.25	**4.25@4.75**
West Ky. mine run	Chicago	4.25	4.25	4.25	4.00@4.85
South and Southwest					
Big Seam lump	Birmingham	3.95	3.75	3.75	3.50@3.75
Big Seam mine run	Birmingham	3.30	2.80	2.75	2.50@2.75
Big Seam (washed)	Birmingham	3.80	3.45	3.35	3.25@3.35
S. E. Ky. lump	Chicago	4.25	6.00	6.25	5.00@7.10
S. E. Ky. mine run	Chicago	4.25	4.75	4.75	4.50@5.00
S. E. Ky. lump	Louisville	6.25	6.90	7.00	6.50@7.50
S. E. Ky. mine run	Louisville	5.65	5.65	5.35	5.00@5.50
S. E. Ky. screenings	Louisville	5.25	5.50	5.10	4.90@5.00
S. E. Ky. lump	Cincinnati	7.00	6.85	6.50	6.00@7.00
S. E. Ky. mine run	Cincinnati	5.50	5.50	5.10	5.00@5.25
S. E. Ky. screenings	Cincinnati	5.40	5.10	5.00	4.90@5.00
Kansas lump	Kansas City	6.00	6.25		5.50
Kansas mine run	Kansas City	5.00	5.00		4.25
Kansas screenings	Kansas City	2.75	2.60		2.50

*Gross tons, f.o.b. vessel, Hampton Roads
†Advances over previous week shown in heavy type, declines in italics.
NOTE—Smokeless prices now include New River and Pocahontas

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

INCLUDES PENNSYLVANIA STATE TAX

	Market Quoted	Freight Rates	Latest Independent	Pre-Strike Company	Oct. 2, 1922 Independent	Oct. 2, 1922 Company	Oct. 9, 1922† Independent	Oct. 9, 1922† Company
Broken	New York	$2.34		$7.60@$7.75		$7.75@$8.15		$7.75@$8.15
Broken	Philadelphia	2.39	$7.00@$7.50	7.75@7.85		7.90@8.10		7.90@8.10
Egg	New York	2.34	7.60@7.75	7.60@7.75	$9.25@12.50	7.75@8.15		7.75@8.15
Egg	Philadelphia	2.39	7.25@7.75	7.75	9.25@9.75	8.10@8.15		8.10@8.15
Stove	New York	2.34	7.90@8.20	7.90@8.10	9.25@12.50	8.00@8.15		8.00@8.15
Stove	Philadelphia	2.39	7.85@8.15	8.05@8.25	9.25@9.75	8.15@8.15		8.15@8.15
Chestnut	New York	2.34	7.90@8.20	7.90@8.10	9.25@12.50	8.00@8.15		8.00@8.15
Chestnut	Philadelphia	2.39	7.85@8.15	8.05@8.25	9.25@9.75	8.15@8.15		8.15@8.15
Range	New York	2.34				8.15		8.15
Pea	New York	2.22	5.00@5.75	5.75@6.45	6.50@7.00	6.15@6.20		6.15@6.20
Pea	Philadelphia	2.14	5.50@6.00	6.15@6.25	7.00@7.25	6.15@6.20		6.15@6.20
Buckwheat No. 1	New York	2.22	2.75@3.50	3.50	3.50@4.00	4.00@4.25		4.00@4.25
Buckwheat No. 1	Philadelphia	2.14	2.75@3.25	3.50	4.00@4.25	4.00		4.00
Rice	New York	2.22	2.00@2.50	2.50	2.75@3.00	2.75@3.00		2.75@3.00
Rice	Philadelphia	2.14	2.00@2.50	2.50	2.75@3.00	2.75@3.00		2.75@3.00
Barley	New York	2.22	1.50@1.85	1.50	1.75@2.00	2.00		2.00
Barley	Philadelphia	2.14	1.50@1.75	1.50	2.00	2.00		2.00
Birdseye	New York	2.22	.....	2.00@2.50		2.75		2.75

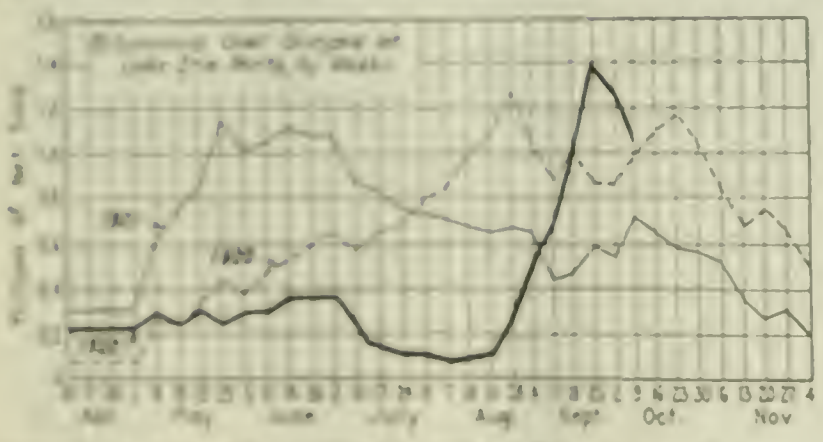
† Advances over previous week shown in heavy type, declines in italics.

How the Coal Fields Are Working

Car Loadings, Surplusages and Shortages

tons in the previous week. Prices have softened, tempting a slight resumption of exports, but the coastwise market still absorbs most of the coal.

Lake dumpings, which were in unprecedented volume for the last two weeks dropped back to 1,057,266 net tons during the week ended Oct. 9, a falling off of 158,168 tons as



compared with the preceding week. The total Lake movement began to date is 11,276,369 tons; during the corresponding period of last year 15,[illegible] tons had been dumped.

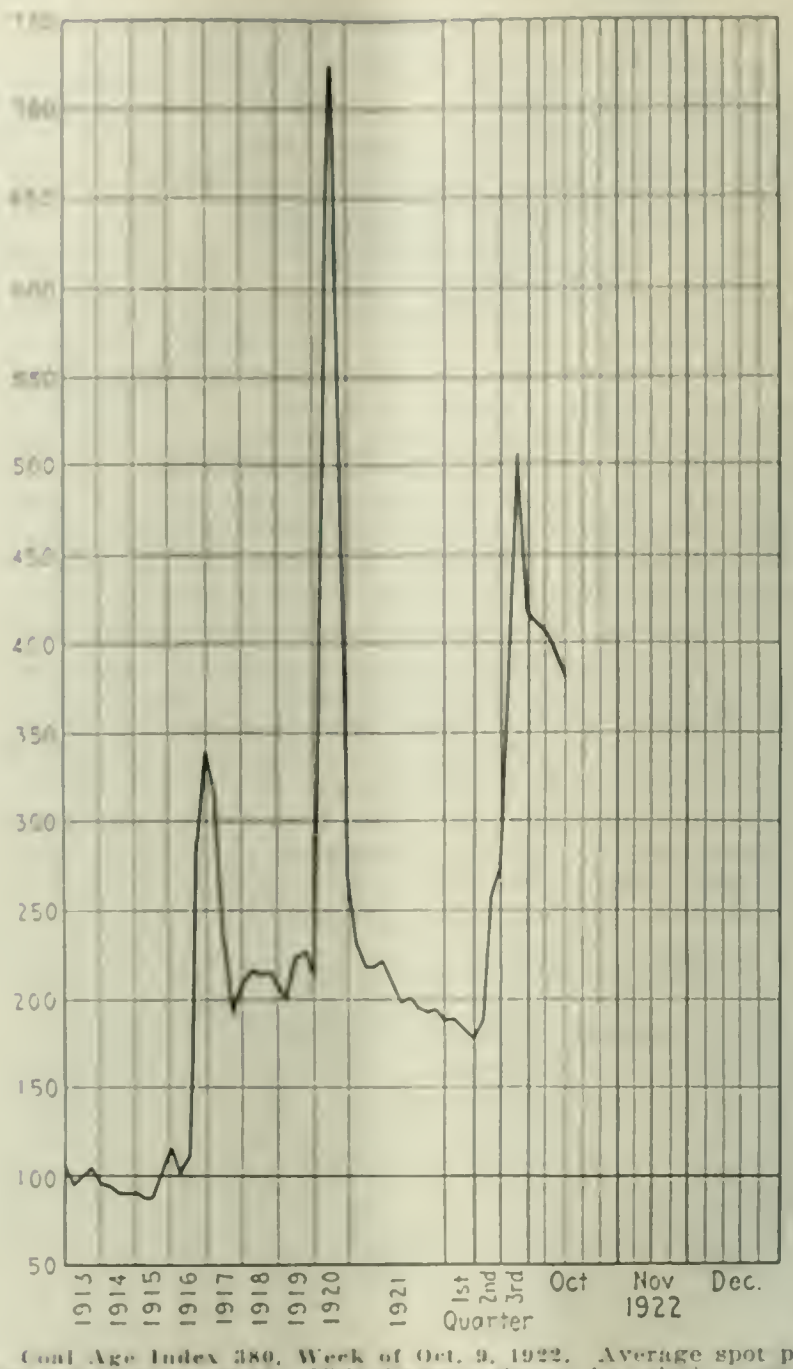
COKE

Pocahontas coke production took a gratifying leap to 162,000 net tons during the week ended Sept. 30, an increase of 29,000 tons as compared with the preceding week. With the exception of West Virginia all districts showed increases. The Connellsville output is the largest since the recovery first started.

Blast furnace coke is as scarce as ever, however, and in general there is not enough tonnage offering to tempt furnaces to operate even if they were willing to pay the going price. There is just enough blister of foundry coke to support the market.

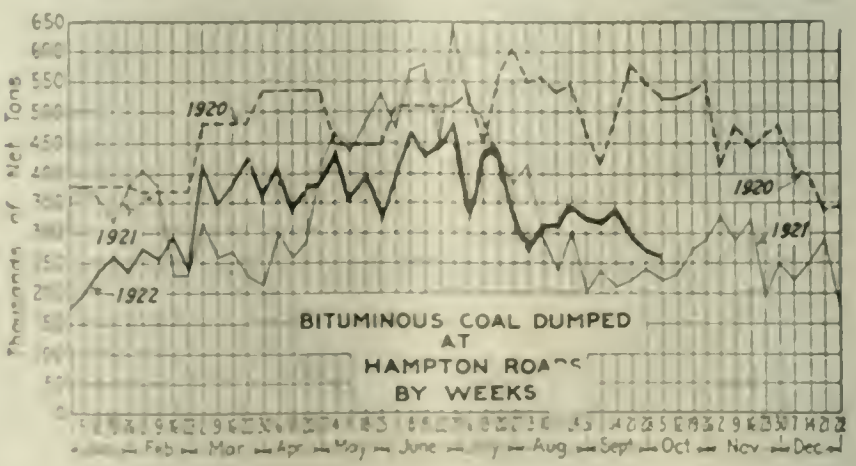
ANTHRACITE

Production of anthracite continues at around 1,300,000 net tons a week. During the week ended Sept. 30 the output was 1,317,000 net tons. Early reports of last week indicated that production will again be around this figure.



Coal Age Index 380, Week of Oct. 9, 1922. Average spot price for same period, $1.60. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

Independent prices show a wide range. The family sizes are going as high as $14@$15 in the outlying districts and in Canada, while Eastern centers are paying around $9.50. This is especially true in Philadelphia where high-priced



coal is being little quoted and rarely, if ever, taken. New York market prices have dropped from the high range quoted last week. The steam market has been extremely hard hit by the heavy tonnage and the strong competition of bituminous coal.

Unless coal reaches the bins shortly, the only place many Americans will be warm this winter will be under the collar. —*Indianapolis Star.*

Foreign Market And Export News

British Obtain Orders from Continental Markets; Prices Held Firm

Best British coals continue to strengthen. There is a good demand from Germany, Canada and Italy. The lower grades are more freely offered, however, and with less price firmness. A cable to *Coal Age* places the output during the week ended Sept. 23 at 5,144,000 gross tons as compared with 4,995,000 tons in the preceding week.

Much anxiety is felt over the threat of Welsh miners to give notice to terminate all contracts on Nov. 5, unless the non-union miners join the Miners' Federation.

The outlook in Durham and Northumberland is considerably brighter. The past few days has been marked by a revival of Continental inquiries and orders, which are more welcome than the American orders. The special feature of the European awakening is the interest taken by the Continental gasworks. The European railways are taking more British steam coals, and 150,000 tons have been sold on German account.

The same feature is found in the Yorkshire fields, where the export trade has picked up appreciably. Forward ordering has attained a level which leads the operators to believe that the Continental market is regaining the pre-war standard. Another feature of the Yorkshire area is better business in the home markets.

Coal Freight Rates Reduced in France

French coals from the Nord and Pas-de-Calais area have still a favorable market. There is now quite a rush for domestic. Industrial coals also are in a favorable situation. Gas coals are very scarce.

On the other hand, the situation of the minor fields of the center of France, which are feeling the pinch of the competition of Lorraine and Sarre coals, is far from being as satisfactory and more small mines are closing.

The various reductions on rail rates for coal from the Nord and Pas-de-Calais have been approved by the French Minister of Public Works for a provisional period of three months from Sept. 20. These are deemed insufficient by French collieries, all the more so as they are offset by a similar reduction granted on the transportation of Sarre and Lorraine coals.

No progress is to be reported in the conflict between operators and men, but a general strike of miners about the middle of October is not at all impossible. Mines of the Nord and Pas-de-Calais are said to be already preparing for it by slackening down their shipments.

Representatives of the Swiss Federal Railways are now negotiating with French reconstructed collieries for a briquet contract.

United States August Coal Imports

	Gross Tons	Value
Anthracite:		
Imported from:		
United Kingdom	30,772	$165,657
Canada	802	6,334
Total	31,574	$171,991
Bituminous:		
Imported from:		
United Kingdom	606,050	$2,872,845
Canada	225,352	1,424,320
Australia	35,519	199,775
Denmark	2,692	15,075
Other countries	719	5,464
Total	870,332	$4,517,479

Hampton Roads Market is Weaker

The market was dull last week, a slight movement in export business proving the only redeeming feature. For the first time in many months the piers reported only about 10,000 tons of vessels waiting for cargo. Prospects for increased movement in the immediate future were very slight.

Prices continue downward, and shippers express the hope they might drop far enough to permit a stronger movement of export coal. Large stocks are on hand at the piers.

Coal Paragraphs from Foreign Lands

ITALY—The price of Cardiff steam first is quoted at 39s. 6d., according to a cable to *Coal Age*.

AUSTRIA.—The output of coal and lignite during the first half of 1922 was 1,674,000 tons; a falling off in the second quarter (810,000 against 864,000 tons in the first) due to serious labor troubles.

INDIA—The tendency of the coal market is weaker. Supplies are adequate. Mills and railways are not in the market and quotations are unchanged.

BELGIUM—The market is very firm, both in the domestic and industrial sections. Briquets are in great demand for home consumption and for export.

GERMANY—Production in the Ruhr region during the week ended Sept. 24 was 1,892,000 metric tons, according to a cable to *Coal Age*, as compared with 1,847,000 tons in the preceding week.

Hampton Roads Pier Situation

	—Week Ended— Sept. 28	Oct. 5
N. & W. Piers, Lamberts Point		
Cars on hand	1,235	1,347
Tons on hand	75,226	85,763
Tons dumped	113,785	121,923
Tonnage waiting	27,600	...
Virginian Ry. Piers, Sewalls Point		
Cars on hand	923	1,301
Tons on hand	54,500	61,140
Tons dumped	70,191	53,647
Tonnage waiting	7,500	4,923
C. & O. Piers, Newport News		
Cars on hand	910	614
Tons on hand	45,500	29,700
Tons dumped	71,143	54,292
Tonnage waiting	3,850	1,550

Export Clearances, Week Ended Oct. 5, 1922

FROM HAMPTON ROADS

For Cuba:	Tons
Br. S.S. Berwindvale, for Havana	7,849
Am. S.S. Guantanamo, for San Juan	4,324
Am. S.S. Lake Fernwood, for Santiago	495

FROM PHILADELPHIA

Br. S.S. Ceuto, for Antilla	
Nor. S.S. Munorway, for Havana	

Pier and Bunker Prices, Gross Tons

PIERS

	Sept. 30	Oct. 7
Pool 9, New York		$5 @ $5 25
Pool 10, Philadelphia	$7 50 @ $8 00	7 @ 7 50
Pool 11, Philadelphia	7 25 @ 7 25	@
Pool 10, New York	7 75 @ 8 00	@ 7 75
Pool 11, New York	7 50 @ 7 75	@
Pool 1, Hamp Roads	7 75 @ 8 10	@
Pools 5-6-7 Hamp Rds	7 75 @ 8 10	@
Pool 2, Hamp. Rds	7 75 @ 8 10	@

BUNKERS

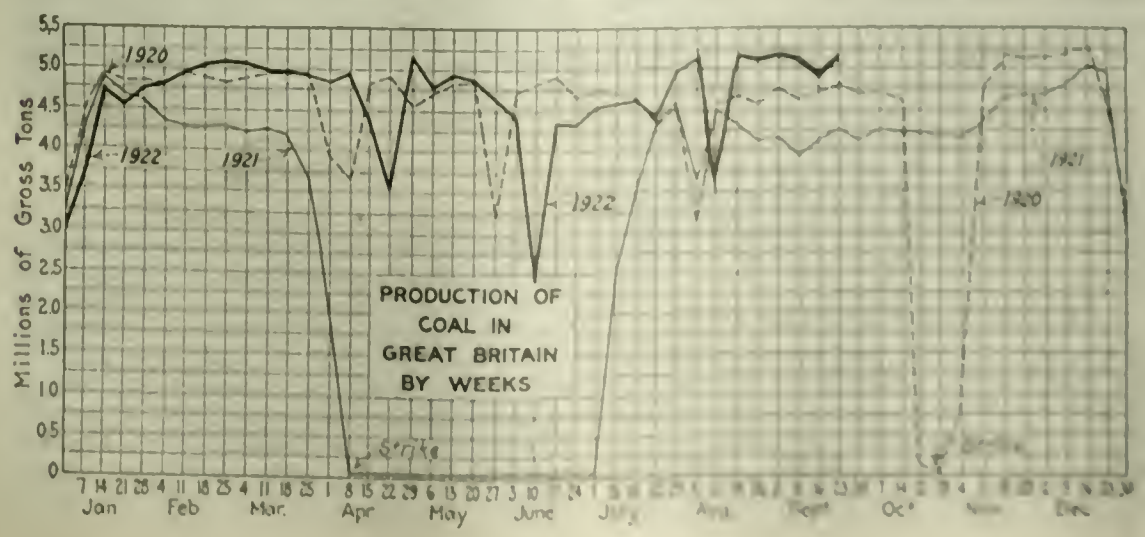
Pool 9, New York		$5 @ $5 25
Pool 10, Philadelphia	$5 @ $5 50	@
Pool 11, Philadelphia	7 75 @ 8 25	7 75 @ 8 25
Pool 10, New York	8 @ 8 25	@
Pool 11, New York	7 75 @ 8 00	@
Pool 1, Hamp Rds	7 @ 8 10	@
Pool 2, Hamp. Rds	7 @ 8 10	@
Welsh, Gibraltar	40s @ 40s	40s @ 40s
Welsh, Rio de Janeiro	57s 6d @ 60s	57s 6d @ 60s
Welsh, Lisbon	50s @ 50s	50s @ 50s
Welsh, La Plata	50s @ 50s	50s @ 50s
Welsh, Genoa	42s @ 42s	42s @ 42s
Welsh, Algiers	42s 6d @ 42s 6d	42s 6d @ 42s 6d
Welsh, Pernambuco	45s @ 45s	45s @ 45s
Welsh, Bahia	50s @ 50s	50s @ 50s
Welsh, Madeira	40s @ 40s	40s @ 40s
Welsh, Teneriffe	42s 6d @ 42s 6d	42s 6d @ 42s 6d
Welsh, Malta	42s @ 42s	42s @ 42s
Welsh, Las Palmas	42s @ 42s	42s @ 42s
Welsh, Naples	42s @ 42s	42s @ 42s
Welsh, Rosario	52s 6d @ 55s	52s 6d @ 55s
Welsh, Singapore	42s @ 42s	42s @ 42s
Welsh, Constantinople	50s @ 50s	50s @ 50s
Welsh, St. Michaels	50s @ 50s	50s @ 50s
Welsh, Alexandria	40s @ 40s	40s @ 40s
Welsh, Port Said	40s @ 40s	40s @ 40s
Welsh, Oran	40s @ 40s	40s @ 40s
Welsh, Fayal	50s @ 50s	50s @ 50s
Welsh, Dakar	40s @ 40s	40s @ 40s
Welsh, St. Vincent	40s @ 40s	40s @ 40s
Welsh, Montevideo	50s @ 50s	50s @ 50s

Current Quotations British Coal f.o.b Port, Gross Tons

Foreign Quotations for Cargo Coal, f.o.b.

Cardiff		
Admiralty, large	26s @ 27s	27s @ 28s
Steam, small	19s @ 20s	19s @ 20s
Newcastle		
Best steams	24s @ 25s	25s @ 26s
Best gas	25s @ 25s	@
Best bunkers	25s	@

†Advances over previous week all are in heavy type.



North Atlantic

Heavier Offerings in East With Western Railway Jam

Embargoes and Shipping Conditions Complicate Situation—Average Consumer Still Banks on Price Decline, Deaf to Warning of Shortage—Railroads Buying Heavily

Coal congestion in the West has thrown heavier offerings eastward. The movement is very slow, as there are many embargoes and shipping conditions are becoming more complicated each day. British coal continues to arrive, but in smaller volume.

Prices are dropping slowly and each decline reassures the average consumer of the wisdom of his buying policy. He is deaf to warnings of a shortage to come and maintains his attitude of aloofness, covering only at current requirements. Railroads, however, are taking heavy tonnages, assigning so many cars for this business that the supply for loading commercial coal is very meager.

There is almost no inquiry at Tidewater. Line shipments are slow in getting through from the mines and sellers are devoting much of their attention to tracing cars to destination.

PHILADELPHIA

There is a lack of market activity, efforts of the shipping people being confined mostly to endeavoring to get coal on the road forwarded to destination. The consumer for the most part continues in his aloofness, and when he does make purchases is very much inclined to shop around.

The producer is not doing a great deal of urging of tonnage on customers, as he has very little free coal anyway, and the consumer is somewhat resentful when spread prices are not at his level.

There are so many freight embargoes of various kinds in effect that shippers are unable to keep track of them, and in the meantime are unable to get sufficient cars to keep their mines to capacity. One shipper interviewed stated that on a single day last week on an allotment of 50 cars he received 3 and declared this is typical of his operations on both the Pennsylvania and B. & O. Prices have rounded, and with each slight drop the consumer points out that his level will be reached before long.

This week there was probably an average recession of 25c. a ton all around, and yet at these prices more than one producer claims to be digging coal at a loss, due to his curtailed output.

Railroads are endeavoring to accommodate, yet as assigned car orders may have been unable to deliver sufficient cars to all roads to meet their requirements. The prices they are willing to pay for low-volatile coal is around $4, and for high-volatile, $3.25.

BALTIMORE

A curious trend has arisen in the local situation for, whereas car supply is stretched and demand as compared with the light deliveries seems fairly good, there is a softening of the price list. Some of the producing interests report that they are maintaining the price list that has been set for a couple of weeks past, but there are undoubtedly cuts of considerable nature from the hands of other large producers and this has lowered the general average of sales.

The fact that there is not much Pool 9 on the market has held that a little better than is the case with Pools 10 and 11, wherein the principal drop has come. Car supply is the most serious feature of present conditions. On some days the B. & O. run of empties to mines falls below 20 per cent. The movement of British coals to Baltimore continues heavy and there is ready absorption so far for what has come in.

NEW YORK

There is practically no inquiry at Tidewater, but line demand is more active. Buyers are not anxious to step up although inducements in the way of lower prices might be offered. Arguments, such as a shortage of cars, are being employed but to no avail. Some consumers look for much lower prices than the present.

With production running at its present level consumers believe there will be further breaks and notwithstanding the lack of cars they will be able to get all the coal needed. Another reason for the lack of demand was the removal of restrictions.

There were close to 1,300 cars at the local piers on Oct. 6. In addition there was considerable British coal to be had at from $6.75@$7 alongside.

Receipts of British coal are growing smaller. With the "fixing" of three Shipping Board vessels this week it is believed they will be among the last. During the week nine vessels, carrying a trifle more than 58,000 tons, arrived here.

Efforts are being made to have the restrictions against bunkering removed, it being contended that within the next 30 days conditions will be normal.

Quotations on some grades, especially Pool No. 9, show a wide range. Punxsutawney and P. R.R. high-volatiles were held around $4; gas, run of mine, around $4.75, gas lump 75c. higher. Bituminous coals were quoted close to $3.50.

CENTRAL PENNSYLVANIA

Operators have gotten their stride and during the month of September produced 76,509 cars. September, 1919, had a production of 90,527 cars, while September, 1920, produced 91,015 carloads. In August this year, the production was 50,364, while in July the total was 14,076 carloads.

The car shortage, particularly in the western part of the district, continues quite aggravating. Prices remain stable, Pool 11 being quoted at $4 and Pool 1 at $5@$5.50.

UPPER POTOMAC

For the first time in several months there was a car shortage in evidence on the line of the Western Maryland in the Potomac field. The curtailed supply of reduced production at a time when the rate of output was about 60,000 tons a week or not far from normal. The curtailed supply of empties, however, found mines with less of a demand to meet owing to the large tonnage in Eastern markets, the effect of which has been to reduce prices.

FAIRMONT

Industrial demand was at rather a low ebb during the closing week of September. This was attributed to the large volume of coal pouring into Eastern markets as Western shipments were embargoed, even to the Lakes, at times. The car supply is becoming more and more restricted. The only mines having cars to amount to anything were those having railroad fuel orders. Operators complain that the Baltimore and Ohio is assigning cars once again and that it is next to impossible to secure equipment for commercial loading.

South

BIRMINGHAM

The problem of the trade continues to be one of car supply. The quota furnished the past week ranged from 30 to 40 per cent of the number needed, and the prospects of any material improvement in the near future are not bright. Much of the equipment of local carriers found its way into foreign territory during the period of shortage caused by the strike and has never been returned to the owners.

There is a strong and urgent domestic demand from every direction. Dealers with contracts are not receiving their quota by any means, due to car shortage. The easing off in the demand for steam coal is also affecting the supply.

Quotations are remaining fairly stable on steam grades though some seams have been selling 25c.@$35c. under the maximum schedule the past week.

The output is holding up well considering the acute car shortage, a total of 345,000 net tons being reported for the week ended Sept. 23, the last figures available. The week of Sept. 30 will probably show a decrease, as transportation conditions were not so favorable.

VIRGINIA

So far mines have not been able to overcome the handicap of a car shortage which is curtailing production to the extent of 50 per cent. It is not so much the strike of shopmen as it is the fact that few of the roads are able to put their hands on enough equipment to keep the mines supplied. The demand for coal is weaker with the result that prices have softened somewhat.

Anthracite

Rush in Domestic Business, Steam Sizes Drug on Market

New York Harbor Terminals Clogged with Commercial Coal, Which May Affect Fuel Situation—Warm Weather Prevents Scramble in Portioning Out of Household Coal.

New York harbor terminals are heavily congested with steam loads of anthracite. Railroad officials fear that the tying up of these cars will seriously affect the fuel situation at New York. Steam sizes quickly became a drug on the market following the resumption of mining, and those producers who have such facilities are now storing these grades.

Domestic business is, of course, rushing. Coal is being portioned out to consumers in small lots and the unseasonably warm weather has fortunately delayed the inevitable rush of householders. Independent quotation show a wide range but the extremely high-priced coal is going to small towns or Canadian points, as Eastern distributing factors are loath to pass on these premiums to their customers.

NEW YORK

Lack of demand has resulted in an accumulation of steam coals here. At the end of the week there were about 3,500 cars containing upward of 175,000 tons at the various railroad terminals adjacent to the New York harbor.

Because of the failure of consumers to take this coal the larger mining companies have reduced the output of these sizes by closing down various washeries and are again storing the present production. That there should be an oversupply at this time is attributed to the supply of bituminous.

Dealers predict that unless the weather becomes unusually colder during the next four weeks and with production continuing at or about the same basis as at present, the situation will be comparatively easy. In the West, however, users of anthracite will be forced to take soft coal.

Quotations for independent domestic coals cover a wide range starting at $9.25, most of the big operators going as high as $9.50.

PHILADELPHIA

Moderate shipments to retailers are coming in and as a result deliveries to consumers are going along quietly. The remarkable run of warm weather has tempered the demand considerably.

There is much speculation as to the relative scarcity of pea, as most dealers had an idea it would be plentiful. Numerous dealers have put in requests urging prompt delivery of this size, probably not with the idea of moving it at once, but to get some stock ahead.

Retail prices are unchanged. Wholesale quotations show no appreciable change in the last week. Independent prices higher than $9.50 are heard repeatedly, but sales are rare.

The State Fuel Commission is hearing the arguments of independent shippers to establish their right to get more than $8.50. It is likely the present prices will be approved in all cases, and in a few instances even higher figures will be allowed later.

Steam sizes are moving along nicely, although there is just the slightest tendency for a slowing down on rice, but all shippers are easily able to get full prices. Some retailers are taking a small tonnage of buckwheat, generally at the urging of the shippers.

BUFFALO

Demand is rushing. It would be impossible for a while to satisfy the consumers with five times the ordinary supply.

The independent mines are trying to ask from $12 up, but jobbers are afraid to buy, because they have to report their sales to the fuel administrator and the prices they have to ask look bad. It will be a long time before the trade is easy.

The effort of the Lake seamen to tie up the fleet by a strike appears to have failed. The steamers move as usual. The west-bound coal movement is light. Shipments to date since the beginning on Sept. 23 have been only 91,600 tons, of which 46,600 tons cleared for Milwaukee, 31,300 tons for Duluth and Superior, 13,700 tons for Chicago and 7,700 tons for Sheboygan. Rates are 40c. to Duluth, 50c. to Milwaukee, Sheboygan and 50c.@55c. to Chicago.

BOSTON

Shipments are coming forward steadily. There are large retail distributors who have not yet had cargoes of prepared sizes, but there seems less anxiety than a fortnight ago. The unseasonably warm weather has delayed the on-coming rush, but in another fortnight there will be heavy pressure on all the anthracite channels to provide increasing supplies.

No change has yet been made in retail prices. What coal is being passed out is at figures that prevailed during the spring, except in pea sizes which is either sold mixed with other sizes or commands a price on an equality with them.

BALTIMORE

Receipts are light and dealers are sticking to their resolve to deliver not more than one or two tons to a customer. Additional receipts are expected as a result of the announcement of the B. & O. of a new freight rate of $3.28 on coal from the Schuylkill field of Pennsylvania. This rate was arranged by agreement with the P. & R. and the L. & N. E. railroads. The B. & O. will carry coal from the Schuylkill field at the same rate charged by the Pennsylvania for coal from the field which they tap.

The Maryland Distribution Committee has taken up with Pennsylvania producers the question of supplying peck and bushel men in this city who claim that they are unable to get any coal whatsoever. It is planned to work out some measure by which the poor of the city who buy in bushel and peck lots will be able to get supplies.

Coke

CONNELLSVILLE

Connellsville coke remains as scarce as ever and prices on an average are a shade above those of a week ago, with furnace at $12@$12.50 and foundry at $13.50@$14. An additional furnace has resumed on coke bought in the open market, a second Shenango stack, while Struthers furnace blew in Oct. 7 on coke obtained through an old contract. In general there is not enough coke in the open market to enable any furnaces to resume by simply buying coke, while most furnaces would probably hesitate to pay present prices even if they were sure of getting a steady supply.

Consumers have shown such an indisposition to pay present pig iron prices that furnaces are not as disposed to get into blast as might be supposed from a mere comparison of coke and pig iron prices.

There is a good bit of inquiry for foundry coke, but the majority of foundries seem unwilling to pay present prices. Enough are willing to buy to support the market at its present level, with offerings relatively limited.

The *Courier* reports production during the week ended Sept. 30, at 90,250 tons by the furnace ovens, and 28,430 tons by the merchant ovens, a total of 118,680 tons, an increase of 13,340 tons.

UNIONTOWN

Despite an acute car shortage coal prices have slipped off several notches, with $3.25@$3.50 prevailing and probably sales made at lower figures. Brokers and operators report difficulty in finding destination for large shipments but encounter very little trouble in placing small lots. That would infer that buyers have placed their coal requirements upon a hand-to-mouth basis.

That the union intends continuing its fight in the Connellsville region seems indicated by the erection of barracks at the Leisenring plants to house evicted miners who are now living in tents. At both Uniontown and Connellsville there are evicted families living with other families. At Uniontown health authorities ordered a dozen families out of an old warehouse because of health conditions as well as the menace of fire. Many of the families are reported to be in dire straits and the drift back to the mines has increased.

BUFFALO

Demand is light, but the supply is so small that high prices are generally maintained. But for the fact that we have a good line of by-product ovens the prices of beehive coke would soar still more.

Chicago and Midwest

Bottom Softens Under Midwest Coal Trade

Even Domestic Demand, Which Has Been Strong, Is Weakening—Steam Prices Sag Lower—Rail Service Continues Bad—Cold Snap Desired.

The entire Midwest is getting deeper and deeper in the "grumps." Warm weather, reports of increasingly heavy car loadings in the Eastern fields and news of mine-operative peace have combined to rob the trade of its one bolstering feature, strong domestic demand. Dealers are now having trouble in moving household coal. The result is that producers are having difficulty in keeping out of the red and the pressure for a reduction in domestic mine prices is becoming insistent. The steam buyers' strike of big consumers is still determinedly pulling screenings prices lower and lower.

Rail service is generally worse. Cops are hogging most of the motive power. It cannot be said that the mines are so urgently requesting cars in most fields. Those properties holding heavy contracts are the only ones that could use a 50 per cent car supply if they could get it and even contract business is none too dependable under present conditions.

All Illinois fields are shut down five days each week, averaging for the state around 30 per cent. Indiana is similarly situated. Western Kentucky is finding a slightly better market, especially in the South. What is really needed is some good cold weather that will bolster the domestic trade as well as aid the steam situation.

CHICAGO

With continued unseasonably warm weather and an exceedingly short car supply, the coal market is undergoing a severe strain. From every branch of the business come reports that very little buying is being done. The strong demand which has kept the domestic business alive has at last shown signs of softening. Mines all state that running time is getting worse.

In several instances domestic orders have been cancelled, which would be considered unusual at this time of the year.

There is practically no spot market for screenings, as steam buyers continue to stay out of the market.

Local brokers are announcing that they are handling no spot Pocahontas at all. Their time is largely taken up with trying to get coal enough to take care of their contract business. They report some improvement in rail conditions with the past few days; however, they are doubtful if any appreciable spot market will develop for some time.

WESTERN KENTUCKY

Steam coal prices slumped off during the week considerably, and some screenings are now quoted as low as $3, although the market ranges as high as $3.75, along with mine run which is quoted $2.50@$2.75. Lump is strong at $5@$5.50, and if any sales have been made at under the $5 figure the past few days, the operators are keeping it to themselves.

Although reports have been heard from Illinois and other points of screenings being in such small demand that operators have been dumping them at any price in order to load out lump, there is no dumping of screenings in western Kentucky, where car supply is probably as bad as anywhere in the country. With lump at $5 and up and screenings at $3 and up, the mine run price is something over $4.

Demand is principally from Southern cities, as Chicago and long-haul points are being offered plenty of coal from other districts, and with the present small car supply operators do not need more business and are not forced to cut prices. Demand for lump is better.

LOUISVILLE

According to some well-posted coal men a demand for domestic fuel is going to hit soon when the weather turns cold, which will make the price waiters mighty sick. Some operators claim there is a "buyers strike" of domestic and industrial consumers. This does not check with reports of operators who say they are loading out all the coal they can get cars for. As a matter of fact buyers are not bidding up prices, therefore operators are talking of the "strike."

Retailers are willing to buy lump and even stock it at a reasonable price, but not at $5 and up. As a result production is principally on mine run, and this is moving out as fast as roads can supply cars.

Lake movement, along with steel plant, gas, byproduct and utility demand on eastern Kentucky, is not hampering production any considering a car supply reported at about 20 per cent. Gas coal is carrying a premium over steam, it being quoted $5@$5.75 for best mine run, whereas non-gas is $4.25 @$5, with some low grade at $4.

SOUTHERN ILLINOIS

The movement of cars in the Carterville field has shown up some better the past week but the shortage seems to increase. A record check at one mine on the Missouri Pacific the past week showed 7 per cent equipment furnished, on the Burlington 13 per cent and on the Illinois Central 15 per cent. These figures are taken from mines having all three roads. It would check about 25 per cent car supply. Steam sizes are heavy and several mines have screenings and small sizes unbilled. This situation is depressing and is accounted for by warm weather. A somewhat similar condition exists in the Duquoin and Jackson County field.

In the Mt. Olive district there is considerable trouble moving steam coal. Domestic sizes are not moving freely on account of hopper bottom equipment which the dealers cannot unload. In this particular field the return movement of empty cars is not good, although about a 2- or 3-day car supply is furnished.

In the Standard district steam sizes are holding up everything on account of their inability to move and this will likely continue for some time unless severe weather sets in. The market seems to be weakening and some mines have so many "no bill" steam sizes that many roads are refusing to furnish any more equipment until the loads are moved.

ST. LOUIS

Warm weather and an indifferent public have brought the local market to the point of demoralization. Orders are coming in for small quantities but earlier orders are cancelled in the hope of warm weather and a slump of domestic coal along with steam sizes. The local steam trade is lagging, figuring on buying cheaper coal. This attitude is forcing the market rapidly. Many St. Louis steam plants are still using oil. Oil competition has been felt all over the Midwest. Again, there is another April 1 not far off that the steam trade fears. In St. Louis recently the Scullin Steel Co., United Railways and City Waterworks quit oil for coal. In East St. Louis and Granite City coal to the tonnage daily of about 20 to 30 cars has recently supplanted oil. But the Frisco will have all of its divisions using oil except the River and Cape between St. Louis and Memphis and the Alabama division between Memphis and Birmingham by April 1, 1924. This will throw out between 3,000 and 4,000 tons of coal daily.

Both country domestic and steam trades have been good up to the present but have followed the action of the St. Louis dealers quickly in curtailing shipments. A little snappy weather will brighten things up. There is no anthracite to speak of coming in and no smokeless. Coke production is light and the condition generally is far from satisfactory.

INDIANAPOLIS

Although the coal situation has not changed within the last few days and prices have held steady, some coal men believe a break in prices will come soon. The demand is not strong and retail dealers say they are having no difficulty in getting sufficient tonnage to supply the domestic market. Dealers are not getting enough to stock, however. It is doubtful if they would at present prices anyway.

The weekly statement of the Indiana Retail Coal Merchants' Association said: "While it is believed the general trend of mine prices will be downward, there is nothing at present to indicate that there will be any change in the price of domestic coal soon. Steam is off, due to an alleged buying strike on the part of large industrial consumers.

Eastern Inland

More Pressing Need of Coal Gives Market Better Tone

While Buyers Seem to Seek Only Current Needs There Are More of Them —Ohio Price Schedule Causes Shippers to Force Lake Markets—Lake Dumpings Still Heavy—Pittsburgh Market Dull.

There is a slightly better market tone. Under pressure of growing coal needs and more firmly held prices industries are showing signs of interest. There is no snap to the market but it has lost some of its apathetic tone of the last few weeks. The general policy has been to buy for current needs only, but more of such takers are in the market.

Governor Davis' announcement of the temporary Ohio fair price list has caused some operators to say that if it is enforced they must send their product out of the state, where higher figures can be obtained. The establishment of these prices is causing shippers to force the Lake market, which is paying $4.25 for good No. 8, as compared with Ohio's list of $3.56.

Lake dumpings are still heavy, although rail congestion is reducing the movement somewhat. Vessels are clearing quickly and but little effect of the Lake seamens' strike has been felt as yet. Dumpings at the lower ports during the week ended Oct. 9 were 1,087,265 net tons, as compared with 1,245,373 tons in the preceding week.

The Pittsburgh market is still distinctly dull. Consumer requirements seem to have been over-estimated. However, the sluggish market is not a factor in controlling the output as yet, as cars are far too scarce to permit prompt loading of the orders in hand.

PITTSBURGH

Demand has fallen off in marked fashion and the market is commonly described as being distinctly dull. Prices have declined 25c.@50c., but are now practically stationary.

All told, consumptive requirements do not seem to be as heavy as was predicted. The average buyer is quite content to cover his immediate requirements, showing no disposition to buy even for a short time ahead. Demand from retail dealers is fair, but seems to be for current distribution only, the dealers being unwilling to put in any stocks. Truck mines are still doing considerable business in domestic fuel and in some cases are making prices well below what can be done on rail coal.

Production is not affected by the dull market as prices still show a wide margin. The limiting factor in production is car supply, which is hardly as good as 30 days ago and is of course far below mine capacity.

The market is quotable at $3.50@$3.75 for good grades of steam coal, $4.50 for byproduct, $4.50@$4.75 for good gas, all mine run, and $5.25@$5.50 for best grades of domestic 1¼-in. lump.

BUFFALO

Shippers are urging consumers to buy, pointing to the fast-growing shortage of cars, but the advice is not much heeded. The talk is called mere effort to work off coal. So the prices weaken and the more they go down the more the consumers refuse to buy. The movement is declared to be less than consumption, but the consumer does not mind that, so long as he believes that he is pounding down the price. The decline is not likely to last. In fact, the shipper is unable to see how the opposite is not the case. One thing is doubtless overlooked. The natural production is large and somebody is managing to get his coal to destination.

As to prices there is naturally a wide range. Some shippers manage to get as high as $6.50 at the mines for gas or Pittsburgh lump and some mines are offering good coal below $4. A fair average is $4.50 for Allegheny Valley mine run and $5@$5.25 for Pittsburgh lump, with a little more for gas lump. The freight to be added for Buffalo delivery is $2.09 for Allegheny Valley and $2.24 for Pittsburgh.

CLEVELAND

A slightly better tone in the market is reported. There is nothing resembling activity, but operators and dealers are somewhat encouraged by what they believe is a growing disposition of buyers to come into the market at prevailing prices. For some weeks consumers have been holding out for lower levels.

Under the pressure of growing coal needs, and with the price showing no further evidence of important declines, industries are giving indications of buying. The state fuel commission has announced the official scale of "fixed" prices. The level of $3.56 for No. 8 mine run is regarded by most operators as unreasonably low. Since there is a fairly good market for this in the Lake trade at $4.25, as much coal as possible will be sent out of the state. The shortage of cars is becoming more and more pronounced in this district. Current quotations are shown in the Weekly Review.

The Lake movement continues at high speed, apparently undisturbed by the walk-out of the union seamen. It is now believed that it will be possible to ship the Northwest more than 15,000,000 tons, which was regarded as the limit a month or so ago. Fears of shortage in the Northwest are greatly diminished and there is no panic of buyers apparent.

NORTHERN PANHANDLE

Accumulation at the Lakes constitutes the most serious interference with the movement and is having a tendency to check production. Although there is not quite so strong a demand for steam coals, nevertheless more coal could be moved if the transportation situation permitted but termnials are clogged with cars. There is more of a demand for lump than any other grade.

COLUMBUS

While the "buyers strike" is not over, still there is evidence of a disposition to buy. Lake shipments are going forward, many embargoes having been removed.

Householders are coming into the market more and more, but the continued warm weather is still delaying them. Retail prices are rather steady at former levels, with Hocking lump, $8.75@$9.50 and smokeless grades up to $11.

The Pennsylvania has removed its Lake embargo and the same is true of other Lake-carrying roads. The New York Central is still badly involved and little coal is going through on either the K. & M. or the T. & O. C. H. V. Ry., shipments are not interfered with.

DETROIT

Not very much interest is being manifested in the market. Summerlike temperatures during the week have soothed the household consumers into lethargic indifference. Detroit's receipts are still far below the amount which dealers estimate as the city's average daily consumption.

A theory advanced by some that the strike of the sailors' union of the Great Lakes against the Lake Carriers' Association effective since Oct. 1, would so handicap the shipping interests as to reduce coal loading and increase the quantity available for shipment to Detroit, has not developed into actuality, as the boats of the Lake Carriers' Association are being maintained in operation, apparently unobstructed by the strike and the volume of coal loaded last week approximates 1,000,000 tons.

The larger part of the present supply is coming from mines in Ohio. Hocking lump and egg is quoted at $8, mine run, $3.75@$4, mine, run and slack, $3.25@$3.50. Pittsburgh No. 8 3-in. lump is $5, mine run, $4@$4.25, slack, $3@$3.75. Fairmont 3-in. lump is $5, mine run, $4.50@$4.75, slack, $4.50. Smokeless lump and egg holds around $8.50, with mine run $6.50@$6.75. West Virginia and Kentucky lump and egg is $6.25@$6.50, mine run, $4.75, slack, $4.50@$4.75.

Anthracite is arriving in small amount. Jobbers are receiving independent quotations of $12@$14 at the mines. The freight charge is $4.06, making the retail price very high.

Northwest

No Fear of Famine in Upper Lake States

Shipments Receipts So Heavy During Recent Weeks and Demand So Light That Docks May Stop Shipments—Hard-Coal Cargoes Also Arrive.

The Northwest is experiencing another "spell" in its spotted pre-winter season. Its fear of a fuel famine has been so completely dispelled by tremendously heavy cargo receipts recently that it has forgotten the scarcity it saw in August. This has reduced consumer demand and coal is now piling up on the docks. Dock men are about to curtail orders lest they be caught this winter with too much surplus, secured at high prices just at the time that all-rail competition is to be expected. It appears that only a cold snap will remedy this peculiar situation.

Even anthracite is beginning to come in small lots. At Milwaukee the old prices prevail but at the Head-of-the-Lakes, where less tonnage has penetrated, it is expected the price will be higher.

MINNEAPOLIS

The Northwest's fear of a coal famine is about gone. It now appears evident that enough fuel will have arrived in the zone of navigation to prevent any suffering. The coal trade reported that it could handle the situation if it could be assured of transportation. And the tonnage moved during September and the early part of October seems to justify this claim.

It will be only a short time, with the heavy tonnage moving until the dock companies will begin to reduce receipts that they may not be overstocked. For it is possible—even likely—that there will be keen competition from the all-rail fields. Another factor which will enter into the coal final tonnage of the Northwest is the ignite of North Dakota. Production there will be sharply increased for the winter.

There have been some instances of Dakotans dealers selling inferior coal at high prices, which resulted in complaint but the rank and file of regular dealers have kept their prices in line with their costs.

MILWAUKEE

October brought a little comfort to hard-coal consumers in the shape of several cargoes. This coal is being sold at the old figures, namely $15.75 for egg, $16 for nut, $14 for pea, and $11.50 for buckwheat.

An advance was made in screened Pocahontas, however. The retail price of this is now $14.75 and the wholesale price $13.25. Mine run is still sold at $9.75 wholesale, and $11.25 retail. Pittsburgh, Hocking and Youghiogheny were reduced 50c. or to $9.75 wholesale, and $11.25 retail. Pile run and screenings were cut 75c., the wholesale price of both sizes now being $9. Other grades of soft coal remain unchanged. Hocking coal is down to $7.50, the lowest it has been for some time.

The danger of a fuel shortage is now rapidly dissipated by heavy receipts. It is evident, however, that many hard-coal consumers will have to turn to soft coal. There is some talk of rationing the anthracite as it arrives. Thus far in October, 20 cargoes have been docked, aggregating 72,400 tons of anthracite, and 150,353 tons of soft coal.

September cargo receipts aggregated 43,343 tons of soft coal, making the receipts of cargo coal for the season 709 tons of anthracite, and 1,290,955 tons of soft coal. During the same period car-ferries brought 20,794 tons of anthracite, and 77,633 tons of soft coal. Rail receipts aggregated 50 tons of anthracite, and 162,746 tons of soft coal, making the grand total of hard and soft coal from all sources since the season of navigation opened up to Oct. 1, 1,746,878 tons.

DULUTH

Unofficial reports place receipts of bituminous at the Head-of-the-Lakes at 1,500,000 tons during September. This indicates there will be opportunity to bring up enough coal if shipments continue. But dock men here may order a halt. Coal has commenced to accumulate on the docks because large consumers are not laying in supplies or making contracts. Dock men claim that last year they lost nearly $500,000 through depreciation of large stocks carried over the winter.

Consumers are frankly waiting for a drop in prices. Youghiogheny and Splint are quoted at $9.50 for lump, $9 for run of pile and $7.50 for screenings. Hocking is 25c. off for lump and run of pile and 50c. off for screenings. The market on Hocking screenings is long. Dock men say that there will be no further reductions.

The seamen's strike has had no visible effect on the movement of ships. At this port few leave the ships, but those who do are replaced easily. The same situation exists at lower ports, according to press reports.

The volume of receipts holds up. Last week 48 cargoes were received of which one was anthracite—the first since the strike started. Twenty-four are reported on the way, of which two are hard coal. Hard coal shipments may increase materially soon. No prices have been made as yet on anthracite, but they are expected to be above last year's level.

New England

Heavy Reserves Postpone Big Buying Till January

Large Volume of British and Southern Coals Depresses Market—Receipts Ahead of Same Period Last Year—Consumption Lower—Prices Drop.

There is very little buying power left in the current market. The avalanche of British coal, together with heavier receipts of Southern coals, has increased reserves to so great an extent that there is hardly a chance of any comprehensive purchasing before January. Throughout this territory receipts have been much larger thus far this year than during the same period in 1921, while consumption has been notably less. It is very difficult to see, therefore, how there can be any improvement in trade conditions the next 30 to 60 days.

Prices are materially lower. Hampton Roads accumulations have reached 150,000 tons and receipts of Pennsylvania coals are declining with the market.

This week prices have slumped all along the line. From a $9.15 asking price on cars Boston for Inland delivery the spot market has eased off already to $8.50 and less. At Hampton Roads $7.35 has been quoted, with intimations that $7 per gross ton f.o.b. vessel would be acceptable. In other words, the so-called Hoover fair price is now bettered by a full dollar a ton.

At Newport News and Norfolk the accumulation of coal over and above bottoms is increasing perceptibly day by day. While there are a few consumers here and there who have faith in a very short car-supply later on, the majority of buyers show no present interest in the spot market.

All the Pennsylvania grades are in most plentiful supply. All-rail receipts, however, are beginning to decline with the weakening market. From $5.25 per net ton for fair grades the average figure has now dropped to $4. Even the choicest quality coals on the Navy Acceptable list can now be had at $4.50@$4.75. More than a few operators are faced with the necessity either of closing their mines or accepting much lower prices even than those now ruling.

Among wholesalers opinion seems still to be divided between those who feel that short car-supply will induce buying and those who say that even with equipment reduced, say to 50@60 per cent normal, the great bulk of central Pennsylvania output will be seeking buyers at less than currrent spot quotations. Meanwhile, the buyers themselves are in an attitude of "watchful waiting."

Cincinnati Gateway

Trade Watches Prices in Other Producing Fields

As Quotations Recede and Rejections Increase, Byproduct, Gas and Domestic Coals Are Market Bulwarks—Some Still Base Hopes on Car Shortage.

With quotations slipping a bit more rapidly, rejections increasing in volume and reports piling up of Northern terminals being clogged with coal—the first time that such a situation has obtained since last April—it can well be said that byproduct, gas and domestic coals are the mainstays of the market at this writing.

Lake buying has temporarily ceased and with this highly competitive feature playing little part in the bidding for coal and on top of this many buyers discriminating against shipments that will not come up to grade, the trade has been looking about and there has been a disposition to keep a weather eye on what other producing fields are doing in the way of naming prices. Those jobbers and wholesalers who believe that the cream can be skimmed forever are still holding tight to their estimates based upon a scant supply of empty cars, but this feature can no longer be taken as a barometer.

LOW-VOLATILE FIELDS

New River and the Gulf

Buyers are trying to maintain control of the market by declining to buy until prices reach a lower level but are unable to dominate the situation as much in the West as in the East, according to conditions reflected in the New River field. The continued shortage of cars is preventing more of a break in prices. Most of the coal has been moving to the coast, since it is difficult to get smokeless through to Western markets where there is a strong demand for prepared sizes. The car supply is not averaging over 30 per cent.

Winding Gulf mines were greatly hampered during the final week of September by the extremely poor car supply. It was not possible to produce more than 100,000 tons representing less than 40 per cent of capacity. Even under normal conditions little coal from this region moves westward and now that these lines are congested less tonnage than ever is going west. Tide water is soft owing to the large volume of receipts.

Pocahontas and Tug River

Pocahontas coal is being diverted to Tidewater and the East, the Pennsylvania and the Hocking having imposed an embargo on coal originating in the Pocahontas region owing to conditions at Lake piers. The car supply is holding back production to a material extent. The greatest difficulty is in getting empties back from Western lines, much equipment being under load at the Lakes.

Tug River mines are not producing more than 75,000 tons a week owing chiefly to a poor car supply. Buyers are showing a disposition to remain aloof from the market and to "bear" prices but a poor car supply is modifying the downward pressure.

CINCINNATI

So many mines are pouring out mine run with little or no attention to preparation that domestic business is still the keenest feature of the Cincinnati gateway. Lump coal is scarce, but on the other hand the retail buyers are shying at taking any great amount. They hold fast to the idea of small deliveries until the price comes down to a lower range.

The smokeless situation is hardest to fathom. The demand is good even though $6@$6.50 is the price on mine run and this in the face of the fact that Tidewater prices are $1.50 and more below that. The nub of the situation seems to be that the Western embargoes are holding this back while the seaboard is getting more of this coal than it will absorb. Producers are still selling at the Hoover price, if you wait your turn in filling the order. Jobbers and wholesalers force the price to the limit when they have car numbers to offer.

There has been no change in the retail situation. A large tonnage is on its way down the Ohio in barges, but low water is holding the fleet at Ironton. It will take a couple of hundred thousand tons by water to make any visible effect on the present retail prices being charged here.

HIGH-VOLATILE FIELDS

Kanawha

Although buyers in general were showing an inclination during the closing days of September to stay out of the market in the hope of securing fuel at lower prices, yet the scarcity of coal due to a poor car supply and congestion at terminals was tending to keep up prices. For domestic coal there was a strong demand. Although striking shopmen of the C. & O. are all back at work, the improvement in the transportation situation is not marked owing to the heavier movement of general freight.

Logan and Thacker

Logan mines are still confronted with such poor transportation facilities that the output is not at best more than 40 per cent of potential capacity. Even though buyers were holding aloof there was more than enough demand to absorb the output. Although mines are supposed to ship a large tonnage to the Lakes, little headway was made in getting coal through owing to congestion at piers. Prices were softer on fuel for Eastern delivery and comparatively little tonnage was being consigned there, and especially to Tidewater.

More than half the full time output of the Kenova-Thacker district is being lost through a shortage of cars. The best demand is in the West but difficulty is experienced in getting fuel through owing to embargoes. Lump is not to be had although prospective buyers are willing to pay almost any price for it.

Northeastern Kentucky

In the face of a demand somewhat restricted owing to the effort of buyers to force prices downward, prices are only fairly well established, with gas coal bringing a little more than steam. Inasmuch as operators are experiencing no difficulty in marketing mine run, no effort is being made to produce lump and egg. There has been little change for the better in the transportation situation.

West

SALT LAKE CITY

The coal price probe continues. Many operators and retailers have been examined. Sessions are behind closed doors and there is no indication as to whether prosecutions will be ordered.

Retail business is quiet as a result of the grand jury examinations and warm weather, but mines are still behind on orders. Cars are in crop service. Stocks in the local yards are low. A retailer declared that instead of coal coming down he looked for another raise if the weather sets in cold. This would be necessary to keep the coal from going out of the state.

KANSAS CITY

The coal situation here is anomalous. Dealers expected a strong demand for domestic grades and they are not having it. This is because oil has displaced coal in many plants and because people expect a price drop. Steam coal is in good demand, however, and prices hold firm, but they are on a lower plane than costs of production would justify. One contract for Arkansas slack was closed recently at $1.50 f.o.b. mines and as Arkansas mines make at least 50 per cent slack it will be readily seen that the operators must get a price for their lump to break even, as the cost of production is around $3.75.

Some operators are selling at cost or below. This is hard to understand. Outside competition is not serious as railroads have embargoed most coal from Illinois, and besides, the market here is not strong enough to draw that coal.

DENVER

The report of operators for the week ended Sept. 23 shows a loss of 30.2 per cent production or 63,771 tons, on account of the car shortage on railroads in Colorado and northern New Mexico. Time lost due to mine disability was 2.2 per cent and "no market" 3.7 per cent. During August, 1922, a total of 950,618 tons of coal was produced in Colorado compared with 777,329 tons in August, 1921.

News Items From Field and Trade

ALABAMA

The Parrish Mining & Development Co., of Chicago, is about to open a mine near [illegible].

COLORADO

The Starkville Mine at Louisville, [illegible] operated by the Independent Fuel Co., has been leased for two years to the Standard Coal Co., with offices in Denver, of which [illegible] president, Geo. Engle vice-president and gen. manager and Chas. Dougherty secretary and treasurer. All the officers of the company, Engle, Taylor and Lee Bonnell are experienced in charge of the coal properties, Engle having been in charge of the Independent mine at the time. The Rocket Fuel Co. of Denver is the successful purchaser for the Rocket property.

The Leyden Coal Co. has purchased its mine machine outfitting to be used for more prompt shipments, temporarily using the gathering R. G. for the present if necessary.

The Big Horn Coal & Coke Co. has purchased the electric machines at Crockett [illegible] and two shortwall cutting [illegible] with 36 inches penetration, powered by electric locomotive to the numbers 2 mine [illegible].

Excavations at the Evans mine of the International Fuel Co. will be completed. The mine is being timed preparatory to the construction of a [illegible] railroad spur, the latter for which has been passed.

ILLINOIS

F. H. Mauk, president and general manager of the O'Gara Coal Co. has completed a Chicago office at [illegible] in New York.

C. L. Doring, [illegible] of Chicago, is in the office after a summer in the West.

The Sherman Coal Co. has organized and rebuilt coal & mine [illegible] Sherman County. The contract is [illegible] of R. G. Cooper, president, F. J. Cooper, vice-president, John K. Fisher, secretary-treasurer and C. E. Sherman, mine foreman, all of Sherman, who will be the proprietors of the new company.

The O'Gara Coal Co. of Chicago, is actively completing its local office building at Sherman.

The Vandalia Coal Co., of Vandalia, has been incorporated with capital of $14,000 by Adolph Bondermark, H. Mendelsohn, William Bockman and Edward Pratt.

The coal mine owned by Shane Bros., of Maquon, has been opened and coal has been shipped to the market. The shaft and surface have been completed. There is a 50-ton bunker permitting the company to load.

The Railroad County Coal Co., which has been operating a strip mine at Carrier Mills, has two steam shovels and plans [illegible]. The company, which is owned by F. E. Cooper and Cooper & Mosley, of Marion, E. E. Reynolds of Harrisburg, O. L. Middlebrook of Carbondale and Carter Brown of Benton, Mo., who [illegible] a new corporation under the name of the Cedar Coal Co. at Carrier Mills. The new company has purchased 80 acres of coal near Cedar. They now [illegible] to have it ready for operation by the middle of December.

Williams & Buchanan, of Mt. Carmel, [illegible] the sinking of a new shaft near Denver. Power, hoisting and other machinery will be installed as soon as the pit and [illegible] work will be finished, so many say it is [illegible].

The Lansing Coal Co., Waukegan, has [illegible] & Co., of same city, [illegible] to work [illegible] mine. The machinery is being [illegible] and other improvements being made.

The Coal Valley Mining Co. has leased between 2,000 and 3,000 acres of land along Hickory Creek, just north of Sheridan, and will [illegible] the coal. It is said to be a good thing, as it is [illegible] and other coal companies in the district have been [illegible] with the result that [illegible] will be run [illegible] and up.

The Peabody Coal Co. has purchased the property of the Springfield Marion Coal Co., which has been operating the Centralia mine, and will [illegible] whether or not the city is to proceed further with its plan for the sinking of a municipal coal shaft. The mine now produces about 30,000 tons per annum, most of which is screenings. To pay the [illegible] for coal will add $60,000 [illegible] per year. This would go [illegible] paying the expense of sinking a shaft on the plot, where the city owns [illegible] coal-bearing land.

[illegible] of the Centralia mine, Springfield [illegible] when its three new owners, Edgar H. Buckley, Carl Elsholf and George W. Schwaner took charge. The mine was formerly the property of the Springfield Marion Coal Co., Springfield.

INDIANA

The City Coal Co. at Jasonville, near [illegible], is completing the sinking of a shaft that will begin producing about Nov. 15 through a steel tipple containing a [illegible] shaker screen and an inclined [illegible] screen. Three tracks run under the [illegible] which was designed and constructed by the Krebbiel Co., of Chicago. The mine engineering company is finishing a four-track steel tipple at Winkle, for the Columbia Collieries Co. It will have a capacity of about 350 tons an hour.

The Linton-Mason Coal Co., of Linton, has filed a notice of dissolution with the secretary of state.

The Freeman Fourth Vein Coal Co. has been incorporated at Jasonville with a capital stock of $10,000. The organizers of the company are J. F. Freeman, S. R. Thon and Thos. Lynch.

For the purpose of mining coal the H. D. & F. Coal Producing Co. has been organized at Linton with a capital stock of $10,000. The organizers are Ebert M. Hammach, S. Hicks and Herbert L. Forbes.

The Cressmont Coal Co. recently was organized at Valparaiso with a capital stock of $[illegible] for the purpose of mining coal. The organizers of the company are Alfred R. Putnam, Lucy D. Putnam and Carl F. Mann.

The Insular Coal Co. has been organized at Linton with a capital stock of $150,000 for the purpose of entering the mining business. The organizers of the company are K. L. Ogle, Edward McQuade, T. S. Martin and Samuel Royse, all well known in the coal producing industry.

The [illegible] of one of the Indianapolis superior courts denied recently a petition of the National City Bank, of Indianapolis, asking that a sale of the Rose Hill Coal Co. be set aside. The company was sold in June by Wilhelmi Schrolucke, receiver, and the sale was approved by Solon J. Carter, [illegible] of the same court.

IOWA

J. C. Ward of Kirksville, Mo., is sinking a new coal shaft at Indianola for a syndicate of local business men. The syndicate has leased about 160 acres of land in the vicinity.

Approximately [illegible] tons of coal for state institutions in Iowa has been contracted for by the state board of control. Prices on all of the contracts range from $4.41 per mixed coal to $6.65 for lump.

The Diamond Block Coal Co. of Des Moines, has been incorporated with capital of $[illegible]. J. D. Mc[illegible]land is the president and D. M. [illegible]son is the secretary and treasurer.

KENTUCKY

The Kentucky Gas Coal Co. has incorporated with a capital stock of $25,000, 250 shares of which L. F. Young, T. L. Young and J. F. Caldwell hold three each.

Mine operators and [illegible] officers as well as [illegible] in charge of controlling some of the [illegible] districts of western Kentucky, [illegible], have asked for [illegible] cause as there is [illegible] much territory [illegible] for the number of men employed. It is claimed that union [illegible] from other sections of the country have been coming [illegible] especially in [illegible] efforts to [illegible] strip mines or [illegible] to organize. Men have just been sent to the Hawley-Isaacs Coal Co., plant at Carbondale, likely is also well guarded.

MINNESOTA

Hibbing, Virginia and Eveleth, three iron range towns near Duluth have filled their municipal coal yards for the winter, according to reports. They purchased an aggregate of [illegible] tons of Pocahontas screenings at a cost of about $7.50 f. o. b. Duluth.

F. W. R. Coleman, formerly of the City Fuel Co., Minneapolis, is reported as likely to be named minister to the Balkan states. Mr. Coleman was a captain in the quartermaster's department during the war, and spent two summers in the coal lands of Spitzbergen prior to the war.

A report to the fuel committee named by the mayor of Minneapolis stated that there would be no chance of lower prices on hard coal, that no soft coal reductions were barely possible, that there is no possibility of a normal supply of anthracite coming to this section, and that a bureau of information on coal supply and price should be organized at once. Quick release of coal cars and increased efficiency of transportation are the two hopes expressed by the committee for averting a fuel famine.

Major C. J. Bailey, of the bureau of service of the I. C. C., has been working on the fuel situation in the Twin Cities. He will seek to push the movement of coal from the docks to the interior and will work for obtaining cars and for prompt handling of them when loaded.

MISSOURI

"Gopher hole" mines are opening up all over Missouri, from St. Louis, in the eastern part of the state, to the Kansas and Iowa lines. These various new operations employ from one to as many as fifteen men and get out from 5 to 100 tons per day. Some of these little mines have long been abandoned and others operated at intervals since as far back as 1860. They could not be operated at a profit during the war time fuel administration prices, but are coming back now with no price restriction. This was one of the causes recently for the Missouri Fuel Commission removing mine maximum prices. It caused the opening of new pits, with an increased production that brought coal prices $2 under the fixed maximum. At present they are helping to serve a big population in central Missouri which formerly depended on Illinois coals together with some from Kansas. This much needed Kansas and Illinois coal is now moving north where it is a present necessity. A few of the activities are these: The Central Missouri Coal & Mining Co., of Jefferson City, G. H. Meeker and Herbert L. Hawkins have opened up what is known as the old Hubbard coal mine, located on the Mills farm about seven miles east of Princeton; the Hawk Point Coal & Mining Co. is planning to sink a shaft near Hawk Point; Dr. C. C. Van Hall, of St. Joseph, has leased 130 acres of coal at Harrisonville from Taylor Bros. and will sink a shaft.

The Jones Coal Co., of Rich Hill, has announced that it will begin at once to clean up the shaft at the mine, south of town, and be ready to ship coal soon. About fifty men are employed.

The Lincoln Coal Co. of St. Louis, has been incorporated for $10,000 by M. E. Sullivan, an old-timer in the wholesale trade.

E. Bryson Tucker, connected with the power and mechanical department of the Consolidation Coal Co., of Fairmont, W. Va., has resigned and is now connected with the A. S. Aloe Co., of St. Louis, importers and manufacturers of engineering instruments and supplies.

NEW YORK

Two new coal concerns have recently set up business in Buffalo. Edward J. Delaney, formerly with F. J. McGuinness, in the Builders' Exchange, under the name of the Manufacturers' Fuel Co.; and Henry C. Stone, a former member of the city jobbing coal trade, in the new Lafayette Bldg., under the name of the Continental Oil & Supply Co.

OHIO

Columbus becomes an important center in coal distribution under the ruling of Federal Administrator Spens, who designated Columbus as the headquarters for the Ohio district. Lieutenant Commander H. H. Benson of Columbus has been appointed in charge of the Ohio district. Cincinnati becomes the headquarters for a district comprising all of Kentucky east of the eighty-fifth meridian.

The Speaks-Drais Coal Co., Columbus, has been chartered with a capital of $10,000. Incorporators are Edna L. Speaks, James Loren, Jr., Helene C. Drais, Charles W. Drais and S. S. Speaks.

Because of a revival of rail and river business at Cincinnati there promises to be more tipples for the transfer of barge coal along the Kanawha. A. Ingersoll of the **Cleveland & Philadelphia Coal Co.** has established an office in Cincinnati to direct the transfer of coal brought down the river from the Kanawha mines. On an artificial wave over the canalized river route the company brought down 7,500 tons which was placed aboard railway cars at Cincinnati and moved to points where the rail congestion was not so stringent.

Operators who visited the Cincinnati market recently were: **Quin Morton**, of Charleston, **C. A. Johnson**, of Pineville, Ky., **W. C. Dudley**, of Lexington, Ky., with interests in the Hazard field, **Henry Harmon**, of the Ft. Dearborn Coal Co., of Tazewell, W. Va., and **Abner Lunsford**, of the Banner Fork Coal Co.

The E. J. Lewis Coal Co., Wellsville, has been chartered under Ohio laws with an authorized capital of $150,000 to mine and sell coal as well as mine clay and manufacture clay products. Incorporators are G. L. Brokaw, D. B. Mackintosh, E. J. Lewis, John P. Wilson and S. D. Foster.

The Keystone Coal & Supply Co. has been incorporated at Warren with a capital of $25,000 to deal in coal by L. C. Viets, Edmund E. Gettig, R. H. MacFarland, Myrtle Jeffries and Tom Walsh.

C. E. Bullard, general manager of the Hazard-Blue Grass Coal Corporation, has been a patient at Christ's Hospital, Cincinnati, where he submitted to an operation upon his tonsils.

OKLAHOMA

The Welch Coal Co. is removing dirt on the Eaton farm, five miles west of Welch so it can put on a steam shovel which will arrive soon. A tractor and several scrapers are on the job. The company will employ a big force of men.

W. H. Fogle has opened a new strip pit on the J. A. Mills farm on Big Cabin Creek near Welch. Most of the coal from this mine will go to the Miami lead and zinc mining district.

PENNSYLVANIA

"Not Guilty" was the verdict rendered in the Somerset County court last week by the jury that heard the murder charge against **Robert C. Wallace**, formerly a coal and iron policeman for the **Hillman Coal & Coke Co.**, at Jerome, accused of the killing on Aug. 22 of a striking miner.

Henry E. Waters, president of the Wilmore Basin Coal Co. and the Efficiency Coal Co., is in the Altoona Hospital in a critical condition with a fracture of the skull, as the result of an automobile accident.

Announcement has been made that **C. B. Sturgis**, president of the Pine Hill Coal Co., of 17 Battery Place, N. Y. City, has purchased the Oakhill colliery, of **Whitney & Kemmerer**. Both collieries adjoin each other at Minersville, Pa.

One hundred men recruited in New York were brought in recently by the **Lehigh & Wilkes-Barre Coal Co.** for employment as anthracite mine workers. They are needed, according to a statement issued by the company, to supply a shortage of laborers resulting from the prolonged mine suspension. The newcomers will work as laborers in the mines. Since the end of the five months' suspension, production has suffered from a shortage of labor. The only method remaining to get back to normal production, the company official declared was to hire men from cities outside of the anthracite region.

A charter has been issued to the **Pine Coal Corporation**, Philadelphia, with a capital of $6,000. William McMullin, Bryn Mawr, is treasurer and the incorporators include Mr. McMullen, J. Warner Rhine, Philadelphia, and Edwin S. Dixon, Jr., Ardmore.

The Eureka Coal Co. has filed notice of an increase in capital stock from $10,000 to $30,000. Raymond F. Gelnzer, Allegheny County, is treasurer.

Land owners of Pennsylvania, including many mining companies, will be given 7,000,000 evergreens and hardwood trees for planting by the State Forestry Department this fall and next spring. The mining companies are among the most extensive planters of trees in the state today.

TENNESSEE

The Douglas Coal Mining Co., Nashville, A. Lackel, president, is planning development of the mines at Island, Ky., which will include new hoisting equipment, mine cars and locomotives, electrical machinery and other equipment.

TEXAS

The Empire Fuel Co., recently organized with a capital stock of $5,000,000, and incorporated under the laws of Delaware, will begin operations immediately in the vicinity of Rockdale. The company owns 5,000 acres of lignite lands in Milam, Limestone and Freestone counties, which will be developed. Adam H. Davidson, of Dallas, is general manager of the company, while A. E. Neisanger, formerly efficiency expert of the Dallas Power & Light Co., at Dallas, is vice-president and general superintendent of the plant. M. R. Summers is local manager at Rockdale. The company has taken over the Sparks interests in the Rockdale lignite field, consisting of 1,000 acres of land with five operating shafts and the Santa Fe Lignite Co., of Rockdale, which owns 1,000 acres of land on the Gulf, Colorado & Santa Fe Ry., eight miles east of Rockdale. The company also owns 3,000 acres of undeveloped lignite lands in Limestone County.

WEST VIRGINIA

The Eagle Alma Coal Co. has been organized by Huntington coal men with a view to operating in territory adjacent to Huntington, this company having a capital stock of $750,000. Offices for the time being will be at Huntington. Active in organizing this concern were: E. W. Bowers, W. E. Tomkins, R. C. Taylor, O. Bowers and N. P. Tompkins, all of Huntington.

Organization of the **Stanley Coal Co.** presages the development of additional coal land in Monongalia County. This company, with a capital stock of $100,000, will have its headquarters at Morgantown. Leading figures in this company are: Charles W. Ream, Stanley Ashby, of Crellin, Md.; Samuel A. Kendall, Jr., John W. Kendall, of Meyersdale, Pa.; J. L. Kendall, Sr., Pittsburgh.

Officials of the union in sub-district 4 of district 17, claim that all but six of the companies in that sub-district have entered into an agreement with the union. Five companies not parties to the contract are in Monongalia County and one in Harrison, the one in Harrison being the Hudson Coal Company which declined to sign when there was no assurance given by the union that men who had worked during the strike would be protected. In sub-district 3 there are many companies who have not become parties to the union contract and who are operating their mines on the open-shop plan. The West Virginia Coal & Coke Co. and numerous other companies on the Charleston Division of the B. & O. come within that category and all of such companies are operating on a satisfactory basis.

There were a good many fatal accidents connected with the mining industry of West Virginia during August, twelve meeting death in or around the mines, with thirteen deaths due to falling coal, timber and slate. Mine car accidents were responsible for the death of four and one miner was killed by electrical shock. Three were killed in motor accidents and one in an explosion. Outside the mines one miner was killed in a mine car accident, two from electrical shock and three from miscellaneous causes.

Governor Morgan named the following well-known mining men to represent West Virginia at the annual meeting of the American Mining Congress: **R. M. Lamble**, chief of the West Virginia Department of mines, **Charles E. Krebs**, mining engineer, Charleston, **Everett Brennen**, president West Virginia Coal & Coke Co., Elkins, **J. G. Bradley**, former president of the National Coal Association and president of the Elk River Coal & Lumber Co., Dundon, **S. A. Scott**, general manager New River Company, Macdonald, **A. R. Heisel**, general manager Island Creek Coal Co., Logan; **Walter Thurmond**, president Logan Operators' Association, Logan; **W. N. Cummings**, Red Jacket Consolidated Coal Co., Red Jacket; **J. J. Huddleston**, Excelsior; **W. P. P. Keeper**, secretary Pocahontas Operators' Association, Bluefield; **W. M. Wiley**, general manager Boone County Coal Corporation, Sharples; **George T. Watson**, Consolidation Coal Co., Fairmont; **T. E. Hutchinson**, Hutchinson Coal Co., Fairmont; **Josiah Keeley**, general manager, Cabin Creek Consolidated Coal Co., Kayford.

Some of the operators of northern West Virginia who signed an agreement with the union are beginning to experience again the annoyance of having unlawful strikes to deal with. One of the first was that during the latter part of September at the Morgan mine of the **Virginia & Pittsburgh Coal Co.**, in Marion County, in which 100 miners participated after two cutters had been discharged. These cutters had failed to live up to their agreement. When a ruling was made that their discharge was warranted the miners struck as a protest.

At the Becco mine of the **Buffalo-Eagle Coal Co.** in the Logan field, a demonstration was recently made of the coal loader manufactured by the American Coal Loading Machine Corporation, of Huntington. With operation on a sidewall of coal lightly shot, it had no difficulty in loading continuously at a rate somewhat better than a ton a minute with one man operating the machine and two men trimming the cars, a locomotive spotting and removing the wagons.

BRITISH COLUMBIA

COAL OUTPUT FOR AUGUST, 1922

Vancouver Island District.

Mine.	Net Tons.
Western Fuel Corp., Ltd., Nanaimo.	85,235
Canadian Collieries (D) Ltd.	
Comox	48,518
Extension	21,044
South Wellington	7,417
Granby Cons. M. S. & P. Co.	22,627
Nanoose Wellington Collieries	10,815
Old Wellington	1,182
Total	195,847

Nicola-Princeton District.

Middlesboro Collieries	9,210
Fleming Coal Co.	4,676
Coalmont Collieries	18,759
Princeton Coal & Land Co.	2,205
Total	34,870
Grand total	230,717

That there will be another producing coal mine on Vancouver Island soon would seem assured, as **J. J. Grant**, former manager of the Nanoose-Wellington Collieries, has secured a considerable acreage adjacent to the old "Jingle Pot" holdings, near Nanaimo, and is reported to have started development close to the shipping point already.

ONTARIO

J. A. Ellis, fuel controller for Ontario, has fixed the Toronto price for anthracite at $15.50 per ton, and issued orders that dealers shall not deliver more than one month's supply at a time to a customer and shall not make deliveries to cellars already containing a two weeks' supply of coal. The order does not appear to substitute fuel, nor to the municipalities outside Toronto. The controller states that other municipalities may apply to him to regulate fuel distribution and that he will then see that similar provisions are made available to such localities.

WASHINGTON, D. C.

The United States Civil Service Commission announces an open competitive examination for structural and marine draftsman. Two vacancies at the Naval Operating Base, Pearl Harbor, Hawaii, one at $7.20 per diem and the other at $7.00 per diem, each with an additional allowance of 96c. per diem while employed at the station; a vacancy in the Public Works Department Naval Station, St. Thomas, Virgin Islands, at $6.40 per diem; and vacancies in positions requiring similar qualifications throughout the United States Civil Service. Washington. At these positions the lower salaries will be fixed upon the examination papers to be found to be to the interest of the service to fill any vacancy by reinstatement, transfer or promotion. In the absence of further notice, applications for this examination will be received until the hour of closing business on Dec. 15, 1922. If sufficient eligibles are obtained the receipt of applications may be closed before that time of which due notice will be given.

O. P. Hood, chief mechanical engineer of the United States Bureau of Mines, will return to his office Oct. 16, after having spent three months in Europe on official business. Mr. Hood visited England, Ireland, France, Italy and Germany to study the petroleum, carbonization, coal-dust explosion problems in general, smoke abatement and utilization of lignite and coal.

Traffic News

Obituary

Recent Patents

Treatment of Materials Containing Coal. [illegible] Edgar, Henry L. Doherty, and Frank M. Jones, London, England, assignors to Minerals Separation North American Corp., New York City. 1,414,647. June 2, 1922. Filed Dec. 22, 1920; serial No. 432,846.

Coal Car. Adolf Lang, Hoboken, N. J. 1,418,772. June 6, 1922. Filed Jan. 19, 1921; serial No. 438,482.

Hoisting Mechanism. Isaac F. Lantz, Connellsville, Pa. 1,419,388. June 13, 1922. Filed Jan. 12, 1921; serial No. 436,747.

Mine-Car Truck. John M. Cameron, Winchester, Va. 1,419,534. June 13, 1922. Filed May 27, 1921; serial No. 472,184.

Operating Mechanism for Mine Doors. Charles E. Carter, Glasgow, Ky. 1,419,287. June 13, 1922. Filed April 12, 1921, serial No. 460,611.

Coal Breaker. Frank Farmer, Hartshorne, Okla. 1,419,107. June 13, 1922. Filed March 7, 1921; serial No. 450,895.

Mine-Car Brake. Stanley J. Sprunk and Robert Jones, Clarksville, Pa. 1,419,778. June 13, 1922. Filed March 30, 1921; serial No. 457,344.

Coking Coal. Evans Fleming, Pittsburgh, Pa. 1,419,958. June 13, 1922. Filed Nov. 20, 1917; serial No. 203,474.

Crusher and Pulverizer. Wm. M. Hardgrove, St. Louis, Mo., assignor to Williams Patent Crusher & Pulverizer Co., St. Louis, Mo. 1,420,017. June 27, 1922. Filed Sept. 1, 1921; serial No. 497,487.

Crusher and Pulverizer. Alexander Gardner, Evanston, Ill., assignor to Williams Patent Crusher & Pulverizer Co., St. Louis, Mo. 1,420,481. June 27, 1922. Filed Oct. 24, 1921; serial No. 510,183.

Acetylene Miner's Lamp. Carl H. Swartz, Baker, Ore. 1,420,724. June 27, 1922. Filed Nov. 30, 1921; serial No. 519,824.

Low Temperature Distillation. Arthur G. Middle, New Kensington, Tyne and Edmund G. Wooler, Northumberland, England, assignors to Charles H. Mayo and William H. Ledger, both of Westminster, London, England. 1,421,134. July 11, 1922. Filed [illegible]; serial No. 547,353.

Crusher and Pulverizer. Milton P. Williams, St. Louis, Mo., assignor to Williams Patent Crusher & Pulverizer Co., St. Louis, Mo. 1,421,184. June 20, 1922. Filed Oct. 28, 1921; serial No. 511,082.

Feed for Utilizing Pulverized Solid Fuels. Andrea Ansaldi and Lorenzo Cacciapuoti, Genoa, Italy. 1,421,384. June 27, 1922. Filed May 15, 1919; serial No. 297,384.

Method of Treating Pulverized Fuel. Ralph E. H. Pomeroy, Canton, Ohio. 1,423,448. July 18, 1922. Filed Dec. 14, 1921; serial No. 522,446.

Apparatus for the Liquid-Fuel Firing of Steam Boilers. William M. Burdon, Belleville, Montreal, assignor to Burdons, Ltd., Montreal, Scotland. 1,423,185. July 18, 1922. Filed April 7, 1920; serial No. 372,004.

Washer for Mine-Car Wheels. Robert F. Phillips and Louis J. McCloskey, Pittsburgh, Pa., assignors to Phillips Mine & Mill Supply Co., Pittsburgh, Pa., 1,423,877. June 27, 1922. Filed Jan. 30, 1922; serial No. 532,522.

Automatic Gate Mechanism for Elevator and Mine Shafts. Charles Drum, California, Pa. 1,423,918. July 25, 1922. Filed Dec. 16, 1919, serial No. 346,036.

Coal-Handling Device. Harry D. Hartzell, Chicago, Ill. 1,423,986. July 25, 1922. Filed Feb. 21, 1921, serial No. 446,560.

Mining Machine. Edmund G. Morgan, Morgan Park, Ill., 1,424,114. July 25, 1922. Filed June 27, 1919, serial No. 569,168. Renewed Jan. 7, 1918, serial No. 210,796.

Mine Fire-Fighting Apparatus. John Kinnamon, Royalton, Ill., 1,421,496. July 4, 1922. Filed May 25, 1920; serial No. 384,246.

Worm Drive for Electric Cars, Especially Mine Locomotives. Gottwalt Muller, Berlin-Wilmersdorf, Germany. 1,421,534. July 4, 1922. Filed Oct. 7, 1921, serial No. 506,139.

Support for Mining Machines. Thomas E. Fray, Chicago, Ill., assignor to Goodman Mfg. Co., Chicago, Ill., 1,421,557. July 4, 1922. Filed May 6, 1920; serial No. 379,210.

Trade Literature

Electrically Operated Pumps. General Electric Co., Schenectady, N. Y. Bulletin 44,28. Pp. 19; 8 x 10 in.; illustrated. Shows the feasibility of applying electric motors for driving pumps of all kinds and points out the considerations involved in selecting the best type and construction of motor and control for different installations.—Advertiser.

Hand Book of the Electric Power Club of Cleveland, Ohio. Pp. 284; 4 x 6 in.; illustrated. Contains definitions, symbols, general engineering recommendations and other information needed by users and purchasers of electric power apparatus and control equipment. Single copies will be given free to consulting engineers, electric light and power companies, rated electrical contractors and educators; otherwise the charge is 50c. per copy.

Jeffrey Portable Belt Conveyor. The Jeffrey Mfg. Co., Columbus, Ohio. Bull. 181. Pp. 7, 7 x 10 in., illus. Describes how the conveyor may be made to serve as an extension to storage pile in connection with a Jeffrey portable car unloader.—Advertiser.

The Terry Turbine. The Terry Steam Turbine Co., Hartford, Conn. Pp. 40; 8 x 11 in., illus. Describing the non-condensing and condensing Terry turbines. A short history of the steam turbine precedes the description.—Advertiser.

American Cast Iron Storage Tank. Conveyors Corporation of America, Chicago, Ill. Pp. 8, 4 x 9 in.; illus. Gives the uses to which this tank is particularly adapted are ash storage, containing the discharge from conveyors of various types, and for coal storage around power plants and coal yards.

Synchronous Motors. Allis-Chalmers Mfg. Co., Milwaukee, Wis. Bull. 1124. Pp. 20; 8 x 10 in., illus. Describes the use of these motors for driving mine fans and motor generator sets.—Advertiser.

Eliminating Waste in Blasting, by N. S. Greenwalder. Hercules Powder Co., Wilmington, Del. Pp. 48; 6 x 9 in.; illus. Among the subjects touched on in this book are: Planning the work, drilling, choice of explosives, use of larger sizes, distribution of explosives, advantages of No. 8 blasting caps, use of stemming.—Advertiser.

Protection up to Date. The Cutter Co., Philadelphia, Pa. Pp. 15; 4 x 7 in.; illus. Describes the uses to which the I-T-E circuit breaker or U-Ra-Lite may be put, with tables for voltages and prices.

Engineering Bulletin on Pneumatic Collecting and Conveying. B. F. Sturtevant & Co., Hyde Park, Boston, Mass. Pp. 72; illustrated, charts and tables.

Willson Safety Goggles and Dustite Respirators. Willson Goggles, Inc., Reading, Pa. Pp. 12, 5 x 8 in., illustrated. Describes goggles for different kinds of work, and the dry and wet filter types of dustite respirator, with and without relief valve.

Association Activities

Fayette-Greene Coal Producers' Association

Permanent organization of the association was effected recently and plans for the work of the organization were discussed in detail. R. W. Gardiner, commissioner of the Pittsburgh Coal Producers' Association, addressed the new association at its Uniontown meeting on the various phases of association work and the benefits to be derived therefrom. He spoke briefly of the valuable work being accomplished by the Pittsburgh association and touched upon new legislation which has just been enacted affecting the coal industry.

There was a large attendance at the meeting who indorsed the tentative association which was formed the latter part of July and which was made permanent. Headquarters will be opened in Uniontown shortly and the organization will begin effective work. George Whyel is president, W. W. Parshall vice-president, and E. D. Brown secretary and treasurer. The detail work of the association will be in charge of an executive secretary.

National Coal Association

The Cost Accounting Committee of the Association, appointed as of June 1, 1922, is composed of the following: Brewster, T. T. (chairman), president, Mt. Olive & Staunton Coal Co., St. Louis, Mo. Barker, G. H., vice-president, Maynard Coal Co., Hayden-Clinton Bldg., Columbus. Barnum, Walter, treasurer, Pacific Coast Co., 50 Church St., New York City. Honnold, F. C., secretary, Coal Operators' Associations, 2017 Elsher Bldg., Chicago. Huff, W. H., president, Victor-American Fuel Co., Denver, Col. Randall, Robert, general manager, Consolidated Coal Co. of Saginaw, Saginaw, Mich. Sampson, W. J., president, Witch Hazel Coal Co., Youngstown, Ohio. Allport, J. H., Barnesboro, Pa. Bowles, A. K., general auditor, Consolidation Coal Co., 67 Wall St., New York City. Drennen, E., president, W. Va. Coal & Coke Co., Elkins, W. Va. Francis, J. D., vice-president, Island Creek Coal Co., Huntington, W. Va. Hornberger, J. B. L., vice-president and comptroller, Pittsburgh Coal Co., Pittsburgh. Johnson, W. L. A., secretary, Southwestern Interstate Coal Operators' Association, Kansas City, Mo. Lewis, T. L., secretary, New River Coal Operators' Association, Charleston, W. Va. McKinney, W. D., secretary, Southern Ohio Coal Exchange, Columbus. Norris, R. V., 524 Second Natl. Bank Bldg., Wilkes-Barre, Pa. Ramsay, Erskine, first vice-president, Pratt Consolidated Coal Co., Birmingham, Ala. Reed, W. B., secretary, National Coal Association, Washington, D. C. Watkins, C. Law, president, Watkins Coal Co., Cresson, Pa.

Coming Meetings

Kentucky Mining Institute will hold its annual meeting Nov. 3 and 4 at Seeback Hotel, Louisville, Ky. Secretary, Elizabeth C. Rogers, Lexington, Ky.

The National Industrial Traffic League will hold its annual meeting Nov. 15 and 16 at the Hotel Commodore, New York City. Secretary, J. H. Beek, Chicago, Ill.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Gas Association will hold its annual meeting Oct. 23-28 at Atlantic City, N. J. Secretary-Manager Oscar H. Fogg, 130 East 15th Street, New York City.

Canadian Institute of Mining and Metallurgy, annual Western meeting Nov. 15-17, at Vancouver, B. C. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Can.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

Volume 22 NEW YORK, THURSDAY, OCTOBER 19, 1922 Number 16

More—or Less—Unionism

INTERESTINGLY written is James W. Cain's recital of facts in "The Battleground of Coal," in the current issue *The Atlantic Monthly*. But it is not with his facts but with his theories and his cures that the public is justified in taking issue. He shows that before the strike the union mines were idle for lack of orders and the non-union mines were working, their activity being due to lower wages. Then he adds:

> From the foregoing it would seem that the solution of the problem lies in putting the whole country on a non-union basis. This is just what the operators are trying to prove. Not only the non-union operators but the union operators as well distribute this propaganda; newspapers are flooded with it. Yet it is clear that the argument of the operators is valid only in a superficial sense, even though present conditions lend it considerable plausibility. For obviously the prosperity of the non-union fields prevails not through any superiority of non-unionism *per se* but from the artificial advantage they have on account of their lower wage expense.

Mr. Cain is right; the enslavement of part of the industry to the United Mine Workers of America and the freedom of the other part from it is the cause of the wage differential and of the inequality of operation in the two districts which existed before the strike. But he has taken on himself to oppose the cure that many operators suggest, and the one which he himself admits is the more obvious outcome of the facts he has presented. Eliminating the cure of national non-unionism he says:

> There is one plan left—short of a big government corporation to run all coal mines—which promises some sort of solution. This is to put the whole country on a union basis and give all operators an equal chance at the market and all mines an equal chance at regular work.

Miners are now reported as making, where they get sufficient railroad and mine cars and are willing to work, as much as $500 and $600 a month. Surely they would not be willing to pay as much as $20 or $25 a day to those who would work for them.

Are they not demanding by the power of their union that other men work in mills and factories, on the high roads and on the railroads and at the desk for less money than they are willing to accept for themselves? We do not put any figure as being a fair wage for any man. We do not condemn labor profiteering. Nor does the law condemn it. Doug Fairbanks, Feodor Chaliapin and Babe Ruth may make their millions or hundreds of thousands or tens of thousands yearly so long as they do it without a combination in restraint of trade. We do condemn them, however, if they obtain high wages by deliberate conspiracy, by murder and other violence, by arson and violation of pledges, by the enactment of laws which while purporting to be for the public good are framed solely to sustain their monopoly and to give them an unfair advantage.

But mark this. The complete unionization of the mine worker would mean the complete unionization of his employer, legal or illegal. The union in fact demands a co-operative bargain between all the employees and all the employers. With all operators paying a scale fixed by a single conference, the employer could laugh at high wages. He would have no incentive to fight to keep wages down, for strikes would be extremely expensive to him as a capitalist. The higher the wages, the more men would flock to his mines. He would have no difficulty in filling the working places no matter how irregularly he worked.

Consequently complete unionization of the mine worker would do great injury to the public unless the government stepped in to prevent it. Mr. Cain does not want that, nor do the operators, but it would be the inevitable result of 100 per cent unionism.

Mr. Cain goes on to say that "it would be a step back to the Dark Ages to put the whole country on a non-union basis. The miner would be reduced almost to peonage." In this he is absolutely wrong. Just before the strike came to an end the non-union United States Steel Corporation, anxious to get men, had to raise wages. The Anaconda Copper Mining Co., at Butte, Mont., now a corporation employing non-union men, is paying $4.75 a day to miners and would, if it could afford it, raise the wage still higher to get men to operate its plants. The Cœur d'Alenes are paying $5 a day.

The wage of non-union men is usually lower than the pay of union men, but that is because the profits of any trust are higher than those of a competitive industry. The profits of a trust, whether a commodity or a labor trust, are sure to be excessive unless the prices of the commodities or the wages of the laborer are set so high as to discourage industry.

It is an ill time to talk of giving Mr. Lewis and his men a firmer hold on the throat of the public when they are demanding a six-hour day and a five-day week in order to furnish men with excessive opportunity in the coal industry when they are needed more elsewhere.

A Maligned Industry's Opportunity

THE announcement of the personnel of the U. S. Coal Commission has been met with mingled cheers and jeers by the coal men. Few appear to evidence hope or anticipation that the commission will or can do much for the soft-coal industry. The public has been led to hope that this agency will lower the price of coal and stop strikes. It, of course, can do neither. The coal men are today in about as pessimistic a mood as they ever have been. Battered between the forces at Indianapolis and Washington they entertain little hope of finding their way out of trouble.

Many there are who hold with Mr. Maurer, in his Cleveland address last week, that since the United Mine Workers will not arbitrate and will not take a reduction

Progress at the Mining Congress

A LOOSE, ungainly organization, the American Mining Congress is making progress in taking on some of the functions of older organizations. Not a few of those who attended the Cleveland meeting last week commented on the excellence of the programs and discussions on mine taxation and standardization of mine equipment and mining methods and did not hesitate to compare them with similar efforts conducted under the auspices of the American Institute of Mining and Metallurgical Engineers. In fact, the so-called standardization conferences really are engineering discussions where the everyday problems of mining are taken up by young men not afraid to be trite at times if they can talk about the things that concern them in the routine of their business.

The mine-taxation conference this year called together many of the country's authorities and the interest in the discussion proves that this subject is gaining in popularity every year. Such open discussion of the coal questions of the day as characterized the Wednesday morning session, when J. G. Bradley, of West Virginia, and C. E. Maurer, of Ohio, had the floor, has never been heard at a meeting of coal men—at least a public meeting.

As the advertising pages of a magazine are to the reading pages so the exhibit of mining machinery and equipment supplemented the meetings and discussions. To some in attendance it appeared that the management of the desire, and perhaps necessity, to return a profit subordinated all to the "show," and relegating important meetings to low-ceilinged, poorly ventilated rooms gave value to this belief. The exhibit, of course, added interest and value to the congress, but care should be taken not to add to the belief that these conventions are merely gatherings of salesmen.

A queer conglomeration of coal mining institute, coal operators' gathering, meeting of economists, Institute of Mining Engineers and county fair, at which no particular attention was paid to the advance slogan, "Greater Prosperity Through Lower Production Costs," the silver anniversary of the American Mining Congress was a success. To this success the coal men of Ohio in particular contributed no small share.

Efficiency vs. Reduced Wages

IN 1921, when coal was in slack demand and prices falling, the operator of a coal mine was offered a railroad-fuel contract for a tonnage representing more than half full-time operation, but at a figure what would not return cost. Business was difficult to get and his men needed the work. He called them together, told them the situation, said that he was willing to take the contract if he could be assured of sufficient margin to cover interest, depreciation and depletion—that is, fixed charges, but no profit. He told the men he was not willing to ask them to take a reduction in wages, but he was asking them to increase their efficiency.

After some debate the proposal was made and accepted by the men that 10 per cent be deducted from each pay envelope and held in escrow, as it were, this amount representing approximately the difference between cost and price. It was put up to the men to increase their efficiency, thereby lowering costs, and it was agreed that if they did their part the 10 per cent held out would be returned.

Now, of course, to increase efficiency here meant the exercise of hearty co-operation between men and management, particularly with the daymen. It meant studious avoidance of preventable mine failures, derailments and mechanical breakdowns. It meant working with a will, getting cars to the diggers, shooting loads to the shaft bottom—for this was a shaft mine—it meant steady application to the daily task, whether track laying, dumping coal or any of the many jobs about the coal mine. On the part of management it meant keen appreciation of the value of the time of the tonnage man, giving him a proper place in which to work and such prompt service as his ability to load required.

By the end of the first pay the preliminary cost sheets indicated that it had been done—that costs had been lowered in sufficient amount without cutting wages. Every pay thereafter the men received two envelopes, one the full rate less 10 per cent and the other deducted 10 per cent in accordance with the agreement with the men.

It is needless to say that this was a non-union mine. It is also needless to say that this mine was an exception among the non-union mines in 1921. There was nothing particularly humanitarian about the course pursued by the management of this mine, for there were cogent reasons for the method followed, reasons found in union mines in close proximity on every side. The fact remains, however, that in the absence of a union it was possible to get close enough to the men to substitute efficiency for reduced wages.

WITH THE COMING OF A COAL PEACE there remains nothing to worry about except the delivery of coal and the arrival of the bill.—*Brooklyn Eagle.*

NO SYSTEM OF GOVERNMENT will work in a land where everybody tries to work the government.—*Illinois State Register.*



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CLARK HOWELL



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CHARLES P. NEILL

United States Coal Commission

Appointed Oct. 10 by President Harding. Under Act of Congress Approved Sept. 22, 1922

United States Coal Commission Named

President Harding announced Oct. 10 his selections for the federal commission which will make an exhaustive study of the problems of the coal industry. The White House announcement carried a brief biographical statement. The text of the White House announcement in full is contained in the following:

John Hays Hammond, native son of California, where he was born in 1855, was one of the remarkable group of Californians who led in making the mining of the precious metals the highly specialized and scientific industry it is now. Educated at Yale, Sheffield Institute and Freiberg, Germany, he became one of the foremost engineers and authorities, examining and handling properties in all parts of the world. He was associated with the Barnato Brothers and with Cecil Rhodes in developing the South African gold fields, and was one of the supporters of the great Rhodes political and financial projects. Following the famous Jameson raid, he was arrested by the Dutch authorities and sentenced to death; afterward commuted to fifteen years' imprisonment and ultimately released on the payment of $125,000 fine. Since returning to the United States he has continued his professional work in connection with important financial interests and he has lectured and written extensively. He was special ambassador and representative of the United States at the coronation of King George V; head of Panama Pacific Exposition Commission to Europe; president National League of Republican Clubs; associated with many scientific, literary and technical societies. His present home is in Washington.

Thomas Riley Marshall, vice-president during the eight years of the Wilson administration, is a native of Indiana. He is a graduate of Wabash College; practiced law at Columbia City, Ind., and was Governor of Indiana, 1909 to 1913.

Judge Alschuler a Noted Labor Arbitrator

Judge Samuel Alschuler was born in Chicago and has practiced law in Aurora and Chicago. He has been active in Democratic politics throughout many years, having served in the Illinois Legislature, and has been his party's candidate for Congress and, in 1900, for Governor. In 1915 he was appointed by President Wilson to the circuit bench of the Seventh U. S. Circuit, on which he still is serving. Judge Alschuler in 1918 was named by the Secretary of Labor as arbitrator of the labor disputes between the Chicago packers and their employees, and his handling of the business has been recognized as one of the notable labor arbitrations in this country.

Clark Howell, editor of the *Atlanta Constitution*, is a native of South Carolina, but has lived most of his life in Georgia, and was educated at the University of Georgia. He joined the Constitution staff and became managing editor when Henry W. Grady died; later he succeeded his father, the late Evan P. Howell, as editor in chief. He served in the Georgia Legislature and for many years as Democratic National Committeeman for Georgia.

George Otis Smith, Director of the U. S. Geological Survey, a native of Maine, was educated at Colby College and at Johns Hopkins. His interest in coal began in 1895 and 1896, when as an assistant geologist of the U. S. Geological Survey he was working in the vicinity of the coal fields of western Washington. Later in the field seasons of 1898, 1899 and 1901 his geologic work in central Washington included the mapping of the Roslyn coal field, the Roslyn seam being then the largest producer on the Pacific coast.

In the first comprehensive treatment of the United States coal fields by the U. S. Geological Survey in 1901 Dr. Smith contributed the chapter on the Pacific Coast coal fields. As Director of the U. S. Geological Survey since 1907 he has taken special interest in the development of the statistical service on coal, first with E. W. Parker, next with C. E. Lesher, and since 1919 with F. G. Tryon, latter having thus practically seen up all that is known of coal statistics.

In 1917 Director Smith was a member of the Committee on Coal Production of which the late Francis Peabody was chairman. In 1920-21 the "Superpower Survey," a coal-saving investigation under the auspices of the Geological Survey, engaged much of Director Smith's time.

Dr. Edward T. Devine is a native of Iowa, educated at Cornell College (Iowa), University of Pennsylvania, University of Halle, Germany. He has been a teacher, writer and lecturer on social and economic questions; general secretary of the Charity Organization Society of New York; editor of the *Survey* for a number of years and more recently a contributing editor; served with the American Red Cross in France during the war; author of many books and articles, especially on philanthropy and charity. Residence, New York City.

Charles P. Neill is a native of Illinois; educated at Notre Dame University of Texas and Johns Hopkins; instructor in political economy at Notre Dame and later at the Catholic University, Washington. In 1905 he was made commissioner of labor by President Roosevelt, later commissioner of labor statistics, Department of Labor. He was a member of the Board of Adjustment under the Erdman Act for the adjustment of labor disputes between railroads and their employees, and has had a long career of unfailing success in the settlement of the most difficult questions of this kind through mediatory processes. He has since 1915 been manager of the Bureau of Information of the Southeastern Railways, dealing with labor problems and conditions.

Organization Meeting to Be Held Oct. 18

The commission will meet for organization purposes on Oct. 18. While Mr. Marshall and Dr. Smith each has been mentioned for the chairmanship of the commission, it is believed that Mr. Hammond will be named for the post.

Practically all comment on the personnel of the commission is favorable. It generally is regarded as a good blend of conservative and liberal opinion. Perhaps never before has any investigation of coal by a federal agency started with so little prejudice. It has the great advantage of having a personnel which is not in any way interested in making political capital out of their fact-finding activities. In this way the commission differs greatly from the efforts of several congressional investigating committees. It is believed that both operators and mine workers hardly could ask for a more sympathetic group before whom to lay their facts.

Particular satisfaction is manifested in all quarters in Washington at the appointment of Mr. Hammond. His name has been linked so prominently and so intimately with the mining industry that it is regarded as particularly fitting that he should participate in what is expected to be one of the most important steps taken in connection with coal in recent years. While a man of wealth, Mr. Hammond has a reputation of being sincerely concerned with the public welfare.

It is believed that Mr. Neill has the confidence of both operators and mine workers. It is conceded that he knows more than anyone else, outside of the coal business, as to the conduct of collective bargaining in that industry. His long experience with employer-employee relationships leaves him with no delusions as to the inside situation in each camp.

Mr. Marshall is nationally known as a friendly type of philosopher with a real sense of humor. He has a general desire to ascertain honestly the other man's point of view and to do constructive things. At the same time he has none of the objectionable characteristics of the professional uplifter or one with trust-busting proclivities.

Judge Alschuler has given many indications of judicial balance and a sense of fair play. He is best known to the coal industry for his part in refusing to sustain Judge Anderson's check-off injunction.

Mr. Howell is a Southern editor but not of the fire-eating variety. He is a conservative and accustomed to pass dispassionately on questions of great moment.

Dr. Devine is held in universal regard and has that characteristic of good-will and friendliness which seems to run through each of the members of the commission.

Mining Brown Coal in Germany, Briquetting It and Extracting Its Byproducts

By Hubert Hermanns
Berlin-Pankow, Germany



Growing Importance of Brown Coal—Mining and Stripping Methods—Large Percentage of Moisture—Drying with Exhaust Steam—Briquetting and Baking Coal for Byproducts—Producer Method of Utilization

IN NO country has the production and utilization of brown coal[1], or rather brown lignite, had more development than in Germany. This substance has of late years become of greater importance to the Republic by reason of the decreased output of coal due to the decreased efficiency of the miners and to the loss of the important coal fields in Upper Silesia and the Saar valley. Moreover, large quantities of coal have to be delivered regularly to France, Belgium and Italy.

Table I shows the development of the production of coal, brown coal and brown-coal briquets in Germany between 1913 and 1920 and 1921.

TABLE I—PRODUCTION IN GERMANY OF COAL, LIGNITE AND LIGNITE BRIQUETS

Year	Coal (Steinkohl), Metric Tons[1]	Lignite (Rohbraunkohl), Metric Tons[1]	Lignite Briquets (Braunkohlenbricketts), Metric Tons[1]
1913	190,109,440	87,233,084	21,976,744
1920[2]	131,340,797	111,880,413	24,273,480
1921[2]	136,210,088	123,011,250	28,243,017

[1]A metric ton equals 2,204 lb., or 1,102 short tons.
[2]Not including Saar District and Pfalz. Though from 1913 to 1921 the coal production declined from 190,000,000 metric tons to 136,000,000, the brown-coal production increased from 87,000,000 to 123,000,000 and the brown-coal briquet production from 21,000,000 to 28,000,000.

The character of the brown-coal deposits in Germany varies greatly. Faults, folds, thrust faults, ruptures and interstratified layers of sand and shale often make the mining of the deposit quite difficult. The thickness of the bed varies from a few inches to 300 ft. The method of mining, whether by strip pit or by underground mining, depends on the depth of the deposit over the coal, the overburden consisting chiefly of sand and clay. When underground mining is adopted the coal is reached by a shaft and less often by a drift. Before the war a miner working underground in coal mines could be relied upon to mine 260 short tons per year, whereas the yearly production of brown coal per miner was between 350 and 400 short tons.



HOW THE GERMAN MINER AVOIDS USE OF BACKBREAKING SHOVEL

Another scene in a brown-coal strip pit. Note that the miners are forming a chute in the coal that will feed into the car without shovelling and have erected a chute with a gate so that the coal will be stored and the car will move away without delay. Thus the men will be able to work without cessation while cars are being placed.

By the use of the land dredger the production in strip pits has been raised to more than 1,500 tons per miner. Unfortunately the heat value of this lignite is only about one-third that of coal. However, even making due allowance for the lower calorific value of lignite, each man in a lignite operation will produce many more heat units than a man in a German coal mine. Whereas a coal miner would produce 2,000,000,000 calories per year, the yearly production for a miner working in brown coal is now 3,200,000,000 calories.

When brown coal is mined by underground methods an entry is driven through the deposit to the further property line with side entries on either side at regular distances and cross roadways between these; thus the coal is divided up into pillars measuring 4 meters (13 ft.) square. The coal obtained from these pillars is transported through the side entries to the main entry and up through the shaft.

The roof of the area thus excavated is allowed to

Note—Headpiece shows a miner working a cut at the base of a bisected funnel in the face of the open coal in a strip pit in Germany. The coal in this funnel runs, usually by gravity, into a car which a recess has been made in the floor to permit of its being spotted at the mouth of the funnel. Note the hoe-like pick the workman is using. Picks such as these have extensive use in the Continental coal fields of Europe. The shovel and car also are of what to us must appear unusually small proportions. The car is built like those used in our metal mines and, to our way of thinking, is needlessly high and better suited to a heavier material than coal. It is intended for a rotary dump.



A great entrance to one single drift mouths, which, though enormous, like those in the preceding illustration, rarely have anything more elaborate than a simple segmental arch. This "Gedenkhalle" is at the mouth of the Victoria mine. The word "Glückauf," meaning "Good luck," over the keystone of the arch and between the pediments will perhaps be hard to decipher.

collapse, forming at the surface a broken or sunken field. Production is started at the far end of the field and proceeds backward toward the shaft. Much lignite has to be left, however, and the losses of mineral in these mines usually exceed 40 per cent, whereas by daylight mining the losses are only about 5 per cent, seldom reaching 10 per cent. The losses by underground mining are such that if the overburden is two, or even three, times as thick as the coal deposit it is nevertheless profitable to remove it rather than work the mineral by underground mining methods. The difficulty in daylight mining is in disposing of the impurities mixed with the lignite. These are thrown into the areas already mined.

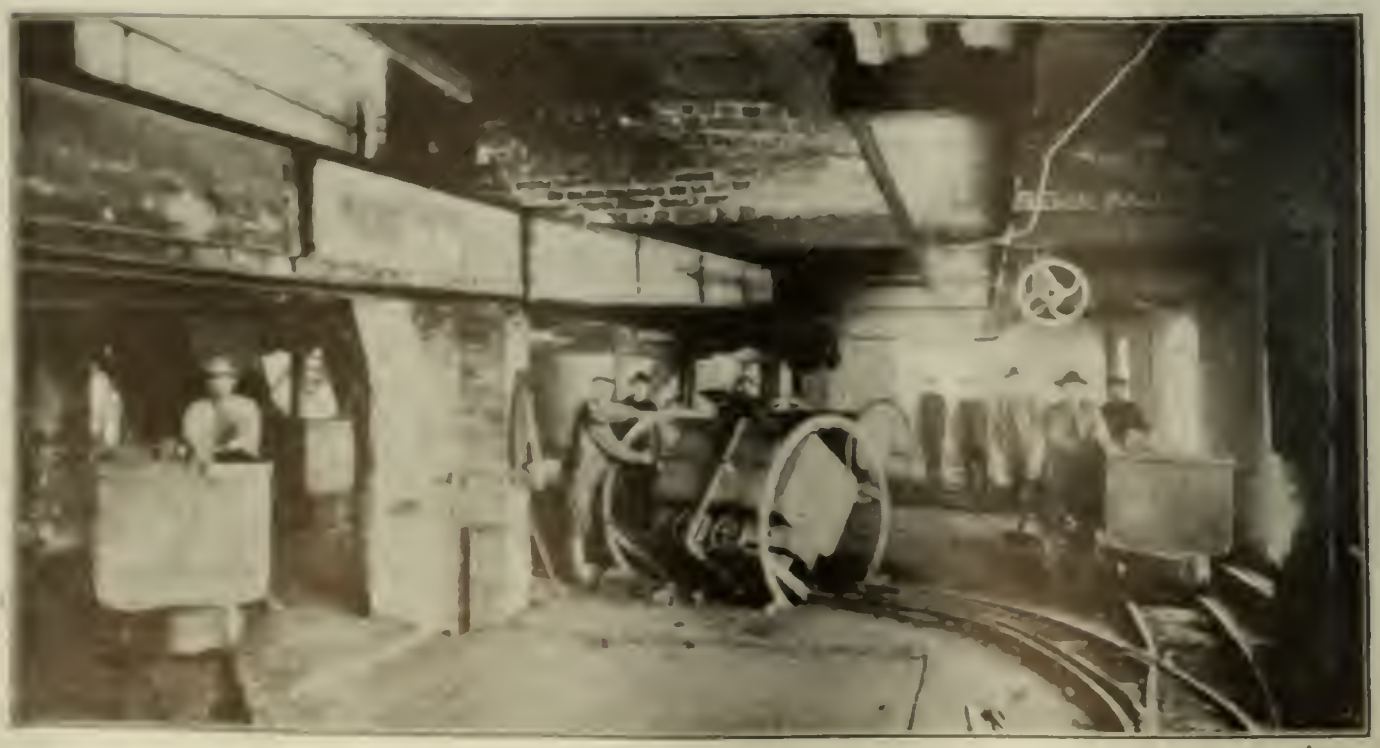
When the coal is mined by hand in these strip pits it is directed into cars by chutes laid close to the coal, or holes are dug in the face of the coal in the shape of a semi-funnel, and by these the coal is chuted into the car. (See headpiece.) This method is known as *rollochbetrieb*. The narrow end of the "rollloch" is closed by boards and is placed so high above the level of the top of the car to be loaded that the latter can be run under it and filled by gravity, the loose coal in the funnel being released as desired. Usually the sides of the rollloch are made so steep that the loosened lignite will run down them without any assistance from the miner.

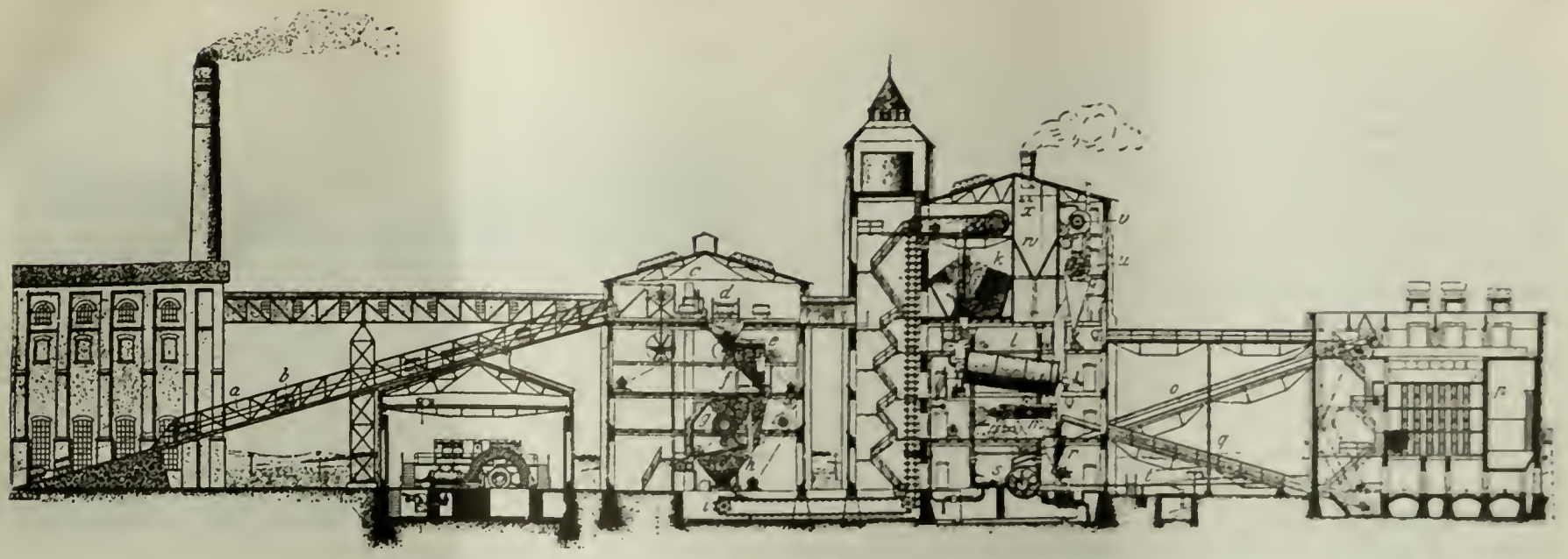
As Table I shows, most of the coal is burned without being briquetted. The use of this coal in its natural condition is limited because it contains from 25 to 50 per cent of moisture. The freight rates, figured on the basis of its heat value, are too high to encourage the use of such fuel. The heat value sometimes falls as low as 2,000 calories, or 3,600 B.t.u.

The difficulties encountered in burning this wet coal have been overcome in course of time by the construction of special furnaces in which the coal is dried before reaching the grate, but the principal way in which the economic value of brown coal can be increased is by its use in the manufacture of briquets. The cars are mostly conveyed by continuous chain haulage from the mine to the briquet plant. Three separate operations have to be performed. The lignite must be prepared, dried and briquetted.

First the coal is discharged from the car by a rotary dump. It falls into a funnel-shaped bunker, from which it goes to the crushers. The broken coal from these drops on an inclined shaking screen 13 to 20 ft. long and about 4 ft. wide. This allows particles less than ½ in. in diameter to fall through, the larger pieces going to rollers or a centrifugal mill. The finer coal is screened again, and the lumps coming from the screen are guided to a belt conveyor by which the coal is transported to the boiler house. The wet coal is dried either in tubular driers or on shelves heated by exhaust steam, this process usually being continued until the water content falls to 15 per cent. For tubular driers the pressure of the exhaust steam should be from 2 to 3

Reviving Dump





PLANT FOR CRUSHING, SIZING, RECRUSHING, RESIZING, DRYING, COOLING AND BRIQUETTING BROWN COAL

(a) Endless chain, (b) coal car, (c) drive for endless chain, (d) revolving dump, (e) crusher, (f) shaking screen, (g) centrifugal crusher, (h) shaking screen, (i) bucket conveyor, (k) coal pocket, (l) tubular drier, (m) screening trommel, (n) fine crusher, (o) belt conveyor leading to cooler, (p) cooling apparatus with shutters, (q) belt conveyor from cooler, (r) funnel-shaped hopper over press, (s) briquetting machine, (t) trough conveyor for briquets, (u) centrifugal separating head serving to eliminate dust from drier, (v) exhauster to draw dusty air from u, (w) discharge louver, (x) spray to settle remaining dust.

atmospheres absolute. When shelves are used the pressure should range between 1.5 and 2 atmospheres.

The tubular driers consist of a sheet-iron shell 8 ft. 2½ in. to 9 ft. 10 in. in diameter and 23 ft. to 26 ft. long and two strong ends in which are inserted tubes of 3¾ in. diameter such as are used in tubular boilers. The coal slides through the tubes, which are surrounded by exhaust steam. The center line of the drier is at an angle of 6 deg. with the horizontal.

The shelf drier (*tellertrockner*) consists of twenty-five to thirty-six circular shelves of 16 ft. 4¾ in. diameter placed vertically above each other at regular distances. These shelves are each made of two circular iron sheets riveted to a frame, the space between them forming a chamber for the exhaust steam. By means of rotary shovels the lignite is constantly turned over and pushed alternately toward openings in the middle and on the outside which connect the separate shelves.

The dry coal goes to a trommel, or revolving screen, and is separated into fine coal and coal dust. It is then cooled in a *jalousiekuehler*. You have seen the small shutters on a Venetian blind; in Germany the latter is known as a *jalousie* (or jealousy) because it allows one to look out without being seen. In the cooler just named the coal falls on shutters similar to those in a Venetian blind, and between them cool air circulates. The lignite is cooled because it can be better pressed in briquets when its temperature has been lowered. Conveyors bring the dried and cold lignite to a bunker placed over the briquet presses.

Brown-coal briquets were manufactured as early as 1858, the coal briquetted being from the Von der Heydt mine. Many technical difficulties were encountered, however. In particular the pulverizing and drying apparatus both proved inefficient. All equipment and methods have been so greatly improved since that date that no more technical questions remain for solution.

Today plunger presses driven by steam are used almost exclusively for briquetting. Electrically driven presses are seldom seen; not because the drive is unsuited to that purpose but because exhaust steam is needed for the drying apparatus. The steam engine and press are combined in one heavy frame with a heavy crankshaft, common to both, in between. On this flywheels are mounted.

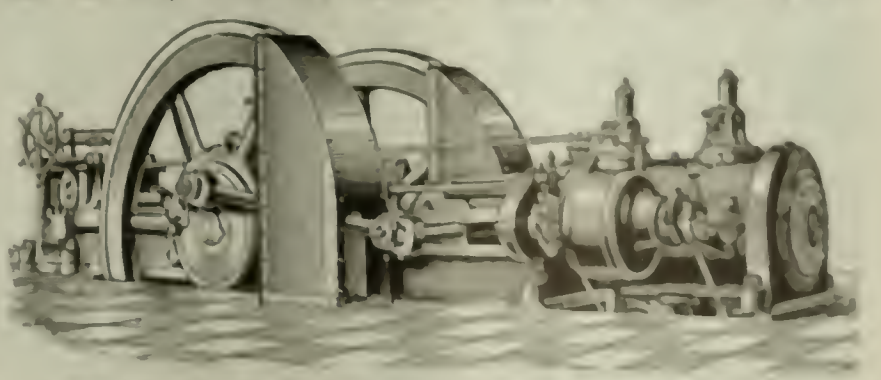
The stroke varies from 6¼ in. to almost 11 in., depending on the condition of the coal and the desired density of the briquet. A rod transfers the crank movement to a heavy slide to the other end of which the plunger of the press is attached. The principal part of the press is the head in which is placed the mold consisting of a passageway 3 ft. 3 in. long open at both ends. The sides of the mold are of interchangeable steel plates, so set that the free opening is of the desired dimensions for the briquet being manufactured. The plates are so formed that the opening on the press side is a few millimeters wider than the rest of the passageway.

Briquetting Pressure Many Tons Per Square Inch

The difference in width depends on the nature of the coal and the desired firmness of the briquet. The opening can be regulated while the press is in operation. The plunger, fitting closely in the widest end of the channel, pushes a quantity of dry coal into the mold, and forms a briquet with every forward movement.

On the return stroke the space left by the retreating plunger is filled again with another measured quantity of coal, which is formed into a briquet at the next stroke. Each briquet is pushed forward in the mold by the one that succeeds it. On passing the narrowed part, the briquet is again subjected to pressure, causing much friction and consequently back pressure on the plunger.

Leaving the passageway the briquets land in a trough, through which they are pushed in a continuous string by the action of the plunger. The trough can be adjusted horizontally and vertically. The briquets usually fall directly into the railroad cars by which they are



STEAM PRESS FOR MANUFACTURE OF BRIQUETS

So much exhaust steam is needed for the drying of the moisture in the brown coal that steam engines are preferred to electric drives. The press and the engine are on a common foundation plate and a single crankshaft serves for both ends of the unit. The briquetting pressures run from 8 to 14 short tons per square inch and the revolutions per minute from 60 to 150.

taken to market. An illustration shows the pressroom of a briquet plant with eight presses. The construction of the press and the trough can be clearly seen.

Not only the length of the stroke but the speed of the press depends greatly on the condition of the coal; the speed is from 80 to 125 r.p.m. The pressure required for the forming of a briquet is from 1,200 to 2,000 atmospheres, 17,640 to 29,400 lb. per square inch. The press must be built so that the flywheels are capable of exerting such a pressure.

The dry coal is held together without any added binder, partly as the result of the high pressure exerted on it and partly through the heat generated in the process which softens the coal and the substances it contains, such as paraffin and resins.

Naturally the capacity of a press depends on the number of revolutions per minute and the weight of the briquets. In about twenty-four hours one machine will make from 60 to 100 long tons. The shape of the briquet varies greatly for industrial purposes, preference being shown for small cube or net-shaped briquets.

Some Brown Coal Cokes Quite Readily

Although brown coal is used mostly in the form of briquets, it can be utilized in other ways. Where it will coke, like the brown coal from Halle, Zeitz and Weissenfels, it may be used in that form. The lignite, having coking qualities, can be readily distinguished from ordinary brown coal. The best coking lignite has a bright yellow, almost white, appearance. When burned it melts like sealing wax and cannot be used at all in grates, as the molten coal would fall between the bars.

This pure and rich coking coal, however, has all been mined. What remains, though more like brown coal, has a lighter color than the non-coking lignite. One of the illustrations shows a pit in a deposit of this character. The lignite is caked slowly so that the water is first separated from it, and later, at a higher temperature, the gases and tar. As a residue a porous and brittle coke remains, which is mostly used for domestic purposes.

The ovens in which the brown coal is baked are vertical shafts lined with firebrick, heated on the outside and provided with rings arranged like shutters, over which the coal slides, losing its moisture gradually. In the hotter part of the shaft the brown coal is decomposed into tar and gas. The coal is taken out at the bottom. The tar is drawn off with the gas and precipitated in a condenser. The gas from which the tar vapors have been extracted serves as fuel for the ovens.

Of the tar, the paraffin, which is extracted by distillation in iron retorts, is the most valuable constituent. By distillation also the oils are freed from the paraffin; those of lower boiling point, forming "solar oil," are freed first. The heavier oils, containing paraffin, are then collected and cooled rapidly, and the paraffin is separated thereby. This is pressed and purified. The oils from which the paraffin has been extracted form cheap lubricating oils and oils for driving Diesel motors.

For some time, especially during the war, experiments were made to increase the production of oils and fuels of high heat value by the distillation of brown coal in producers. The tar in that case is not obtained by a baking process but by distillation. No coke remains but all the combustible materials are transformed into gas. Large quantities of tar were produced by this method during the closing months of the war.



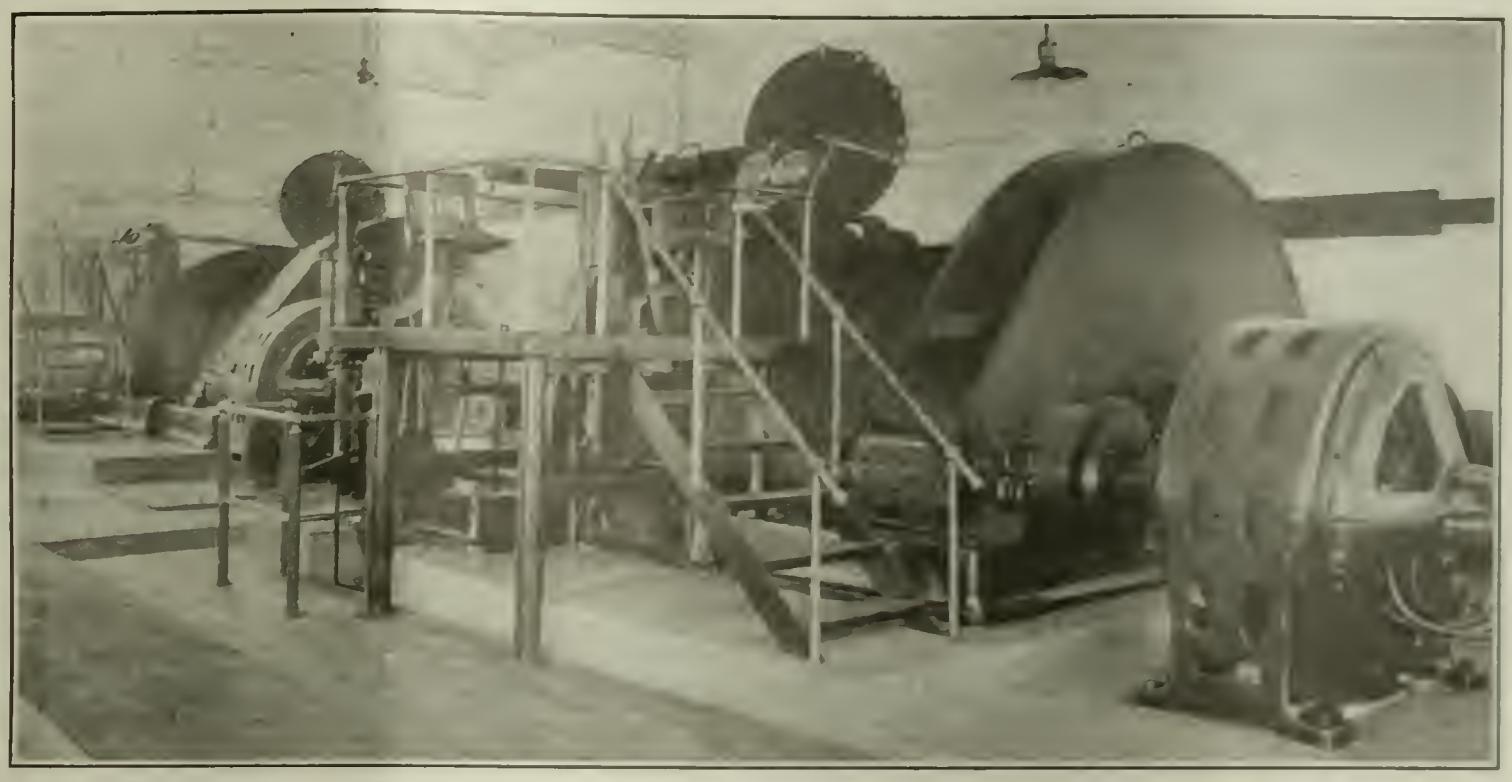
STRIP PIT IN DEPOSIT OF COKING BROWN COAL

The overburden in this pit is noticeably light, though this doubtless has no relation to its coking quality. In America and elsewhere lightly covered coal usually cakes with more difficulty than deeper coal. The coking brown coals of Germany are yellow and even tend toward whiteness. They appear to be possessed of large quantities of paraffin, and they melt so freely in the fire that they serve but poorly under boilers.



Briquetting Room

Pressroom of briquet factory No. 2 of the Victoria Mine. This factory has eight presses each of which in a full day's run of twenty-four hours will produce from 60 to 100 long tons. Thus the whole factory will make from 500 to 900 short tons of briquets daily. Note the troughs by which the briquets move from the machines to the railroad cars, propelled by the pressure of the briquets leaving the machine.



Calculation of Power Required for a Counterweighted Hoist and One in Balance, Shallow Shaft*

Moments Required for Lifting Load Reduced by Moments of Falling Counterweight or Descending Load—Acceleration Moment Must Be Large Enough to Increase Speed of Descending as Well as Ascending Bodies

By F. L. Stone†
Schenectady, N. Y.

IN LAST week's issue shaft calculations were made for an unbalanced, uncounterweighted hoist. In this article will be developed the calculations for a counterweighted hoist and one operated in balance. The counterweight that will give the best motor rating is one the weight of which is equal to that of the cage plus that of the car plus half the weight of the load. In the example given the following conditions were specified:

Total lift, ft.	250
Weight of cage, lb.	9,000
Weight of car, lb.	2,300
Weight of rock, lb.	8,000
Trips per hour	60
Rests, top and bottom, each, sec.	7
Rope	1¼ in. diameter, weight 2 lb per ft.
Drum, cylindrical	6 ft. diameter with 2 ft face
Weight of rotating parts at rope center, lb.	17,000

From these figures it can be deduced that the counterweight for this hoist should weight 15,300 lb. in all. The closer this condition is approximated, the closer will the two cycles, hoisting the load and hoisting the counterweight, coincide.

As 60 trips per hour are required and all other data are the same, the moments of the up load will be exactly the same as in the first case, except for acceleration and retardation moments, which will be increased by reason of the fact that the counterweight has also to be accelerated or retarded.

We will, however, proceed as if this were an entirely new problem as far as moments are concerned.

Up Load		
Cage	9,000 lb.	
Car	2,300 lb	
Rock	8,000 lb	
Total	19,300 lb	

Up Moments, Cage and Load	
At 0 turns,	19,300 x 3 = 57,900 ft lb
At 13.26 turns,	19,300 x 3 = 57,900 ft lb

Moments, Up Rope	
At 0 turns,	2 x 250 x 3 = 1,500 ft lb
At 13.26 turns,	0 x 3 = 0 ft lb

Total Up Moments		
Turns,	0	13.26
Load	57,900 ft lb	57,900 ft lb
Rope	1,500 ft lb	0 ft lb
Total	59,400 ft lb	57,900 ft lb
Down	45,900 ft lb	47,400 ft lb
Net	13,500 ft lb	10,500 ft lb

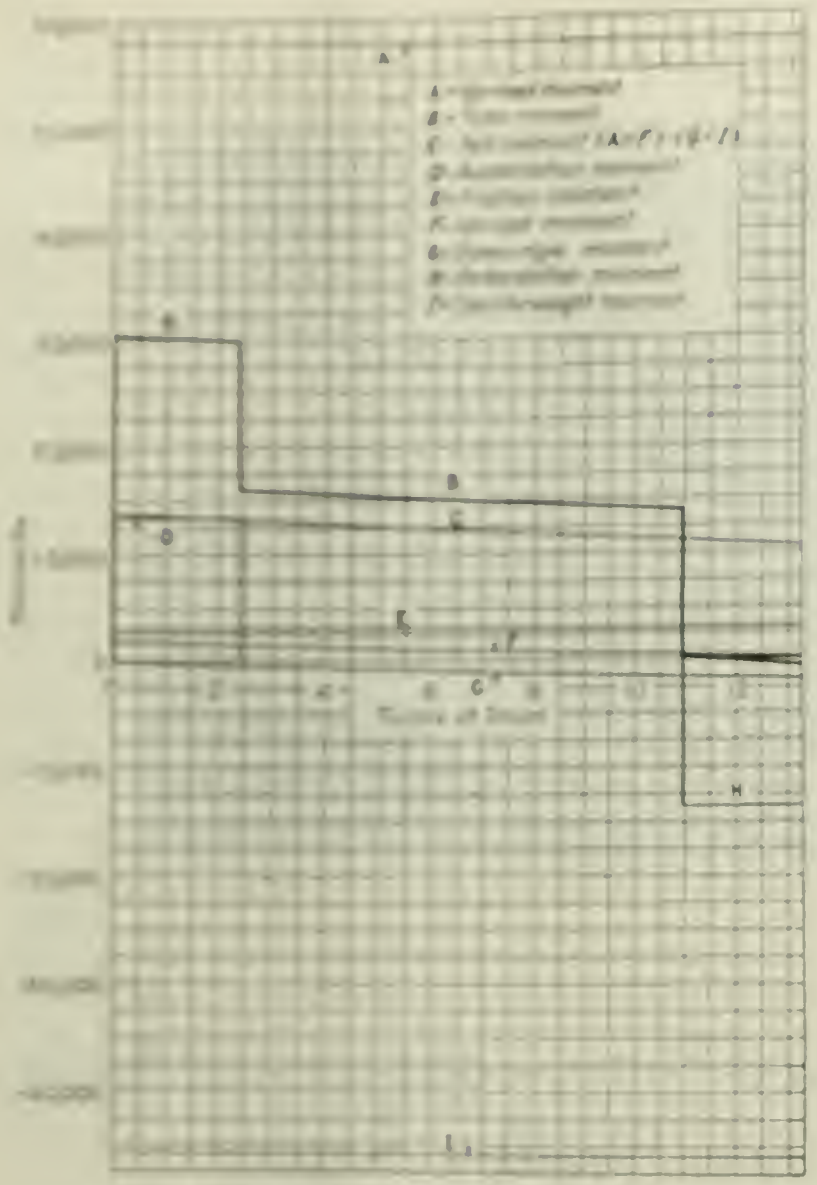
$$\text{Average moments} = \frac{13{,}500 + 10{,}500}{2} = 12{,}000 \text{ ft-lb}$$

Assuming 80 per cent efficiency as before, 12,000 ÷ 0.8 = 15,000 ft.-lb. Substracting the average moment from 15,000 (that is, 15,000 − 12,000) we get 3,000 ft.-lb., which is the frictional moment. The acceleration and retardation may be calculated as follows:

NOTE—The headpiece shows ore and cage hoists at mine of Montreal Mining Co., Hurley, Wis.

*Other articles on hoist design by F. L. Stone may be found in *Coal Age*, Vol. 8, p. 916; Vol. 9, p. 923, and Vol. 22, p. 977.

†Power and mining engineering department, General Electric Co.



MOMENTS WHEN RAISING CAGE AND CAR AND LOWERING COUNTERWEIGHT

The upper block that represents the total moments which are in this case positive, for the retardation moment at no time is sufficient to reverse it necessarily in spite of brake on the engine or to make the use of power for hoist is unnecessary.

Revolutions per second full speed = 0.78

Rope speed = 14.68 ft. per sec.

$$\text{Acceleration} = \frac{14.68}{6} = 2.446 \text{ ft. per sec. per sec.}$$

In this, as in the first case, given in the article last week, p. 577, all the mass is moving at the same speed, including the rotating parts of the hoist, the values of which have been reduced to their equivalent at the rope center. We therefore can take the whole weight moving and determine the acceleration moment at one calculation. The load to be accelerated and retarded may be itemized as follows:

	Lb.		Lb.
Counterweight	15,300	Drum	1,800
Cage	9,000	Drum	17,000
Car	2,300	Head sheave	7,000
Rope	1,800		
Total			60,400

$$\text{Accelerating force} = \frac{60,400 \times 2.446}{32.2} = 4,590 \text{ lb.}$$

$$\text{Moment of accelerating force} = 4,590 \times 3 = 13,764 \text{ ft.-lb.}$$

Retardation, as before, will have the same value as acceleration, but with a negative sign—that is, —13,764.

SUMMATION OF MOMENTS (LIFTING LOAD) IN FT.LB.

Turns	0	2.34	2.34	10.92	10.92	13.26
Car, load and rope moment	13,500	13,200	13,200	10,800	10,800	10,500
Frictional moment	3,000	3,000	3,000	3,000	3,000	3,000
Moment of accelerating force	13,764	13,764	0	0	—13,764	—13,764
Total moment	30,264	29,964	16,200	13,800	1,860	—264
Time	0	5	6	17	17	23
Horsepower	344	340	164.2	122.7	8.3	—2.3

$$\text{Horsepower required} = \frac{2 \times 3.14 \times \text{revolutions} \times \text{moment}}{550} = 0.0089 \times \text{moment}$$

To the lifting of the counterweight and the lowering of the cage and cars the following computations can be applied:

Up Moments		*Down Moments*	
Turns 0	15,300 x 3 = 45,900 ft.lb.	Turns 0	—11,300 x 3 = — 33,900 ft.lb.
Turns 13.26	15,300 x 3 = 45,900 ft.lb.	Turns 13.26	—11,300 x 3 = — 33,900 ft.lb.
Moments of Up Rope		*Moments of Down Rope*	
Turns 0	2 x 250 x 3 = 1,500 ft.lb.	Turns 0	0 ft.lb.
Turns 13.26	0 = 0 ft.lb.	Turns 13.26	2 x 250 x 3 = 1,500 ft.lb.

Sum of Moments Up			*Sum of Moments Down*		
Turn	0	13.26	Turn	0	13.26
Load	45,900 ft.lb.	45,900 ft.lb.	Load	33,900 ft.lb.	33,900 ft.lb.
Rope	1,500 ft.lb.	0 ft.lb.	Rope	0 ft.lb.	1,500 ft.lb.
Total	47,400 ft.lb.	45,900 ft.lb.		33,900 ft.lb.	35,400 ft.lb.
Down	—33,900 ft.lb.	—35,400 ft.lb.			
Net	13,500 ft.lb.	10,500 ft.lb.			

$$\text{Average moment} = \frac{13,500 + 10,500}{2} = 12,000 \text{ ft.lb.}$$

Again assuming an 80-per cent efficiency and dividing by 0.8, the average moment will become 15,000, or 3,000 more than before, making the frictional moment 3,000 ft.-lb. Acceleration and retardation are computed as follows:

Revolutions per second = 0.78 and the rope speed = 14.68 ft. per sec.
Acceleration = 2.446 ft. per sec. per sec. as before.

Load to Be Accelerated or Retarded	Lb.		Lb.
Counterweight	15,300	Drum	17,000
Cage	9,000	Head sheave	7,000
Car	2,300		
Rope	1,800	Total, lb.	52,400

$$\text{Accelerating force} = \frac{52,400 \times 2.446}{32.2} = 3,980 \text{ lb.}$$

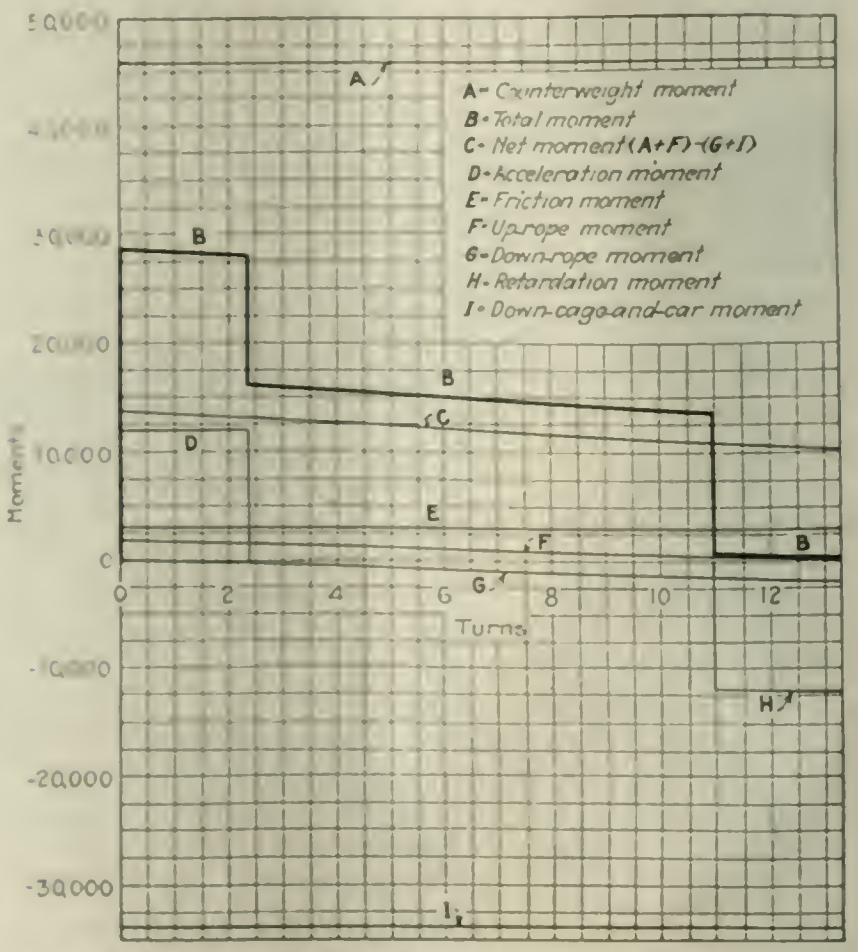
Moment of accelerating force = 3,980 x 3 = 11,940 lb.

The summation of moments in lifting the counterweight will be as follows:

SUMMATION OF MOMENTS (LIFTING COUNTERWEIGHT) IN FT.LB.

Turns		2.34	2.34	10.92	10.92	13.26
Counterweight and rope moment	13,500	13,200	13,200	10,800	10,800	10,500
Frictional moment	3,000	3,000	3,000	3,000	3,000	3,000
Moment of accelerating force	11,940	11,940	0	0	—11,940	—11,940
Total moment	28,440	28,140	16,200	13,800	1,860	1,560
Time	0	6	6	17	17	23
Horsepower	253	250	144	123	16.55	13.88

Horsepower = 0.0089 x total moment



MOMENTS WHEN LOWERING CAGE AND CAR AND HOISTING COUNTERWEIGHT

As the counterweight moment is reduced by the moment of the cage and car the total moment is less than the counterweight moment. The net moment equals the difference between the sum of the up-counterweight and up-rope moments and the sum of the down-cage, down-car, down-load and down-rope moments.

Glancing at the duty cycle it will be seen that the motor required for this work is much smaller than that necessary for hoisting a totally unbalanced load. The actual work done is that of hoisting the active load, rock or coal.

We have lifted 8,000 lb. of material through 250 ft., the work being done at an assumed efficiency of 80 per cent.

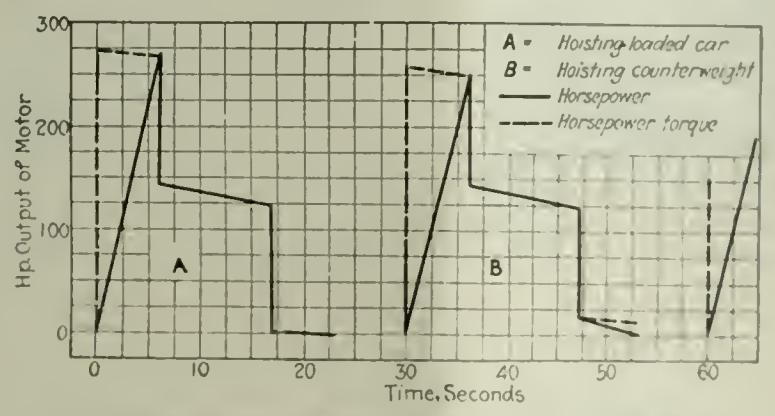
Work done = 8,000 x 250 = 2,000,000 ft.lb. or

$$\text{Horsepower-seconds} = \frac{2{,}000{,}000}{550} = 3{,}636$$

Then $\frac{3{,}636}{0.8}$ = 4,545 hp. sec., which should equal the area of the total duty cycle. Thus:

	Loaded Car Up	*Counterweight Up*
Accelerating	$\frac{269+266}{2} \times \frac{6}{2} = 802.50$	$\frac{253+250}{2} \times \frac{6}{2} = 754.50$
At full speed	$\frac{144.2+122.7}{2} \times 11 = 1{,}467.95$	$\frac{144.5+123}{2} \times 11 = 1{,}471.25$
Retarding	$\frac{1.07-1.83}{2} \times \frac{6}{2} = -1.14$	$\frac{16.55+13.88}{2} \times \frac{6}{2} = \frac{45.64}{2}$
Total horsepower-seconds	= 2,269.31	2,271.39

Adding the horsepower seconds of work performed in the two cycles—namely 2,269.31 and 2,271.39—the result is 4,540.21, thus checking with the result previously obtained.



HORSEPOWER-TIME CURVE, DUTY CYCLE, COUNTERWEIGHT HOIST

The left graph, A, is that which refers to the hoisting of the loaded car and the right graph, B, that which relates to the hoisting of the counterweight, both being quite similar and differing but little in magnitude.

We will now consider the last case for this set of conditions—namely, hoist in complete balance. That is to say, we will assume a double-compartment shaft, cages and cars in balance and the same output, a trip per minute, as in the first two cases, that just calculated and that considered in *Coal Age* on pages 577 et seq. of this volume.

The up moments of the cage, car, rock and rope will be the same as before, that is, Turns 0 = 59,400 ft.-lb.; Turns 13.26 = 57,900 ft.-lb.

The down cage and car have the following weights: Cage 9,000 lb.; car, 2,300 lb.; total 11,300 lb.

DOWN MOMENTS

Turns 0 11,300 × 3 = 33,900 ft. lb.
Turns 13.26 11,300 × 3 = 33,900 ft. lb.

MOMENTS OF DOWN ROPE

Turns 0 0 ft.lb.
Turns 13.26 2 x 250 x 3 = 1,500 ft.lb.

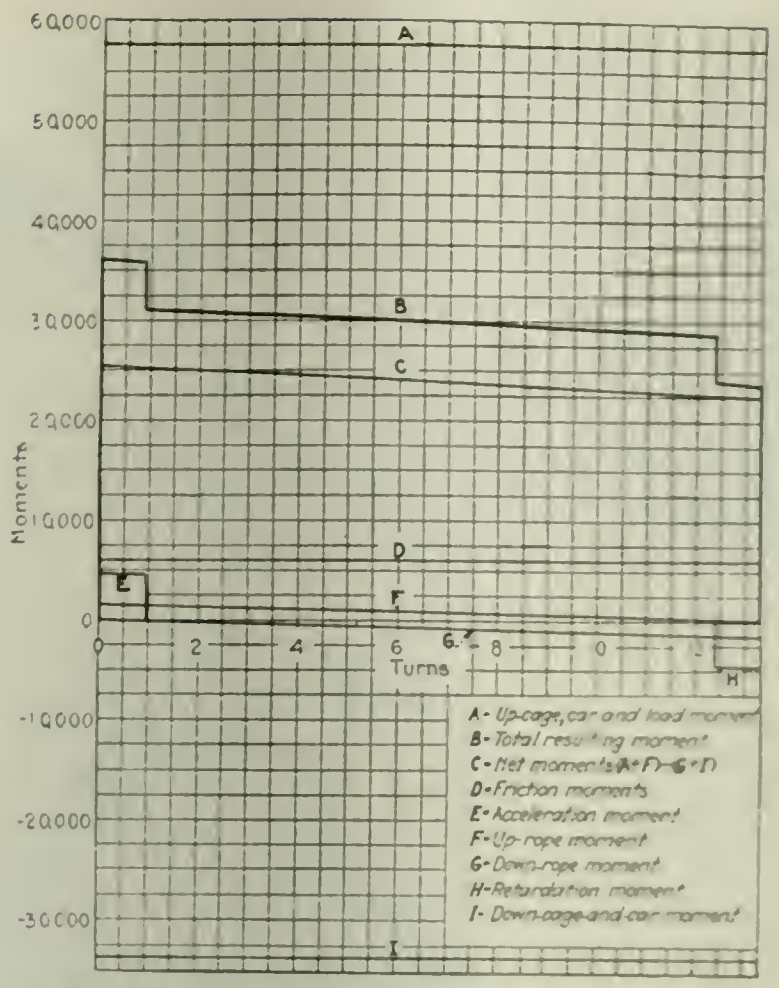
SUM OF MOMENTS DOWN

Turns 0 33,900 + 0 = 33,900 ft.lb.
Turns 13.26 33,900 + 1,500 = 35,400 ft.lb.

The down moments must now be deducted from the up moments.

Turns	0	13.26
Up moments	59,400 ft.lb.	57,900 ft.lb.
Down moments	33,900 ft.lb.	35,400 ft.lb.
Total	25,500 ft.lb.	22,500 ft.lb.

$$\text{Average net moment} = \frac{25{,}500 + 22{,}500}{2} = 24{,}000 \text{ ft.lb.}$$



MOMENTS WHEN HOISTING IN BALANCE

Here again the total moment, being the algebraic sum of two contrary moments, is less than the larger moment and in fact less than either. The net moment equals the difference between the sum of the up-car, up-cage, up-load and up-rope moments and the sum of the down-car, down-cage, down-load and down-rope moments.

Again assuming an 80-per cent efficiency and dividing by 0.8, the average net moment will become 30,000 ft.-lb., or 6,000 ft.-lb. more than before, making the frictional moment 6,000 ft.-lb. Acceleration and retardation should be determined as follows:

	Lb.		Lb.
Cages	18,000	Drum	17,000
Cars	4,600	Sheaves	7,000
Rock	8,000		
Rope	1,800	Total	56,400

Running time = 60—7 = 53 sec.

The acceleration takes place in 6 sec. and the retardation in 6 sec. as before.

$$\frac{13.26}{53 - \frac{6+6}{2}} = \frac{13.26}{47} = 0.282 \text{ revolutions per second, or } 16.9 \text{ r.p.m.}$$

$$\text{Turns during acceleration and retardation} = \frac{0.282 \times 6}{2} = 0.846$$

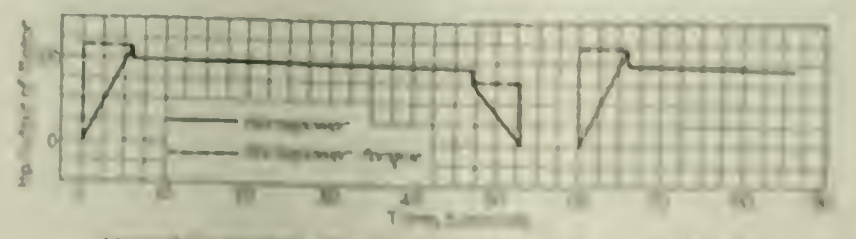
Velocity at full speed = 0.282 x 6π = 5.3 ft. per sec.

$$\text{Acceleration} = \frac{5.3}{6} = 0.884 \text{ ft. per sec. per sec.}$$

$$\text{Accelerating force} = \frac{56{,}400 \times 0.884}{32.2} = 1{,}548 \text{ lb.}$$

Moment of accelerating force = 1,548 x 3 = 4,644 ft.lb.

The summation of the moments for the balanced hoist will be found tabulated on the next page near the top of the left column.

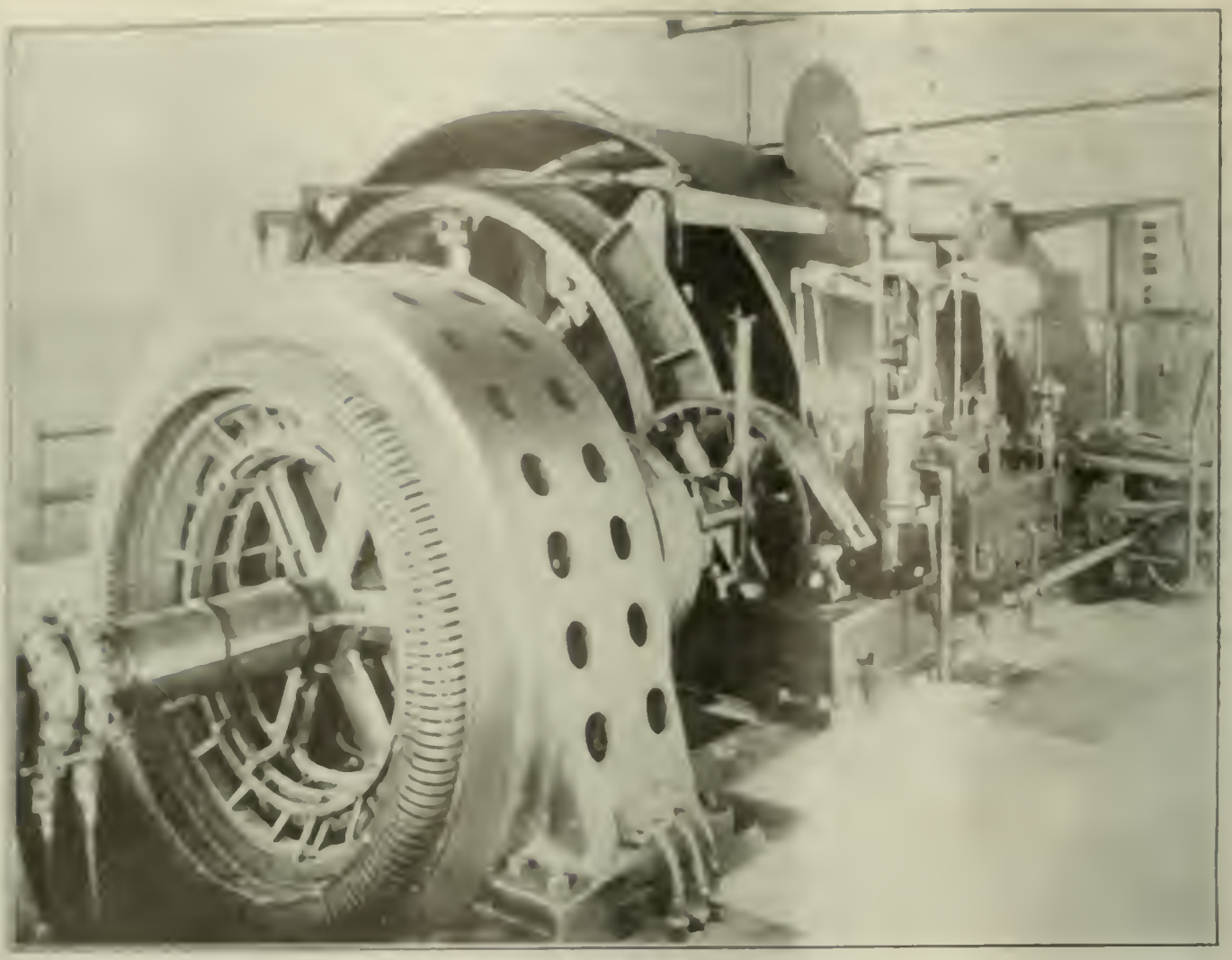


HORSEPOWER-TIME CURVE, DUTY CYCLE, BALANCED HOIST

The solid line represents the horsepower actually used and the dotted line the horsepower that must be provided. No horsepower can be actually used when the rope is not moving, but when the hoist is starting a horsepower torque must be provided as great as at any point in the cycle. A torque somewhat smaller but still large must be provided at the end of the cycle.

Electric Hoist

A substantial hoist at No. 14 shaft of the Lehigh Coal & Navigation Co.'s Lansford, Pa., colliery repairs an 800-ft. lift, and runs at rope speed of 3,000 ft.



SUMMATION OF MOMENTS (BALANCED HOIST)

Point	0	0.884	5.884	12.36	12.36	13.26
Rope moments	23,500	23,250	23,250	22,850	22,850	22,500
Load moments	6,000	6,000	6,000	6,000	6,000	6,000
Unbalanced moments	4,644	4,644	0	0	−4,644	−4,644
Total	34,144	33,894	29,250	28,850	24,156	23,856
Engine speed	116.2	115.3	100.5	92.9	77.8	77
Time	0	6	6	47	47	53

$$\text{Engine speed} = \frac{\text{Drum r.p.m.} \times \text{gear ratio}}{\text{Pitch}} \times \text{(Rope speed} \times \text{constant)}$$

A check on the area of the plotted cycle can be made as follows:

$$\text{Accelerating } \frac{116.2 + 115.3}{2} \times \frac{6}{2} = 347.25$$

$$\text{At full speed } \frac{100.5 + 92.9}{2} \times 41 = 3,964.70$$

$$\text{Retarding } \frac{77.8 - 77.0}{2} \times \frac{6}{2} = \frac{232.20}{4,544.15} \text{ horsepower seconds.}$$

Is Coal from Peat or from Drifted Matter?

SPEAKING before the British Association for the Advancement of Science Sept. 8 of this year the president of the geological section, Professor Percy Fry Kendall, declared that true coal seams—those, that is, that were autochthonous, or generated where found, that is from peat—had the following characteristics: (1) Wide extent, (2) uniformity of thickness and character over extensive areas, (3) freedom from interstratified detrital mineral matter, (4) constant presence of a seat earth or rootlet bed, (5) entire absence of remains of aquatic animals within the seam. Substitute, he said, negatives for affirmatives and affirmatives for negatives and the characteristics of cannel, which he regards as drift or allochthonous matter, are truly set forth.

In cannel, he added, scales, teeth and bones of fish are almost invariably present, and it is from cannel that our largest collection of coal-measure vertebrates have been obtained. Amphibian remains are more rare; cetraends are crowded in some places and lastly freshwater shells such as Carbonicola are represented commonly not by the shells themselves, but by the flattened wrinkled epidermis, the calcareous shell having evidently been dissolved by the acids generated by decomposing vegetable matter. The ash content always is high, rising to 40 per cent before reaching the point at which it would be regarded as shale. The characteristics of cannel are consistent with the view that it originated from a mass of vegetation macerated in pools of water somewhat after the manner in which flax is retted.

Sometimes the cannel is in unconformable relation to the underlying beds, as at the Abram colliery, Wigan, England, where it rests in one district upon true coal and in the course of about a mile encroaches first on the coal, then upon its underclay and, finally, having become 7 ft. in thickness, it rests upon a bed of shale underlying the underclay.

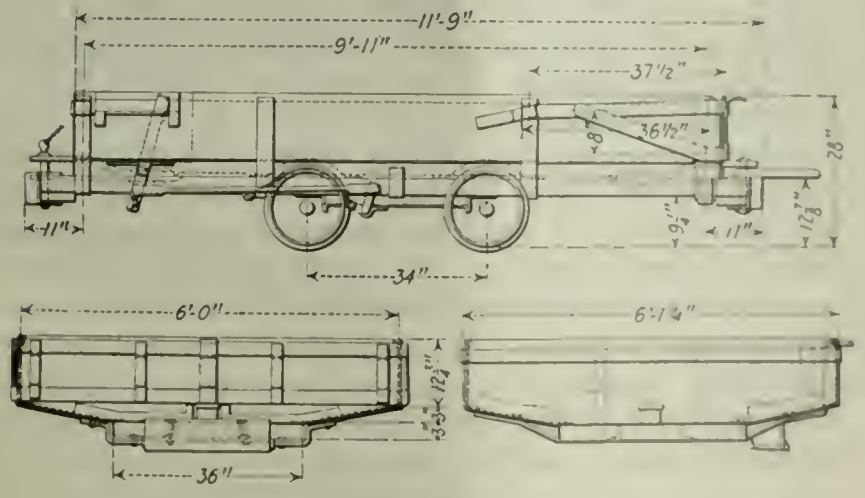
It commonly happens, added Professor Kendall, that the presence of a patch of cannel as a constitutent of a coal seam is accompanied by an increased thickness, even out of proportion to the magnitude of the cannel, and this irrespective of whether the cannel is above, within or below the true coal. This may be explained by the fact that the process of fermentation by which the cannel was produced reduced its volume more rapidly than the ordinary clay reduced that of the adjacent peat and so maintained a depression in which the plant débris of the peat bog could accumulate, but the ultimate effect of this fermentation was a less complete loss of hydrocarbons, and consequently, both because its contemporaneous loss was greater and its subsequent loss was less, the presence of a cannel component increases the thickness of a seam.

Huntington Show Suggests Modern Ways of Reducing Coal Cost—I



Typical West Virginia Mine Cars — Low Cars Permitting of Side Loading — Use of Band Brakes — Machine for Electrically Heating Rivets—Hoist for Long Slopes and Inclines

MUCH interest was exhibited in the Coal and Industrial Exposition held at Huntington, W. Va., Sept. 18-23, in the Chamber of Commerce Building. Lightning, it is said, seldom hits twice in the same spot, but the coal exposition has ventured for two consecutive years to descend on so small a town as Huntington. The rest of the country needs some of the enlightenment that has been so generously bestowed on this West Virginia town and it is certain that some other city will get it, as it was decided at a meeting of exhibitors to hold the show elsewhere in the coming year. The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers, thus deserted by their exposition, decided to withhold a decision on next year's place of meeting till they found where the exposition was going to be held.



LOW STEEL CAR WITH END GATE AND BAND BRAKE

The top side plate and rear-end plate are of ⅝-in. steel and the flare, gunnel and front-end plates of ¼-in. steel. The capacity is 76 cu.ft. The track gage is 42 in. Hyatt roller-bearing wheels are provided.

Prominent among the exhibits were four mine cars of mammoth proportions. They probably will carry but little coal, however, for apparently payment of coal by the carload instead of by the ton results in the filling of cars but little more than level full. The cars are, however, constructed to carry a maximum quantity of coal for a minimum height of body.

The American Car & Foundry Co. had a big all-steel car that was constructed for the Little War Creek Coal Co., at Iaeger, W. Va. Its weight is 4,400 lb., its length is 9 ft. inside and 10 ft. 8 in. over all, its width is 6 ft. and its height from the top of the rail to the top of the car, 3 ft. 2¼ in. Its capacity is 107 cu.ft. and its gage 44 in. The wheels, which are fitted with Hyatt roller bearings, project above the bottom of the car and are hooded with steel covers; to stiffen the sides three steel gusset plates are set on each side. They connect the sides of the car with its bottom. It will be dumped on a rotary dump.

Across the way might be noted a rival car constructed by the Kenova Mine Car Co. for the Red Jacket Consolidated Coal & Coke Co., at Red Jacket, W. Va. This, which was a composite car with sides of steel and a bottom of wood, like the other, had hooded wheels and two angle stiffening plates on each side. It holds 2½ tons when level full. Its dimensions are as follows: Weight, 3,800 lb.; inside length, 10 ft. 6 in.; width, 6 ft.; height above rail, 29 in.; capacity, 90 cu.ft.; wheels, 14 in in diameter; track gage, 48 in.; wheelbase, 40 in. A spring drawbar, a swivel hitching and a Timken roller-bearing wheel of the exposed lynch-pin type were notable features.

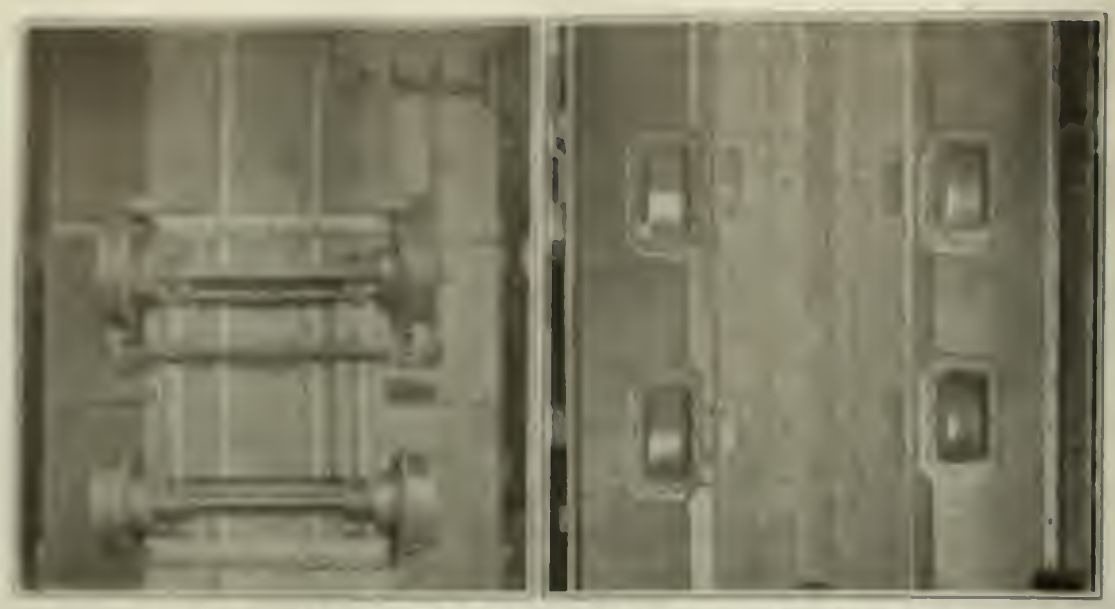
Only slightly smaller is the car made by the Watt Mining Car Wheel Co. for the Island Creek Coal Co. This car has a gage of 44½ in. for a track gage of an even 44 in. It has an 18-in. wheel, a straight link hitching, Hyatt roller bearings and lifting end gate being intended, unlike the other two cars, for end dumping. Its weight is 3,700 lb., its inside length 9 ft. 1½ in., its over-all length 10 ft. 6¼ in., its inside width 5 ft. 5 in., its height above the rail over all 3 ft. 4½ in., its wheel-



SAME CAR SHOWING HEAD END AND BAND BRAKE DETAILS

The introduction of steel has made possible a [illegible] of the car. The rise of the flaring sides of copy 3 in. over the [illegible] width it gives to the car body an [illegible] With a track gage of only 2 ft. 8 in. the [illegible] of the car is 6 ft. It can be hauled equally well at the side, the front and the end.

NOTE—The illustration forming part of the title depicts the booth of the Northeast Kentucky Association which was a reproduction of the mouth of a mine in that section. The men grouped on the car were a number of anthracite mine workers who, dressed in overalls and mining caps with [illegible] lamps, provided a large part of the excellent musical entertainment which enlivened the exposition.



CODE OF CAR BOTTOM FROM BELOW AND FROM ABOVE

This view was in that from below and shows the hand brake on the hind wheels. The second view is that from above. It shows the housings over the wheels. The tops of these wheels are actually above the level of the car bottom. As the car is flat and dumping no grooves can be provided on the inside

base 32 in. It holds 24 tons when level full and 2.8 tons when loaded to a normal height.

It will be noted that modern mine cars are frequently riveted; not bolted. Rivets are less likely to become loose. Properly driven, they will hold permanently until a wreck of some sort subjects them to strains for which they have not been designed. Then the cars come to the shop, and the riveting must be renewed.

In this work the electric riveter of the American Car & Foundry Co. exhibited in the company's booth offers opportunities. The heat is, of course, not of the cheapest but it is confined to the rivet and not dissipated as in a furnace. There is no risk of burning a lot of rivets by leaving them in the fire. The heat is from the center out and not from the outer surface inward. Hence it lasts longer or else does not have to be made so intense to last as long. The rivet is in full view of the operator.

In a booth near the entrance to the show was exhibited, by the Hockensmith Wheel & Mine Car Co., a car built for the Pond Creek By-Product Collieries Co., of Leekieville, Ky. Several illustrations are shown of it because, although it has certain qualities all its own, it is typical of the cars being used in West Virginia, a state where large loadings per man are made at most of the mines. The cars are quite low, this one being only 28 in. high. The height is kept low, usually not at all because the coal is thin, but because ease of loading favors a low car. It also saves injury to the coal in loading.

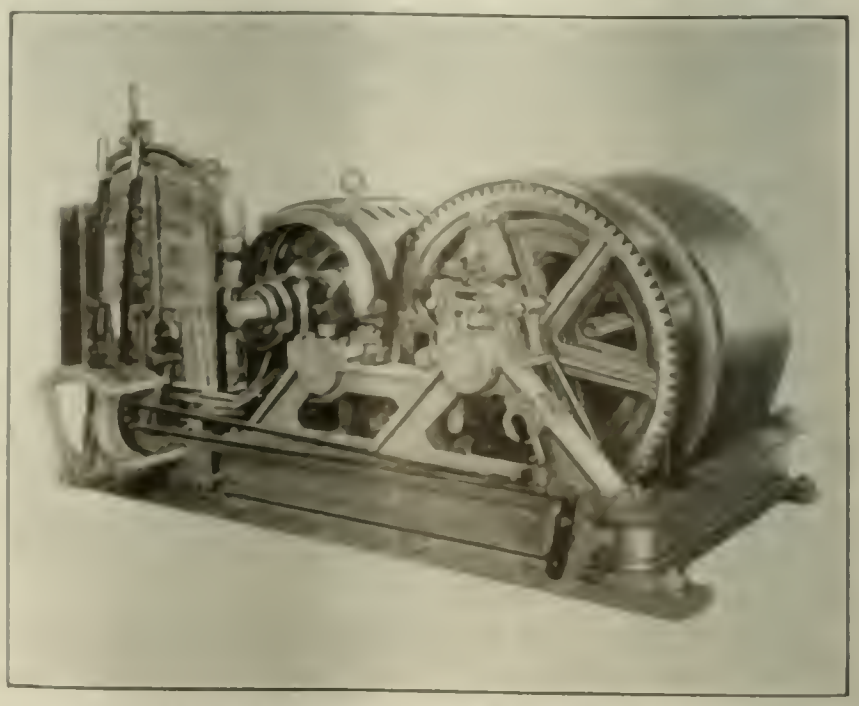
The band-friction double-reduction single-drum hoist of the Thomas Elevator Co. occupied another booth. It is intended for such work as sinking shafts, hauling cars up slopes or inclines or for other purposes where a machine with large drum and ample cable capacity is desired. It is fitted with a band friction on one end of the drum and a composition-lined band brake on the other. A band friction puts no end thrust on the bearings and is therefore especially advantageous on long hauls. The brake is of ample proportions and as it is placed on the opposite end of the drum from the friction any heat generated by it does not affect the operation.

These machines are furnished with a smooth drum face and cut gearing. When made with machine-cut grooves on the drum the friction may be locked in engagement and the machine used for operating skips, cages or cars in balance. The brake and friction shafts are fitted with babbitted bearings and the control levers are banked in a quadrant conveniently located for the operator. Speeds and capacities range up to 12,000 lb. rope pull and 600 ft. per minute. Either alternating or direct current may be employed.



HEATS RIVETS BY RESISTANCE TO CURRENT

Coal, gas, smoke and cinders have been avoided by the use of this electric rivet heater that handles three rivets at a time. The rivets are heated by conducting the current by the bar or rods along the work. Rivets should not be heated to over 1,800 deg. Fahr. The core of an electrically heated rivet is hotter than the surface. When heated in this manner it should not be dropped in a wooden box. It would seem that steam-chilled lithe weight to advantage before the rivet cools.



BAND-FRICTION SINGLE-DRUM HOIST

Has a band-friction brake at one end of the drum and composition-lined band brake on the other. A band friction puts no end thrust on the bearings and is therefore advantageous on long hauls.

Every Big Mine Should Have Its Locomotive Inspector

To Be Always "Fit" a Locomotive Must Be Inspected at Regular and Frequent Intervals—If Continuously Kept in Good Condition, with Hauling Loads Commensurate with Capacity, It Should Last Indefinitely

By W. M. Johnson*
Woodward, Ala.

ELECTRIC locomotives are now largely employed both in gaseous and non-gaseous mines for hauling coal from the working face to the pit mouth. These machines form the key to present-day coal production. They vary in size from four to thirty tons. Without them the output of some of the larger mines would be so seriously reduced that coal could not be mined economically. In fact to revert to mule haulage or other modes of transportation would mean disaster to the coal-mining industry.

Considering the thousands of electric locomotives that are put into the mines each year, the question naturally arises what percentage replaces worn-out equipment and what is installed in new development? This is not easily answered, as other considerations are immediately involved such as "What is the average life of a mine locomotive?" as well as many others.

Of course everyone experienced with mine locomotives will immediately answer that the life of an electric haulage motor depends entirely on the service it is called upon to perform. They believe that they have thus effectively answered the query. However, even if we restrict the scope of the question and limit the work of the locomotive to that commensurate with its size, so that the machine hauls loads proportionate to its capacity only and over track such as is normally found in coal mines, the question is not easily answered in a satisfactory manner.

Ancient Locomotives Are Rarely Seen

From time to time the technical papers have published photographs of electric locomotives of ancient vintage that have been in continuous service for twenty or more years and that are still as good as new, or are doing as much work as ever. Here again is an answer to the query, but is it not rather the exception than the rule that a locomotive should operate for twenty years and be as good as ever, without any change in structure, or with little or no expense for repair parts during that time?

As a matter of fact, coal company records of cost of operation and repairs to electric locomotives are for the most part average costs and cannot be used in a comparative way to estimate the life of such a machine. Neither can a yearly depreciation method be employed.

Again if new parts are being continually added to a locomotive, is it fair to estimate the life of the machine at twenty years, when as a matter of fact probably twice the cost of a new haulage motor or a capitalization amounting to the price of three locomotives has been spent during this period and its end finds the company possessed of a half or completely worn-out locomotive?

On what then does the life of an electric locomotive operating at normal load and over average trackage depend? The answer is: "On the thoroughness and regularity with which it is inspected and the promptness and excellence of the repairs made." The old adage, "It is easier to keep up than catch up," applies particularly to electric mine-haulage locomotives.

Consider your own mine. Are the electric locomotives used in it always in first-class condition, or are they over the pit a large part of the time? Is it cheaper to operate them in a hit-or-miss fashion until they go out of service for want of repairs, with the accompanying interruptions to haulage schedules and loss of tonnage or to keep them in such shape that they will maintain a 100-per cent efficient haulage schedule?

Railroad Locomotives Rigorously Inspected

Look at the great steam-railway systems on which the very existence of the country depends. Are they run in a hit-or-miss fashion? Decidedly not. A fast freight or passenger locomotive after a run of 100 or 200 miles is thoroughly examined, oiled and passed by competent inspectors before it is again called upon to perform service. Are electric mine locomotives, many of which travel 100 miles per day and some of which cover an equal distance both day and night, treated in a similar manner? Or are they run until they fall apart? Again I affirm that "the life of an electric locomotive varies directly as the completeness of inspection and the quality of repairs made."

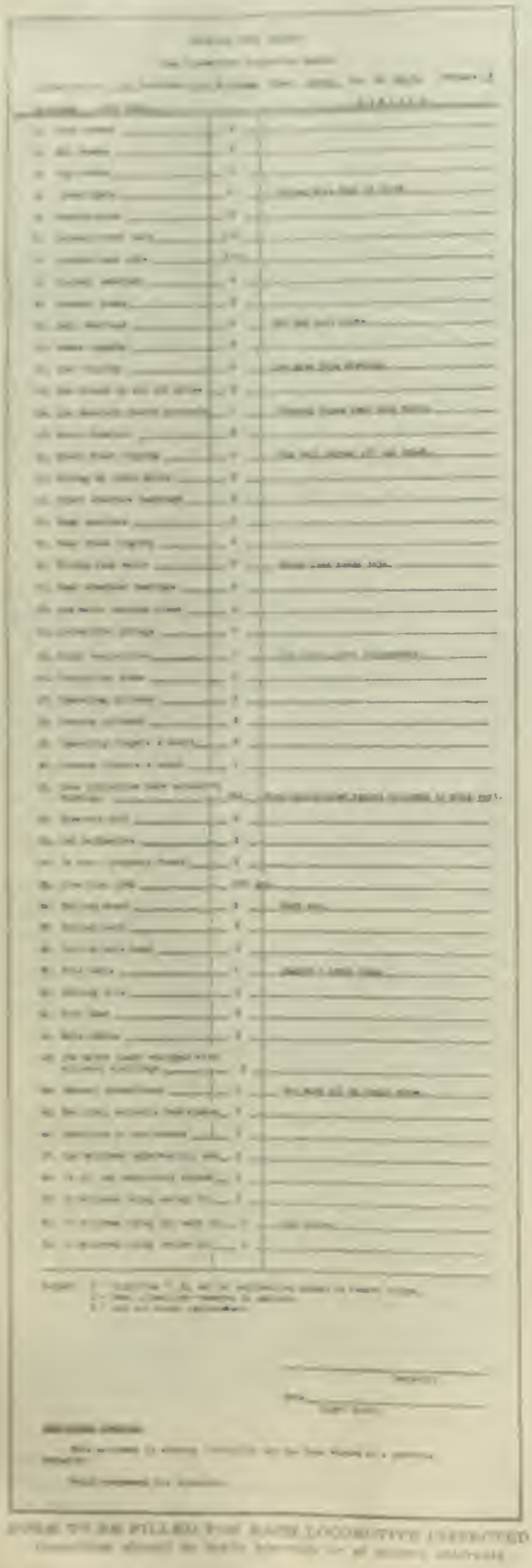
Most mine owners will say: "Of course we inspect our electric locomotives. Our mine electrician both inspects and repairs them. In fact he does everything but operate them, and he could do that if necessary." But should the man who makes the inspection be the one to make the repairs also? Emphatically not. Man's characteristic tendency to do as little physical work as possible and "get by" is the reason for so saying.

Electrician Should Not Inspect Own Motors

The old biblical admonition to the effect that "a man can see the mote in his neighbor's eye but cannot see the beam in his own eye" is familiar to all. The same reasoning applies to permitting an electrician to make his own inspections. He soon will be making his inspection reports to suit his own convenience. And a report that does not embody a true statement of conditions is of less value than none at all, for it will convey an erroneous impression to the management.

In large operations with twenty or more electric locomotives in service an inspector is a necessity and will save his wages many times over in the course of a year. In the case of smaller companies working one or two mines and employing only a few locomotives, the proper scheme is to have the electrician from one mine act as the inspector for the other and vice versa. With a little friendly rivalry, it will be surprising to see the close scrutiny the locomotives will receive and to observe how delays, armature failures and kindred

*Electrical Superintendent, Woodward Iron Co.



troubles will decrease slowly and steadily until, instead of being an accepted daily occurrence, they will become unusual.

An inspector, where the mines operate daily, can handle about twenty locomotives per week as a maximum allotment, provided those machines are not scattered over too great a territory. He can report on each machine twice weekly. My inspector handles thirty locomotives per week equally divided between three mines. He works 10 hours per shift at night, six nights per week. He can thoroughly inspect, on the average, eight locomotives per shift, so that each week I have on my desk a complete statement of the actual condition of each machine. The mine electrician also receives a carbon copy of the inspection report the morning following. In this manner no time is lost in replacing any parts found needing attention.

To make the work of inspection as easy as possible, especially so far as writing is concerned, a printed form has been prepared arranged in pads so that a carbon copy is easily made. The form accompanying this article is an actual copy of an inspector's report. As may be seen, it requires little writing, yet conveys a complete record of conditions. These reports are likewise easily examined, as the status of any part requiring attention stands out prominently while that of those in good shape is automatically passed over at a glance.

This form is intended for use with a straight two-motor locomotive without reel attachment. It can easily be modified to meet the needs of any type, however, using the same symbolic scheme to reduce to a minimum the writing that the inspector is obliged to do.

I adopted this inspection system about a year ago. At that time one of our mines was producing 1,400 tons of coal per day with twelve locomotives in service. These machines were continually in and out of the pit for the renewal of armatures burned out by poling, for hot bearings, controller and brake trouble and numerous other misfortunes peculiar to electric mine locomotives. At the present time the same mine operates only nine locomotives, yet produces 2,300 to 2,400 tons per day. During the past six months not a single armature has failed, whereas prior to the adoption of this inspection system an average of one to two locomotive armatures were burned out per week. The same inspection scheme has been adopted for our coal-cutting machines, and the results obtained in the past half year have been highly gratifying.

How long will a locomotive last in mine service? At the present time we cannot estimate the life of our machines. As we are keeping them in first-class operating condition they should last indefinitely.

BY THE INSTALLATION of means for the control of air currents, by the installation of instruments of precision and by making a long series of calibrations, the experimental coal mine operated by the U. S. Bureau of Mines at Bruceton, Pa., near Pittsburgh, has been put in condition for a study of some fundamental factors that govern the ventilation of mines. In one of the rooms of the mine a lead disk 3 ft. in diameter has been placed against the coal. Thermocouples have been placed in this disk and also at various depths in the coal and shale roof for the purpose of studying the rate of flow of heat through coal and shale. Such data, when obtained, will be of value in the control of ventilation in deep metal mines. This work is under the general direction of G. S. Rice, and under the personal supervision of J. W. Paul, assisted by G. E. McElroy, H. P. Greenwald and H. C. Howarth.

American Mining Congress Considers Standardization, Taxation and Industrial Relations

Twenty-Fifth Annual Convention Held in Cleveland—Coal in Limelight —Seek Laws to Prevent Interference by Organizations of Employers or Employees with Production or Distribution of Necessities of Life

COAL was easily the headliner at the twenty-fifth annual convention of the American Mining Congress in Cleveland, Oct. 9 to 14. The cataclysmic events in coal's history during the past year and the present general movement, both internal and external, to reorganize the coal industry are responsible. During the five days of the convention, held in connection with a striking national exposition of mining methods and equipment in Cleveland's new and magnificent Public Auditorium, much was said which may have a lasting effect upon coal and its relations with the public. The convention program directed much attention to standardization throughout all mining, upon mine taxation, better industrial relations within all branches of the industry, and to oil shale and its future, but there is no gainsaying the fact that coal was in the spotlight.

Sidney J. Jennings, of New York, was elected president; D. B. Wentz, of Philadelphia, first vice-president; H. W. Seaman, of Chicago, second vice-president, and E. L. Doheny, of Los Angeles, third vice-president. Directors elected were D. B. Wentz, W. C. Doring, president of the Southern Wheel Co.; W. H. Lindsay, of Nashville, and A. J. Nason, of Chicago. The convention and mining exhibition in 1923 will be held in Milwaukee.

At the closing session on Friday the convention adopted a ringing resolution on the labor question, declaring that "laws should be made and enforced by all the power of the government that shall forever strip labor organizations as well as employers of the ability to interfere with production and distribution of the necessities of life." A resolution was adopted putting the influence of the American Mining Congress behind the Federal Coal Commission and authorizing a committee of seven from the congress to co-operate with the commission and with the coal operators.

Crowds Flock to New Auditorium

The convention and exposition drew mining men and others interested less directly from all over the country. A total of over 500 delegates registered but the throngs which flowed through the two immense floors almost full of exhibits in the Public Auditorium when the doors were open to the public would have indicated a much greater attendance. Cleveland itself contributed heavily to this crowd, for the great building is new and most of the taxpayers whose $6,500,000 built it have not yet seen its beautiful and spacious interior. It was generally admitted by exhibitors that they had never shown before in such a handsome and well-appointed building. Many of their displays were novel and most of them interesting and instructive.

Delegates began to register for the convention as early as Sunday morning, Oct. 9. The next day enrolment boomed as engineers and mining men arrived from everywhere. Short meetings of the boards of governors for the Southern and the Western divisions of the congress were the only program events of the morning, but in the afternoon the taxation conference, one of the important branches of the congress, began its series of meetings, which ran through the succeeding three days.

Monday evening the convention and exposition was formally opened with a program on the immense stage of the auditorium after a musical prelude on the municipal pipe organ played by Edwin Arthur Kraft and songs by Miss Rex Haller, soprano, and the famous "Anthracite Quartet" of hard-coal miners from Pennsylvania.

Newton D. Baker, Secretary of War during a part of Woodrow Wilson's presidency and now president of the Cleveland Chamber of Commerce, made the address of welcome, in which he declared than an obligation rests upon those in the mining industry to devise means of co-operating with each other, to take the public into their confidence, especially in matters relating to coal.

President Harding, unable to be present, sent a letter to Michael Gallagher, of Cleveland, chairman of the speakers' committee for the convention, in which he assured the mining industry of his interest in it and his confidence in the wisdom and leadership of the congress. The President's letter is shown in another column.

Most of Tuesday morning, when the second general conference of the convention was held, was devoted to the interests of metal mining. W. R. Woodford, president of the Rail & River Coal Co., presided. W. J. Loring, president of the congress, who was scheduled for an address, was absent, serving on a committee investigating the Argonaut mine disaster in California. Carmi Thompson, vice-president of the Tod-Stambaugh Co., of Cleveland, iron ore operators, and now a candidate for Governor of Ohio, spoke on "Some Requirements of the Iron Ore Industry." Gold was treated by H. W. Seaman, of Chicago, Ill., and Bruce C. Yates, of Lead, S. D., and a paper on prospecting methods was read by Walter H. Trask, of Denver, Col.

In the afternoon the first of the convention series of oil-shale conferences, presided over by Victor C. Alderson, of the Colorado School of Mines, was held, running parallel with the second mine taxation conference and the first of the standardization conferences. That evening the general session was devoted to "Industrial Co-operation," with John A. Penton presiding.

The principal address of the evening was delivered by



SIDNEY J. JENNINGS
President American Mining Congress, 1922



CHARLES D. WENTZ
Re-elected First Vice-President, American Mining Congress

W. A. Grieves, vice-president of the Jeffrey Manufacturing Co., of Columbus, Ohio, a man well known for his firm belief in the value of encouraging a spirit of mutual helpfulness and confidence between employer and employee. He urged his hearers among employers of labor to remember the importance of the human element in their industry and to turn it to good account by educating their men in the principle of mutual dependence. He said unions have their place and should not be antagonized unnecessarily, but that their baneful effect can be offset by proper methods and a wise attitude by men in the head offices and down the line.

Arthur Young, vice-president of the International Harvester Co., described the works council system his company uses throughout its twenty-four plants, declaring that in three years only five appeals had been taken from the decisions of the joint council of workmen and bosses.

An important coal conference took place Wednesday morning, as reported elsewhere. The manufacturers' division of the congress lunched together that day at noon. In the afternoon both the mine taxation and the shale-oil conferences continued.

Wednesday evening, amid much jollity, the exhibitors held a smoker in a temporary dining room at one end of Machinery Hall, the lower floor of the auditorium. A troupe of entertainers, including an orchestra, a cartoonist, a dozen singers and dancers, and two black boys who sang and danced and farced humorously on a big platform in the center of the room were much applauded.

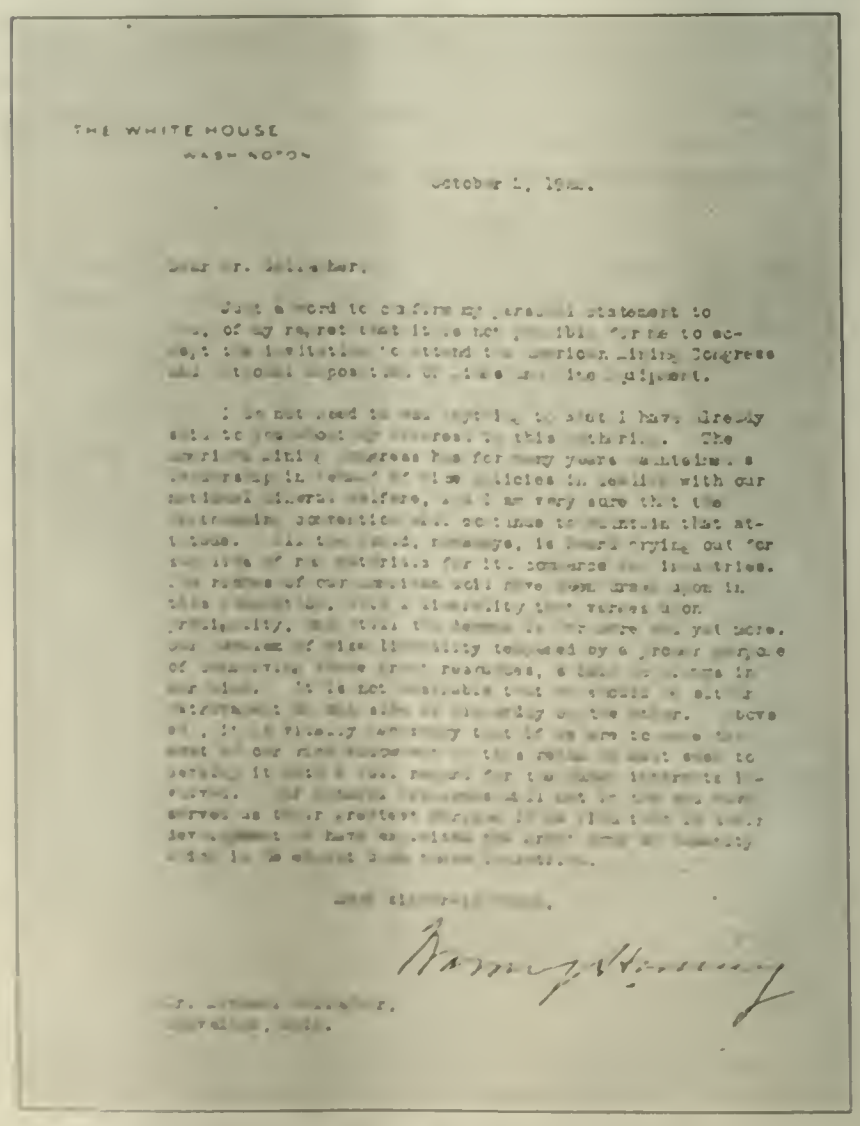
Standardization was given the floor on Thursday. Committee reports, the naming of which does not convey the interesting nature of their contents, occupied most of the day and evening sessions, but led to the exclusion of several addresses by prominent men.

Colonel L. H. Douglas, who, as chief of the technical staff of the ordnance bureau of the War Department, passes on all matters of standardization, spoke on the afternoon on "Standardization as a Factor in Industrial Mobilization." He advocated a draft law for war times that would take in every man from banker to laborer and a scheme of fixing wages and profits that would "freeze wages and profits at figures obtaining when war was declared." That evening W. S. Culbertson, of the Tariff Commission, explained the new act, saying that in his opinion the provision permitting the President to change the schedules and make adjustments would do more to take the tariff out of politics for good than anything that has ever been done. Judge Crawford, of the Industrial Relations Court of Kansas, told of the progress made by that novel experiment in handling labor trouble and pointed to Alex Howat in jail as what they do in Kansas to stop strikes.

G. A. O'Reilly, vice-president of the Irving National Bank of New York, on Friday morning painted an optimistic picture of business conditions in this country and put himself on record as favoring the payment by European countries of their debts to the United States. F. W. Fenn, of the National Automobile Chamber of Commerce, spoke on the importance of motorized transport in mining. Herbert Wilson Smith, of the Mining Congress staff, spoke on the relation of a protective tariff to the mining industry. Friday afternoon was devoted to viewing the exhibits and to dressing for the banquet that night.

The banquet, always a feature of the annual gathering of the Mining Congress, was a gay affair, despite the muchly mentioned and greatly bemoaned absence of pre-Volstead refreshments. The toastmaster, Richard F. Grant, of the M. A. Hanna Co., wove his opening remarks around the old familiar saying, "Gone are the days." After he had everyone saddened he turned Elisha Lee, vice-president of the Pennsylvania R.R., loose. Mr. Lee reviewed the shopmen's strike and said that decentralization of the labor problem offered the only permanent solution. He urged that when a man entered the railroad service he give up the right to strike, and pointed out that the stockholder never has a strike when his earnings fall lower than he likes.

Ira E. Robinson, of the Interior Department, gave the assembly what he described as a "good, old fashioned" talk in the old Fourth of July, spreadeagle style, deprecating every modern tendency and extolling the Constitution and the liberty-loving patriots of the past.



THE WHITE HOUSE
WASHINGTON

October 2, 1922.

My dear Mr. Webster:

Just a word to confirm my previous statement to you, of my regret that it is not possible for me to accept the invitation to attend the American Mining Congress which is to meet in Cleveland.

I do not need to say that I am heartily in accord with what I have already said to you about the importance to this country of the work which the Congress has for many years undertaken, and I am very sure that the patriotic convention will continue to maintain that attitude. In the world, nowadays, is heard crying out for the products of raw materials for its commerce and industries. The resources of our American soil have been drawn upon in this connection, with a generosity that varies with the fertility, but still the demand is for more and yet more. Our concern at this liberality is tempered by a proper purpose of conserving these great resources, and that is borne in mind. It is not unreasonable that we should exert ourselves to this end in preference to the other. Above all, it is vitally important that if we are to make the most of our mine resources we should have a policy which shall be helpful to the miner, for the latter interests [illegible] involved. Of course [illegible] but in the end must serve as their greatest [illegible] if we [illegible] development we have [illegible] and [illegible] in the short [illegible] interests.

And sincerely yours,

Warren G. Harding

Mr. Herbert Hoover,
Cleveland, Ohio.

LETTER FROM PRESIDENT HARDING
Chief Executive's message to the twenty-fifth anniversary of the American Mining Congress, Cleveland, Ohio, Oct. 9-14, 1922.

How Remedy Tax Evils That Beset Mine Properties?

Keen interest in mine taxation was well sustained throughout the twenty-fifth annual convention of the American Mining Congress at Cleveland, Oct. 9 to 14. In the series of taxation conferences running through the first three days the troublous question of how to remedy tax evils which exist in most mining regions was threshed out from many angles, and committee reports, some of them voluminous, were read. As a general result the congress veered its course from state action to federal, on the theory that while the root of a good deal of the evil in mine taxation may be local the first remedy lies largely in the federal government.

So the congress after resolving that the load of federal expenditures be greatly reduced, realigned itself for future taxation activity. A committee is to be appointed made up of at least one well-informed representative in each mining territory to act with the division of taxation so as to better maintain the congress' contact with tax matters everywhere, and the division is to proceed with the collection of a comprehensive library on the subject, to be maintained at Washington headquarters. Already a bibliography has been compiled by McK. W. Kriegh, chief of the tax division, which will be used as a basis for the building of the library.

The congress considered it a healthy sign of federal right-mindedness that two government officials were sent to the tax conferences to encourage better co-operation between mine owners and Washington. E. H. Batson, deputy commissioner in charge of the income tax unit of the U. S. Bureau of Internal Revenue, was one of these. He explained in detail and clearly some of the problems his unit meets and which previously have puzzled many mine men. He showed how the bureau slowly had built up a working system which at last is able to cope with the involutions of mine taxation and said that by 1923 the government will have cleaned up all of the excess profits tax cases. Mr. Kriegh said this would release approximately $200,000,000 capital now tied up. This release, he declared, would prove a great boon to the mining industry. The second government tax official present was Albert H. Fay, chief of the natural resources division of the Bureau of Internal Revenue.

Mining Classified as a Going Business

Carmi Thompson, of Cleveland, an iron-ore operator, who is candidate for Governor of Ohio, paid high tribute to Mr. Fay.

"Mr. Fay does all that a good man in his position can," said Mr. Thompson, "but he is handicapped by an unfair law—a law that is unfair because it classifies mining as a going business when it really is a liquidating one. The more successful the mining operation, the faster it liquidates."

At the Monday taxation conference, which opened the tax program at the convention, reports on various state tax methods were read and discussed. The central unit of the congress' tax committee reported its inability to recommend any uniform system of mine taxation for the whole country because of the wide variations of method now in use by states. But it suggested that a uniform general system be worked out to include the taxation of mines. The tax interweaving of mining and other properties is such that separation is out of the question. The committee declared that the immediate need of tax remedy is great, remarking incidentally that there is much underestimating of the amount of taxes paid by mines, and that the industry suffers by reason of such estimates. It suggested that while it is difficult now to combat such errors made in defence of high mine tax rates, a library of tax information such as the congress contemplates creating should end this embarrassment.

Hammering home the idea that the present rather chaotic condition of mine-tax matters is expensive to the industry, an estimate was made that the 18,000 mining companies of the country paid out more than $2,000,000 to prepare and make their income and capital stock tax returns in 1921 and that adjustments cost the companies a total of approximately $23,000,000 more, bringing the total cost to at least $25,000,000 for that one year. The remaining sessions of the conference were intended to bring out possible remedies for the tax situation, so that this cost could be reduced.

Paul Armitage, of New York, who presided at most of the tax conferences, on Tuesday read an exhaustive paper on "Distributions from the Depletion Reserve Under the Federal Tax Laws," elucidating the laws on the subject passed since 1913 and now controlling. He remarked that there still is some doubt as to whether a quota of the capital invested in mines must be debited against annual profits to calculate net profits, but that this is not vital because since 1916 the government income tax laws make complete allowance for depletion. There is so much difference of opinion, however, over methods to be used in arriving at the proper annual allowance for depletion that Mr. Armitage suggested a committee of the Mining Congress take up the question with the U. S. Commissioner of Internal Revenue and the Division of Natural Resources. R. V. Norris, a well-known mining engineer of Wilkes-Barre, Pa., presented a discussion on the valuation of mine properties.

Progress in Mine Accounting Methods

At the same session T. O. McGrath, of Bisbee, Ariz., a recognized authority on mine accounting, presented a progress report of his committee on mine accounting methods in relation to federal taxes, and W. R. Ingalls, of New York, addressed the conference on "Mine Taxation in Louisiana." Mr. McGrath's committee held that since the mining industry has never standardized its accounting and costing methods, it was only natural that the Treasury Department go ahead and crystallize its regulations whether the mine men agree with them or not; so the committee recommended that uniformity be arrived at within the industry. On Wednesday George E. Holmes, of New York City, author of "Holmes—Federal Taxes" and chairman of the congress' special committee on state taxation, spoke on "Invested Capital of Mining Corporations." Robert N. Miller, a former solicitor of internal revenue for the Treasury Department, explained a series of special and significant cases under recent revenue acts and Mr. Kriegh, of the congress' tax division, clarified many points on proper procedure in effecting settlements and compromises with the Commissioner of Internal Revenue.

The following resolution on state taxation was introduced by the tax conference:

Resolved that the report of the special committee on state taxation be accepted as read at this conference and that the thanks of the American Mining Congress be extended to the members of said committee and to those who co-operated with them.

Further resolved that since it seems impossible to obtain uniformity in mine taxation until such time as the various states agree to uniformity in the principles of general property taxation, the subject of improvement in methods of local taxation of mines be referred to the tax committees of the several chapters of the American Mining Congress.

Further resolved that subjects of general interest in mine taxation be referred to the standing tax committee, with power to confer with and aid the tax committees of the several chapters; and

Be it further resolved that a general tax committee be created to be composed of one member from each state, to co-operate with the standing tax committee of the American Mining Congress on all matters of general interest in taxation. The members and officers of the standing tax committee of the national organization shall be ex-officio members and officers of such general committee; and

Resolved that the Board of Governors of the several divisions appoint at this session, or as soon thereafter as practicable, from each state within their jurisdiction, one man to be a member of such general tax committee, and that where a state is beyond the jurisdiction of the Board of Governors the standing tax committee be authorized to select from each of such states one man to act on such general committee.



Problems of Operating Men

Edited by James T. Beard



Regarding the Use of Booster Fans in Mines

Instances Where the Use of Booster Fans Becomes a Necessity—Other Cases the Result of Bad Management —Need of an Efficient Mine Superintendent or Manager

FROM time to time there have appeared, in *Coal Age*, numerous references to the use of booster fans for conveying the ventilation in certain mines. In offering the following remarks, it is not my desire to refute the claims that have been advanced as to the advantage gained by the installation of such a fan in any particular mine.

Undoubtedly, there are instances where it becomes necessary to set up a small blower or booster, in a portion of a mine that is about to be abandoned, and where it is impracticable to incur any unnecessary expense to improve the ventilation in that section. But, the air being bad, it is realized that something must be done to improve the condition where the men must work for a time longer.

While this is true in a few cases, it appears there are many instances where booster fans have been installed as a supplementary unit, in providing the required circulation of air in the mine. My observation and experience warrants me in saying that all such cases are solely the result of bad management.

Proper Plan and Management Will Obviate Need of Boosters

In my opinion, if a mine is properly laid out and its air-courses and passageways ordered, cleaned and kept free of all obstructions to the flow of air, no occasion will arise calling for the installation of a booster fan in order to maintain the required amount of air in the working places.

Whenever a booster is found up at some point back of a mine, it is safe to say that the possibilities are there of some foul atmosphere. The mine may be an old operation that has been around for fifteen or twenty years and has been in charge of, perhaps, two or twelve different foremen, many of whom have taken little interest in keeping up the mine with an eye to its future development.

Some of these foremen may not have anticipated staying in the place longer than to give them an opportunity to secure a position elsewhere. In every case, it is easy to imagine that the mine would be allowed to get into bad shape in a short time, because nothing is done to prevent it.

The chief desire of a temporary foreman of this kind is to keep a low cost-sheet and put out cheap coal. In order to do that, he allows dirt to accumulate on the roads; falls of roof in the air-courses go unheeded; timbering of entries is neglected and complaints of bad air in the working places are frequent.

Under these conditions, there is sure to be evidence of bad management everywhere throughout the mine. This will continue until affairs take a turn and the officials wake up to the idea that a change of foremen is necessary. It is wholly to the advantage of a coal company to employ an efficient and reliable foreman—one whom they can retain in permanent charge of the mine.

Business Foremen Needed

If a business man of intelligence and experience is needed in any position in a coal operation, it is in the position of mine foreman. Personally, I have seen much money wasted through careless and indifferent management on the part of the foreman in charge. For one reason or another, foremen are often prone to retain more men than they require and, yet, the mine is not kept in the best working condition.

No foreman is efficient unless he keeps the mine in his charge in good working condition at all times and plans the work with a view to the future development of the property. As the workings of a mine are extended, the foreman must be able to provide separate air splits that will insure good ventilation at the working faces. To do this, he must have a thorough knowledge of the theory and practice of ventilation.

Inefficiency Quickly Shown

As may be inferred from my previous remarks, inefficiency on the part of a foreman in charge of a mine will show itself quickly through the bad results obtained in its operation. This may not appear in a day, or a month. In some cases, it may require a year or more to prove the inefficiency of a mine foreman, unless the management are keen observers and have a thorough knowledge of the practical operation of the mine, and the needs of its future development.

The shrinkage of output and the daily mounting of the cost-sheet are, of course, warnings of breakers ahead; but, often, present fears are allayed by the plausible excuses of the mine foreman. It is then up to the management to form their own independent opinions, and determine whether the fault lies with the foreman, or that the condition is unavoidable.

In closing, let me say that dirty tracks, falls of roof blocking the air-courses, accumulation of water at the working faces, or on the main haulage roads, cannot be explained away by excuses, provided the foreman has the means at hand for doing the work required.

O. Kennett,
Mine Foreman.

Hillside, Ky.

Relation of Foremen and Miners

Need of training all miners to have confidence in themselves—Two types of mine foremen—Two types of miners.

READING the article "Gaining the Confidence of Men," by G. W. Breeden, *Coal Age*, Aug. 24, p. 290, it occurred to me that it would be a good idea to inspire our miners to have more confidence in themselves, and rely more on their own judgment in the placing of their shots and the standing of their timbers. Teach them to take proper care of their working places, and not to depend on the foreman to tell them how and when to do these things.

In my opinion, it is a good thing for a miner to confer with his boss when he visits his place, and ask for his ideas in regard to standing timbers under dangerous top. But a miner should never wait for him to point out where timbers should be stood to make the place safe.

Train Miners to Independence

Miners should be trained to be careful and watch for any dangerous conditions that may appear. Then, without waiting for the boss to tell them what to do, the man should proceed at once to make himself safe.

It seems to me that the efficiency of miners who stand timbers only when and where the foreman says, or depend on him to arrange their shots, cannot be estimated very highly. It is all right for a miner to have the utmost confidence in his foreman's judgment, in regard to standing timbers and arranging and charging shots; but every miner should be trained to take care of himself without being told to do so.

The foreman should be a man of experience, whose judgment can be re-

lied on in almost any emergency arising in connection with the mine work; but that does not signify that he should know where timbers are needed in a working place any better than the old experienced miner who works there every day.

Training a miner to depend on his foreman to tell him what things he must do to keep his place safe has a tendency to cause him to loose confidence in himself in that respect. A miner who has no confidence in his own ability to stand timbers and arrange his shots in working his place is worthless as a mine worker.

Type of Foreman on Whom Miners Learn to Depend

Competency and ability on the part of the foreman to fill the position he holds and honesty in dealings with his men will gain their abiding confidence. Consider two foremen, for example: Of one it can be said, he is a kind and pleasant fellow; but he does not know anything about practical mining. Can you rely on his judgment, or on anything he may say regarding the work? He is ready to make promises, and just as ready to forget them. Such a foreman cannot gain or long retain the confidence of his men.

Of the other foreman it can be said, he is rather an unsocial man, or distant in his manner; but when it comes to business you can rely on what he says. His word is as good as his bond. He talks but little, but means all he says. His judgment about the work is good; and he gives it when and where it is needed. Miners will have confidence in such a foreman, though he may be close and strict in his dealings with them—friendly but never intimate.

Two Types of Miners Compared

In a certain coal mine, there are two miners employed. One of these is not skilled in his profession, although he has been in the mines for years. He is incompetent to do work where care and the exercise of good judgment are required. The other miner has not been in the mines many years, and yet he is skilled and competent to do any kind of work pertaining to the mine. He is a good workman.

If in a section of this mine there is a dangerous and difficult piece of timbering to be done, which of these men will the foreman choose for the work? Will he select the miner first named? Can he have confidence in his judgment and ability to perform such work? The answer is, No!

Some miners profess great friendship and respect for their foreman as long as they are shown special favors; but when there are no favors coming, their regard for him wanes. The better element of miners, however, have confidence in the foreman who is honest and capable; and who, in a business way, looks after the welfare, interest and safety of all and treats all his men with equal fairness in his dealings. A foreman who sacrifices honor and principle to gain the favor and confidence of a few of his men will soon lose the respect and confidence of the better and more intelligent element.

Practice of the Golden Rule the Key to Mutual Confidence

In the article previously mentioned, Mr. Breeden says in substance that his experience as mine foreman has taught him to treat his men as he would have them treat him under similar circumstances. Let me add, the practice of that principle is the key that will unlock the door to a mutual and abiding confidence between men and officials. The hope of industrial peace is to be found in the practice of the Golden Rule.

John Rose,
Former State Mine Inspector.
Dayton, Tenn.

Longwall Retreating in the Panel System

Butt headings driven up the pitch—Panels worked out by the retreating method of mining.

REFERRING to my previous letter, describing a method of handling a fire situation in a longwall mine, *Coal Age*, Aug. 17, p. 248, it appears I did not make myself clear in regard to the method of working out the panel.

Starting on the main headings, each panel is worked by driving three pairs of butt headings directly up the pitch. Each pair of headings was driven on 50-ft. centers, leaving 245 ft. of solid coal on each side of each pair of butts. It is stated that these pillars were to be worked out on the longwall retreating system. In my opinion, the area within the panel could not be worked on the retreating system, until other developments had been driven to the outer edge of the panel area.

My idea was to drive longwall advancing faces across the pitch, starting left and right from the butt entries and leaving the necessary gateways for switches, at suitable intervals, on each pair of butts.

Thomas Allen.
Mine Rescue Station,
Mt. Harris, Colo.

[It is difficult to understand how working out a panel, by extending a longwall advancing face across the pitch, to the right and left of each pair of butt headings within the panel, would eliminate the danger of fire due to heating of gob areas. It was not so stated in the description given by this correspondent, in his previous letter.

The purpose and aim of the previous letter was, evidently, as there stated, to overcome the danger of the heating of the gob by reason of the mixture of the fine coal, slack and clay cuttings formed in mining the coal. It should be apparent that there is more danger in employing the advancing system of longwall, in working out the panel, than by driving the butt headings up to the barrier pillar, at the top of the panel, and then working back the pillars on the retreating system.

By the retreating method, it is clear there are no gob areas to be left between the working face and the gangway, as in the advancing system. The retreating method of working out the panel wholly eliminates this condition and overcomes the danger due to the heating of the gob, which was understood to be the plan suggested by this correspondent.—Editor.]

Firing Shots from Surface After Men Have Left Mine

System of long standing still in use—All shots fired from the surface by electricity—Current taken from the generator in the power house.

IT WAS with much interest and pleasure that I read the recent reference to the custom of firing all shots from the surface after the men have left the mine, which has been in use at the Dawson mine, on the Stag Canon Branch, of the Phelps Dodge Corporation.

Permit me to say that this system, which has been in vogue for a long time at this mine, is still in use alhougth the firing, now, is not done by battery; but the current is taken from the generator in the power house. As the mine was extended, this change was found to be necessary, in order to provide a stronger current than could be obtained from the hand battery first used. Notice of the continued use of this system at this time I thought would be of interest to readers. The fact of the practice being of long standing is evidence in itself of the satisfaction it has given.

Chief Advantage Gained by Firing Shots From the Surface

It is unnecessary to refer to the chief advantage derived by the adoption of this method of firing shots in the mine, by which all accidents to men and to shotfirers are eliminated. As has been stated, the use of permissible explosives, in place of black powder, practically eliminates the danger of fire being started by the shooting.

However, as a further precaution, fire runners should enter and examine the mine to see that no such danger exists, shortly after the shots have been fired. Time must be given, only, for the air current to sweep away the gases produced by the shots.

W. F. Murray,
Dawson, N. M. Safety Engineer.

Charging Holes With Steel-Headed Tamping Bars

Steel tamping bars dangerous under any conditions—Danger greatly increased if coal contains sulphur—Charging a hole with loose powder a dangerous practice—Tamp all holes with clay

READING a recent reference to the blasting of coal in mines, in respect to the dangers attending that work, I am reminded of one or two dangerous practices to which, I believe, attention has not as yet been drawn.

The first point I would mention, in this connection, is the use of steel-headed tamping bars. In spite of all

that has been said, the practice has grown to a considerable extent in this district. It would seem that, for their own safety, miners would discontinue the use of such bars and employ wooden ones instead.

In our mines the coal contains much sulphur, both in the form of sulphur balls and streaks of sulphur. This makes the use of steel bars for tamping shots all the more dangerous and should be a warning to mine officials and miners that such bars should be discarded.

Drilling a Sulphur Ball

When a miner, in drilling a hole, strikes a sulphur ball he makes every effort to pass the obstruction, if possible. At times, this results in deflecting the drill and produces a slight curve in the hole; but, in any event, the sulphur ball remains exposed at the side of the hole.

Now, if such a hole is tamped with a steel bar or a bar with a steel head, there is every chance of a spark being struck when the bar comes in contact with the sulphur ball. The probable result is an explosion of the charge in the hole and the injury or death of the miner. Such accidents are common in our mines, although they are wholly avoidable if proper precautions are taken and steel tamping bars prohibited.

Again, this coal contains many small streaks of sulphur so that the auger is drilling in sulphur, more or less, the full length of the hole. For that reason, the danger of striking a spark when tamping the hole with a steel bar is all the greater.

Drilling with a Worn Bit

Incidentally, let me refer here to the increased danger when a miner resorts to another dangerous practice. It often happens that his auger has become so worn that the diameter of the hole is too small to allow the cartridge to be pushed safely to the bottom of the hole.

In that event, what does the miner do? Nine out of ten, perhaps ninety-nine out of a hundred, will open the cartridge and proceed to pour it as best one can into the hole, at the same time pushing it back to the bottom of the hole with the tamping bar. Then, it is a miracle if the man escapes the terrible results of the chances he is taking.

Now considering these dangers, so common in blasting coal, every mining man will agree that the charging of a hole with loose powder and the use of a steel-headed tamping bar should be absolutely prohibited by the mine rules and regulations, regardless of whether the same are forbidden by the mining laws of the state.

Allow me to suggest that every coal operator should keep on hand, in their supply houses, tamping bars with copper or babbitt heads and sell the same to those miners who are not previously equipped with such bars. It should be an invariable rule that no miner will be permitted to use another kind of bar, excepting it be a wooden one.

In my opinion, it should be the duty of the district mine inspector, in making his rounds of the working places when inspecting a mine, to see that the miner is supplied with a suitable tamping bar. He should urge that these be kept on hand in the supply house, and sold to any miner who is not already supplied. The bars should be sold to the miner at cost, with freight charges added.

In the same connection, let me suggest that coal companies should supply their miners with clay or other incombustible material for tamping their shots. This will go far to obviate the use of fine coal dust and slack for that purpose, which is too often the practice of miners where other material is not at hand.

It is hardly necessary to repeat what has been so often urged in *Coal Age*, that competent shotfirers should be employed whose duties it would be to examine, charge and fire all shots in the mine, except such shots as are, in their judgment, for any reason unsafe.

Every miner should be instructed to remove the fine coal cuttings, after drilling a hole in his place. In most cases, arrangements should be made for taking these cuttings out of the mine. Where dustproof cars are in use, the cuttings can be loaded out with the coal.

In closing, let me say that when these and a few other precautions necessary for safety are followed by miners and the officials in charge of the mine, we shall see a gradually decreasing percentage of mine accidents. What is needed is the strict enforcement of rules for safety.

OSCAR H. JONES,
Wilder, Tenn. Fentress Coal Co.

Inquiries Of General Interest

When To Install a Booster Fan

Conditions That Make It Advisable to Install a Booster in a Mine—Such a Fan Only to Be Regarded As a Makeshift —Dangers Incident to the Installation of a Booster Fan

KINDLY permit me to ask, through the columns of *Coal Age*, for a little information regarding the installation of booster fans in mines. I am desirous of learning the advantages and disadvantages of installing such a fan.

Owing to the increasing difficulty of ventilating the workings in our mine, we have had before us the proposition of installing a booster fan at some advantageous point in the mine. The seam of coal we are working has an inclination equal to a grade of 25 per cent. The slope has reached a depth of 6,000 ft. The coal is being worked out on the room-and-pillar system.

If it is practicable to install a booster fan, I would like to know at what point in the mine it should be placed. Also, how can I ascertain if the return airway is of sufficient size to carry the increased volume of air desired. It is important to know this before attempting to make the installation.

MINE MANAGER.
Kemmerer, Wyoming.

It is strange that this question, regarding the advisability of installing a booster fan in a mine, is so often asked when there is but one answer to be given. The installation of a booster fan should never be considered by a mine management if it is to be operated as a unit of the ventilating system. It should be understood that the office of a booster, in any event, is only intermediary. It cannot act to materially increase the circulation throughout a mine. Its effect is only local, the fan acting to draw the air from the main current and send it coursing through a section of the mine where the ventilation is slack owing to leakage of stoppings back on the road.

There are conditions that arise from time to time, however, when the ventilation has become poor, in a section of a mine that is nearing completion and about to be abandoned. In order to improve the circulation in this portion of the mine it would be necessary to go to considerable expense in the repairing of old leaky stoppings. To avoid this expense and yet improve the circulation of air in the section, recourse is often had to the installation of a booster fan and this is placed near the mouth of the intake airway, in that section.

The great disadvantage of making this installation is the constant watch and care required to see that the fan is kept running. A booster is commonly operated by a small electric motor, which is dependent on the power supplied to it through a conductor. A fall of roof breaking the wire will put the fan out of commission; or any neglect on the part of the attendant whose duty it is to look after the fan will have its effect to reduce the circulation in the section it is supposed to ventilate.

The trouble may occur after the fireboss has examined the section and before the men enter for work, with the result that gas may have accumulated

in dangerous quantities in the working faces. Therefore, at the best, a booster fan should only be regarded as a makeshift, for the purpose of avoiding expensive repairs in a portion of the mine that is about finished.

It is unnecessary to dwell further on the dangers that follow in the wake of installing a booster fan at any important point in the mine. In case of an explosion in the mine, such a fan is of little or no assistance to the rescuers who would enter the mine. The sparking of the motor is an added danger, in a mine generating gas. It is a safe general rule never to place any ventilating apparatus at any other point than on the surface where it will be subject to constant supervision and accessible at all times.

Examination Questions Answered

Indiana Mine Bosses' Examination, Indianapolis, 1922

(*Selected Questions*)

QUESTION—*Give five causes of accidents that occur on haulageways, and state the method to prevent them.*

ANSWER—1. Accidents to persons walking the road and being caught by a car or trip. 2. Accidents due to men and boys riding on loaded trips, contrary to the regulations of the mine. 3. Accidents to motormen and trip-riders when cars are derailed, causing a wreck. 4. Accidents due to cars standing on a room switch where the track is supposed to be clear for the motorman. 5. Collision of cars by reason of faulty schedules, or disobedience of orders by motormen and drivers.

To prevent these accidents from occurring: 1. Provide ample clearing space on one side of the track and refuge holes at short distances apart, kept whitewashed and free from all obstructions. Every trip should have a warning gong or other means of telling the approach of danger. 2. Enforce strict regulations in regard to persons riding loaded trips, and provide suitable penalties for violation of the rules. 3. Keep all haulage roads, tracks and switches in good condition, and establish a maximum speed for motormen hauling cars and trips. 4. Allow no cars to be left standing at the mouths of rooms, unless they are securely blocked to prevent their running out onto the main road. 5. Have a good schedule for the running of cars or trips and enforce strict regulations regarding the maximum speed of hauling.

QUESTION—*Give five safety precautions that a miner should observe on going to his working place at the face.*

ANSWER—1. A miner should enter his place with caution, observing carefully the condition of the roof and timbers as he proceeds. 2. If he has brought his powder with him, on coming into the mine, he must first put it in a safe place before proceeding. 3. He should look for the mark left by the fireboss, showing that the place has been examined and found safe. 4. Unless the mine is known to be free from gas, every miner should make a test to ascertain that no gas is present at the roof or in cavities where it might lodge. 5. Before starting to load his coal, the miner must set any timbers that may have been discharged by shots the night before.

QUESTION—(*a*) *What is the law respecting air measurement in the mine?* (*b*) *What advantage is such a measurement?*

ANSWER—(a) The Indiana Mine Law (Chap. 258, Sec. 11) requires the mine boss to measure the air current, at least once a week, at the inlet and outlet of the mine and at or near the face of all entries; and keep a record of such measurements in a book provided for that purpose, said book to be open for the inspection of the inspector of mines. He must also, on or about the first day of each month, mail to the inspector a true copy of the air measurements taken, stating the number of persons employed, the number of mules and horses, and number of days worked in each month. Separate air splits must be provided for each fifty persons at work in the mine; and the law authorizes the inspector to require a separate air split for a less number of persons if, in his judgment, conditions make it necessary; and to require that any desired changes for the improvement of the ventilation be made within a reasonable time; or he may withdraw the men if this is not done.

The law has the advantage that the measurements taken at the points designated show how much of the air current reaches the working faces; and, by limiting the number of men working on a single air split, the law provides a safeguard against too high a velocity of the air sweeping the working faces.

QUESTION—*What are the causes of dust explosions in a mine, and what is the best known method to prevent them?*

ANSWER—The chief causes of dust explosions are: The excessive use of powder in blasting the coal; failure to remove the fine cuttings in machine mining; neglect to clean up roads and air-courses and remove accumulations of dust in the working places. To prevent these occurrences, permissible powder should be used and the blasting performed by competent shotfirers. No accumulations of dust should be permitted at the working faces throughout the mine. Roadways and air-courses should be cleaned, at regular short intervals, and an effective spraying system installed in dusty mines where the coal is highly inflammable.

QUESTION—*In what way would you provide for the protection of your men from falling roof?*

ANSWER—Frequent careful inspection of the working places, by the foreman, assistant foreman, safety inspectors and firebosses; and the enforcement of strict rules and regulations regarding the setting of timber in working places, will go far toward protecting the men from roof falls at the working face. Particular attention must be given to the work of drawing pillars. All workers must be carefully instructed in respect to making themselves safe. In addition, an ample supply of suitable timber must be kept in all working places, ready to use when needed. The most effective safety device known, however, is a careful man.

QUESTION—*What is the best and safest way to detect the condition of the roof?*

ANSWER—Besides the usual method of sounding the roof with a pick, holding one hand against the roof while striking the blow, to detect any tremor or hollow sound that would indicate an unsafe condition, it is important to make thorough inspection to see if any slips or fault lines are present. If these are found they must be carefully studied and means taken to avoid accidents therefrom.

QUESTION—*What is the danger arising from working a mine adjoining an abandoned mine?*

ANSWER—The abandoned workings may contain accumulations of water or gas that would flood the live workings and endanger the men should a place break into the old works. In order to minimize this danger drillholes must be kept in advance of the faces of all places approaching old workings that have been abandoned. No reliance should be placed on the accuracy of surveys of such mines.

QUESTION—*Give method of procedure in case an explosion occurred in a mine of which you had charge, and the ventilating devices have been injured and men must be rescued.*

ANSWER—Call for volunteers and select the most experienced men to form rescue parties. Make such temporary repairs as are necessary to restore the ventilating current. The rescuers, equipped with safety lamps and wearing breathing apparatus, if such is available, must enter the mine with the air and proceed with caution, making only such repairs as may be necessary to restore the current. Send at once for physicians and other assistants.

British Household Coal Prices Now 63 Per Cent Higher Than Before War

[illegible] household coal prices of those qualities of coal most largely used by the bulk of householders in Great Britain is considerably less than one-half of the total, as shown in the following table:

	s.	d.
[illegible]	19	0
[illegible]	5	8
[illegible]	2	0
[illegible]	12	8
[illegible]	10	6

The distribution charge includes trades' and rate notes' wages, lorries expenses, carts, riding costs, salaries and establishment charges and profits.

Doubt Brights are sold at an additional shilling per ton, the pit-head price being a shilling more than that of the fuel previously mentioned. In 1913 the pit-head price of this fuel was 11s., railway rate and wagon hire amounted to 7s. 4d., and distribution charges 6s. 8d., the total making 25s. The present price is thus about 63 per cent above pre-war quotations.

Kentuckians to Consider Mine Problems

Under the leadership of A. G. Spillman, general superintendent of the St. Bernard Mining Co., Earlington, Ky., their president, the Kentucky Mining Institute will assemble, Nov. 3 and 4, at the Seelbach Hotel, Louisville, Ky., to discuss mining problems with special reference to the needs of their industry at the mines of their state.

Two committees will report, one on the preparation of coal and the other on coal mining machinery, the latter being presented on behalf of the committee by Alphonse F. Bruley, [illegible] editor of *Coal Age*. This will occupy the first session, opening at 10:30 a.m. The second session, at 1:30 p.m. of the same day, will hear papers, one by Graham Bright, chief general engineer of the Westinghouse Electric & Manufacturing Co., of Pittsburgh, Pa., on "Gathering Locomotives for Coal Mines;" another by C. D. Franks, district engineer of the Portland Cement Association, on "What Good Roads Mean to Mining Districts," and a third by J. M. Dewberry, general coal and coke agent of the Louisville & Nashville R.R., Louisville, Ky., on "Present Coal Traffic Problems and Prospects for the Future."

The same evening at 8 o'clock a smoker will be held at which the subject to be discussed will be: "How to Make an Operators' Association of Most Value." In this discussion the following are scheduled to discuss the problem: R. A. Hunt, secretary, Bazard Coal Operators' Exchange, Lexington, Ky.; R. E. Clayton, secretary, Harlan County Coal Operators' Association, Harlan, Ky.; J. E. McCoy, secretary, Southern Appalachian Coal Operators' Association, Knoxville, Tenn.; J. E. Butler, general manager, Stearns Coal & Lumber Co., Stearns, Ky.; C. F. Richardson, president, West Kentucky Coal Co., Sturgis, Ky.; R. C. Tway, president, R. C. Tway Coal Co., Louisville, Ky.; Munro B. Lanier, president, Munro-Warriner Coal & Coke Co., Birmingham, Ala.; C. S. Nield, general manager, Pioneer Coal Co., Kettle Island, Bell County, Ky.; K. A. Mequire, president, the Harlan Coal Co., Louisville, Ky.; Harry E. Bullock, president, Carrs Fork Coal Co., Lexington, Ky.; Frank D. Rash, president, St. Bernard Mining Co., Earlington, Ky.; F. P. Wright, general manager, Crescent Coal Co., Bevier, Ky.; James D. Overall, general manager, Reinecke Coal Mining Co., Madisonville, Ky.; C. J. Norwood, University of Kentucky, Lexington, Ky., R. Dawson Hall, Engineering Editor, *Coal Age*, New York City.

On Saturday a business session will be held at 9 p.m., after which the meeting will be adjourned.

Cliftonville Case Involves 218 Union Men 71 Charged with Murder

Two hundred and eighteen union miners were placed on trial at Wellsburg, county seat of Brooke County, W. Va., on Oct. 9, charged with complicity in the death of Sheriff H. H. Duvall, of Brooke County, who was killed while repelling an attack on the Cliftonville mine of the Richland Coal Co., on July 17. Seventy-one of the defendants are charged with first-degree murder. The indictments range from murder to conspiracy, burning of property and assault. As many as half a dozen indictments are pending against some of the defendants, all of whom, it has been announced, will be prosecuted to the full extent of the law.

Prosecuting Attorney W. S. Wilkins of Brooke County will be assisted by John J. Coniff and J. B. Handlan, of Wheeling. Charles J. Shuck resigned as Assistant District Attorney to engage in the case as counsel for the defendants, and has associated with him D. A. McKee, formerly prosecuting Attorney of Ohio County; F. A. O'Brien and M. J. Cullinan, all of Wheeling, and John D. Gardner, of Steubenville, who was once a miner. One of the most interesting phases of the case is that John J. Coniff, who was the principal attorney for the defendants in the Matewan case, will act as one of the principal attorneys for the state in the Cliftonville case.

Martial Law Lifted in Mingo County

Martial law, established in Mingo County, West Virgina, June 27, 1921, more than fifteen months ago, after a series of outbreaks, which resulted in several deaths and the destruction of considerable property, was raised Oct. 7 by Governor Morgan. Peace has been restored along the Tug River, where war between union and non-union miners spread terror and resulted in the intervention of federal troops.

Preliminary Statistics of Production of Coal in Indiana in 1921

(Exclusive of product of wagon mines)

County	Loaded at Mines for Shipment (Net Tons)	Sold to Local Trade and used by Employees (Net Tons)	Used at Mines for Power, Steam and Heat (Net Tons)	Made into Coke at Mines (Net Tons)	Total Quantity (Net Tons)	Total Value	Average Value per Ton	Number of Employees—Underground—Miners, Loaders etc. (a)	Number of Employees—Underground—All Others	Number of Employees—Surface	Number of Employees—Total	Average Days Worked
[illegible]	[illegible]	12,287	[illegible]		547,480	$1,275,000	$2 33	685	317	382	1,384	84
[illegible]	[illegible]	[illegible]	[illegible]		9,144	26,000	2 84	10	3	3	16	222
[illegible]	[illegible]	[illegible]	[illegible]		271,104	614,000	2 26	284	103	50	437	140
[illegible]	[illegible]	[illegible]			2,527	8,000	3 16	11	..	..	11	145
[illegible]	[illegible]	[illegible]	[illegible]		658,127	1,716,000	2 61	591	331	112	1,034	147
[illegible]	[illegible]	[illegible]	[illegible]		1,485,479	4,632,000	2 46	1,828	764	475	3,067	109
[illegible]	[illegible]	[illegible]	[illegible]		2,736,111	7,083,000	2 59	2,430	877	391	3,698	135
[illegible]	[illegible]	[illegible]	[illegible]		77,345	206,000	2 66	12	..	82	94	121
[illegible]	[illegible]	[illegible]	[illegible]		28,249	76,000	2 69	85	43	17	145	71
[illegible]	[illegible]	[illegible]			8,064	27,000	3 35	21	4	2	27	150
[illegible]	[illegible]	[illegible]	[illegible]		1,035,469	2,858,000	2 76	1,069	468	270	1,807	102
[illegible]	[illegible]	[illegible]	[illegible]		7,472	18,000	2 41	18	4	6	28	111
[illegible]	[illegible]	[illegible]	[illegible]		1,418,435	8,480,000	2 48	2,973	1,560	584	5,117	135
[illegible]	[illegible]	[illegible]	[illegible]		224,665	604,000	2 69	297	79	28	404	185
[illegible]	[illegible]	[illegible]	[illegible]		2,185,886	5,564,000	2 55	2,528	1,099	380	4,007	116
[illegible]	[illegible]	[illegible]	[illegible]		6,304,245	16,794,000	2 64	6,552	2,514	709	9,775	140
[illegible]	[illegible]	[illegible]	[illegible]		858,707	2,288,000	2 66	1,078	294	264	1,636	118
Totals	[illegible]	[illegible]	[illegible]		20,319,509	$52,269,000	$2 57	23,472	8,460	3,755	32,687	128

(a) Includes also drivers. Compiled by E. Moore, U. S. Geological Survey, Oct. 7, 1922.

New England in Fair Way To Escape Domestic Coal Shortage

Warm Weather, Cellar Stocks and Plenitude of Substitutes Reassure—Massachusetts Takes Steps to Safeguard Supply—Goodly Share of Anthracite Shipments Goes Down East



New England has made strenuous efforts to avert a domestic coal shortage before the advent of coal-burning weather. Despite all the warnings of an impending famine, there are several encouraging factors in the situation in that section which indicate that household consumers may "get by" with a minimum of inconvenience this winter.

Unseasonably warm weather has delayed the lighting of furnaces. This has proved a welcome respite to retail dealers and has enabled shippers to spread a thin veil of anthracite over the territory as a bulwark against the insistent demands which will come with the first cold snap. More coal went into cellars just prior to the anthracite suspension than has been generally realized. New England got a fair proportion, at least, of the mine storage stocks that were moved during April, May and June. Substitute fuel is plentiful; little has been distributed at retail, but it will be available when wanted. Lastly, economy in fuel consumption can always be expected during a period of shortage with its attendant high prices.

Conditions in Massachusetts are typical of New England as a whole. That state, through its Fuel Committee, is taking active steps to safeguard the fuel supply and protect its citizens from extortion. In urging upon the Federal Fuel Distributor, at Washington, the necessity for adequate supply and reasonable prices, James J. Phelan, Massachusetts Emergency Fuel Distributor, describes the situation in that state as follows:



UNLOADING BRITISH STEAMER AT MYSTIC WHARF, BOSTON

During fuel emergency New England railroads and industries have been heavy takers of British coal, straining unloading facilities and congesting our harbors with boats awaiting their turn at the wharves.

"Bituminous reserve stocks for industrial purposes are not in excess of the line of safety, considering our remoteness from the mines. Anthracite deliveries by dealers to householders so far this season, commencing April 1, are carefully estimated not to have exceeded 25 per cent of the total quantity customarily distributed by dealers to householders within the same period of time in normal years.

"In view of the fact that the people of New England and of Massachusetts have always used anthracite for their household needs, and we have this year lost five out of twelve months' anthracite production, it follows that our people will be unable to secure adequate anthracite supplies. We shall, therefore, be compelled to use considerable substitute fuel to take the place of, or mix with, such supplies as we may be able to secure.

Would Not Hesitate to Issue Embargoes

"I am glad to observe that you are exerting every effort to secure the fullest transportation services in order to provide the maximum quantities available as promptly as possible. I, therefore, trust that you will not hesitate, whenever the occasion requires, to issue embargoes, and establish priorities that shall maintain constant and equitable distribution between states. In this connection may I point out that in my order of Sept. 21 'all dealers and consumers receiving fuel in carload lots must unload such cars within the twenty-four hours following the receipt thereof. Every day saved in the use of coal cars should be a gain of several tons in production.

"There exists to-day a variation of approximately $4 a net ton in the mine prices being charged Massachusetts retail dealers above the costs prevailing last March for anthracite, resulting in increased costs to our householders. I can, and shall, control the gross margin which may be added by dealers to the cost of coal to them, in order to prevent extortion within the state, but it is obvious that the cost of coal at its sources is beyond my control. You will understand that our earnestness in this matter is based upon our desire that the federal and state governments shall fully co-operate in such a way as will secure to the citizens of Massachusetts the best results possible under the present difficult conditions."

New England is getting more than its fair share of current anthracite shipments, when the meager Western and Lake movements are considered. Requirements for the winter in Massachusetts are estimated at [illegible] tons. By Oct. 1 all-rail shipments of anthracite in this section were averaging 300 cars per day. The normal movement is 425 cars. If this movement and shipments by water can be maintained the estimated shortage of 1,000,000 tons will be reduced materially. However, this shortage will occur for the most part at the beginning of the season, therefore the main problem is to overcome this difficulty for perhaps 60 or 90 days, after which it is expected that the conditions will gradually become normal before the winter has ended.

Note—The headline shows a Black Hand "sentiment" seen near Providence.



BRITISH CARGO ON SCOTIC RIVER
[illegible] awaiting [illegible]

Consumers are not buying our bituminous coal as a substitute for anthracite. The high freight rates make that most prohibitive except as a last resort. The householder feels that this coal can be obtained in a pinch, but he will not buy it unless the pinch comes. A drive has been made on the domestic market by British sellers, in an endeavor to place some of their coal. Shippers offered "Welsh semi-anthracite" along the Eastern seaboard at prices that compared favorably with our own hard coal. Some few cargoes have moved in, but the amount distributed by retailers has been insignificant and little additional tonnage is now expected. New England railroads have been heavy takers of British commercial fuel. Many cargoes are in the harbors and others are still coming. This unusual flow of coal has been transported in a miscellaneous assortment of bottoms, many of them of a type that has caused delay at New England unloading machines. But despite much congestion the price has been kept at a level which still attracts the New England railroads, which are taking advantage of this opportunity to add to their reserves.

British Fuels, Though High Grade, Do Not Ship Well

British shippers also made an attempt to push their Admiralty Large for domestic purposes, but, like the Welsh semi-anthracite, this coal has not cut much of a figure in the domestic market. Both are high-grade fuels, but do not ship well. The New Englander has been so accustomed to the use of our clean and uniformly sized anthracite that the physical appearance alone of the British coal has been against its sale at retail. The following analyses were made from recent receipts in New England:

	Welsh Semi-Anthracite	Admiralty Large
Carbon	82 75	78 79
Volatile	11 45	14 09
Ash	1 95	5 38
Moisture	1 05	77
Sulphur	88	97
B.t.u.		14,810

Coke is finding a better market for domestic purposes than for years past. The present emergency also has produced a strong market for Rhode Island coal, which is being sold not only at points adjacent to the mines but is finding its way to more remote New England points. The public had lost much of its faith in this coal, partly because of its weight, which made it appear small in bulk when delivered, and partly because of its excessive ash content, but mainly because of the difficulty in kindling it. This coal is extremely variable in character and quality, ranging from anthracite to graphite and, unlike Pennsylvania anthracite, its high content of water necessitates a special drying process. During the last year or so extensive experiments have been made in preparing and firing this fuel, and at the present time one company at least is putting it on the market in sizes and condition that makes it an excellent substitute for Pennsylvania anthracite and at a price which is attractive. New methods of firing are necessary; the coal needs considerably more draft than other fuels, but once one becomes acquainted with its peculiarities it is said to be far more satisfactory as a domestic fuel than bituminous coal.

Anthracite receipts are making inroads on the shortage with every day's delay of cold weather. With the practice



BOSTON & MAINE R.R. TAKES MUCH BRITISH COAL
Unloading cargo directly into railroad cars, shown in foreground.

of economy and a plenitude of substitutes at hand when wanted, the worst that New England householders should experience this winter is the necessity of adapting themselves to the use of unfamiliar fuels. At that the substitute tonnage will not be large and its use will be confined to the early part of the season.



AWAITING CARS TO TAKE BRITISH CARGO
[illegible]

The U. S. Bureau of Mines, in co-operation with the U. S. Public Health Service and the Society of Heating and Ventilating Engineers, is engaged in a study of the relative importance and correct correlation of the many individual factors concerned in the problem of the physiological effect of different conditions of temperature humidity and air motion. A special room has been constructed for this purpose at the Pittsburgh station in which the air conditions are controlled by apparatus outside the chamber and entirely separate from it. A comprehensive program, which includes a quantitative study of a considerable number of bodily functions, is being carried out. The work has not yet been completed, but enough has been done to demonstrate the importance of determining the physiological reaction to environment as a measurement of the harmful effect of heat and humidity, and to show that feelings of discomfort as a standard of measurement cannot be depended upon because there is a certain adaptation of the sense organs to an unchanging environment, and individuals differ in their sense reactions.

Smokeless Operators Will Sell Domestic Sizes at $6; Spens to Probe Anthracite Prices Over $9.25

Prepared sizes of smokeless coal for domestic use will not be sold at a price in excess of $6 a ton, an agreement to that effect having been reached by the Federal Fuel Distributor and operators representing 80 per cent of the smokeless production. Fuel Distributor Spens gave out the results of the conference in the following prepared statement:

"The Federal Fuel Distributor had a conference on Oct. 14 with coal operators in the 'smokeless field' of West Virginia relative to coal prices. This field comprises the Pocahontas district, the New River district, the Winding Gulf district and the Tug River district, and the estimated total coal production in these four districts is 36,000,000 tons per annum. The operators that were present at the conference represent approximately 80 per cent of the commercial production.

"The maximum price f.o.b. mines on prepared sizes for household use that was observed by the operators, through co-operation with federal and state authorities, prior to cessation of the miners' strike, and at a time when the car supply in the 'smokeless field' practically equalled the demand, was $5.13 per ton, including sales agency's commission. With the settlement of the miners' strike in union coal districts the operators in the 'smokeless field' found it necessary to advance the wages in their mines materially, resulting in an estimated increased cost of production of the prepared sizes of approximately $1 per ton. In addition, with the ending of the strike, the car supply commenced to diminish, due to distribution of equipment that naturally had resulted from a wider distribution of this 'non-union' coal, the immediate demand for cars from 'union' mines, and the retarded transportation incident to the railway strike, until today the car supply in the 'smokeless field' is appreciably below currrent requirements and quite below the supply available at the time the former price was established.

Smokeless Coal Now Much in Demand

"The demand for 'smokeless' coal is very great, and since the termination of the miners' strike, at which time this understanding as to prices was cancelled, f.o.b. prices at the mines on domestic coals have ranged as high as $8.75 per ton plus 8 per cent sales agency's commission, or a total of $9.45 per ton. These operators, however, in appreciation of the present emergency and in a desire to co-operate with the federal government in the accomplishment of its purposes, indicated a willingness not to exceed a maximum price f.o.b. mines of $6 per ton on the prepared sizes of coal for domestic use, this price also to include the sales agency's commission. Therefore, effective at once, this will be the maximum price f.o.b. mines that wholesalers, retailers or other purchasers of these coals will be asked to pay.

"While, as stated, the entire production of the 'smokeless field' was not represented at the conference, we have been assured that the action taken by the very large majority will undoubtedly be followed by the remaining interests."

Conferences on the matter of coal prices are being arranged by the Federal Fuel Distributor with representatives of mine operators from each of the sixteen coal-producing districts east of the Mississippi River. Fuel Distributor Spens is giving attention also to the price situation in certain coal-producing states where it is reported that coal is being sold within the state at a certain maximum figure agreed upon with the state authorities while it is being marketed outside the state at figures in excess of this maximum.

Lieutenant-Colonel C. B. Hatch, U. S. Marine Corps, retired, has been designated with the permission of the Navy Department to act as the representative of the Federal Fuel Distributor on the fair practices committee of Pennsylvania, an organization which functions as a part of the Pennsylvania Fuel Commission and which is giving its especial attention to matters affecting the price and distribution of anthracite. Lieutenant-Colonel Hatch's residence is in Philadelphia. He succeeds E. M. Durham, Jr., who is resuming his duties with the U. S. Railroad Administration. Arrangements have been made for a conference between the federal distributor and a special committee of the National Coal Association, of which J. C. Brydon, of Baltimore, is chairman, to be held in Washington, Oct. 18, for the purpose of discussing matters relating particularly to transportation conditions and car shortages.

The following statement summarizing developments in the anthracite price situation was issued Monday night by the Federal Fuel Distributor:

"Approximately 75 per cent of Pennsylvania's anthracite is produced by the larger, or so-called 'company' operators. The balance is produced by the so-called 'independent' operators. On the 75 per cent production a price of $8.50 per ton f.o.b. mines, established by Pennsylvania state authorities prior to the creation of this office, applies to a maximum, although on a goodly percentage of the production prices ranging from $8 to $8.35 per ton have voluntarily been observed. On the remaining 25 per cent production prices range from $9.25 to as high as $14.25 per ton f.o.b. mines.

"The fair practices committee of Pennsylvania was appointed several weeks ago to investigate cost of the 'independent' production and to determine fair f.o.b. mine prices. The Federal Fuel Distributor is represented on this committee.

"This committee commenced to function about Oct. 1, and since that time, pending a more thorough investigation and final conclusions, 'independent' operators, representing approximately 20 per cent of the total production, have signified a willingness to observe a maximum price of $9.25 per ton f.o.b. mines, the prices theretofore on this production having ranged in some instances to as high as $10.50 per ton.

"In order that the fair practices committee may concentrate its efforts on the remaining approximately 5 per cent, on which production prices are today ranging as high in some cases as $14.50 per ton f.o.b. mines, the Pennsylvania Fuel Commission and the Federal Fuel Distributor have agreed as a temporary expedient to defer investigation of these independent operators whose prices will not exceed $9.25 per ton f.o.b. mines. The Fair Practices Committee have been advised by the Pennsylvania Fuel Commission and the Federal Fuel Distributor that their findings as to fair prices that should obtain for the 5 per cent production should be completed by not later than Oct. 31."

Jobbers' Commission, Neal Rules, Must Not Bring Coal Price Above Mine Maximum

Jobbers' and brokers' commission charges on sales of coal to retailers and consumers must not raise fuel prices above maximum levels fixed for coal at the mine by the state, under a ruling by C. J. Neal, state fuel administrator of Ohio and approved Oct. 11 by Governor Harry L. Davis. Under this ruling the "fair prices" of $3.50 to $4.50 established in Ohio include the middleman's profit. Mr Neal's announcement reads:

"Effective Tuesday, Oct. 10, prices received by producers in Ohio for coal sold to jobbers, brokers or wholesalers for delivery within the state and the commissions of such jobbers, brokers or wholesalers must not exceed the list of maximum fair prices announced Oct. 1 and effective Oct. 10 until changes are announced in such prices."

Argument in the assigned car case will be reopened before the Interstate Commerce Commission on Nov. 15. The docket in the matter of mine rating and coal car distribution rules will be considered at the same time. Commissioner Aitchison will preside.

Maurer Foresees Repetition of This Year's Trouble Next April*

[illegible] such a thing as a fear of a coal shortage in the Central Competitive Field had almost been silenced. [illegible] the old interstate agreement was formed, and I want to say without any limitation that it was a success and served its purpose. True, in the years the price of mining declined; true, in that the years capital starved to invest in West Virginia, and while our West Virginia friends may charge us with a great many evils, the interstate agreement in the Central Competitive Field and the wages we paid developed and built up West Virginia.

Capital went where capital controlled, and in the Central Competitive Field capital did not control. And as wages increased in Ohio and Pennsylvania notwithstanding the fact that they were within twenty-four hours of the great markets, heavy wages and control of labor gradually built up and developed the great State of West Virginia and brought them scale into the markets.

The [illegible] blessing that the people of West Virginia have today is the fact that we have had an interstate agreement and a high wage scale in the State of Ohio and the Central Competitive Field. In 1898 and from that date on [illegible] both labor and the employers had respect for each other's contract. It was the most binding contract that was made in this country, and both sides took pride in the fact that the contract was carried out. But the interstate agreement has served its purpose. Since 1916 there has never been a contract made with the United Mine Workers of America in the Central Competitive Field. What is the great underlying cause of all the legislation and all the interference and all the evils that we have?

There are but two: The United Mine Workers and railroad transportation.

The United Mine Workers have asked for government control. There isn't any easier way that they can get the government to step in and take control of your property than by creating situations like they have created in the last three years.

I believe in the right of property. I believe the right of property is just as sacred as a man's life, but nevertheless the advanced theory today is that the right of property is subject to the public welfare and the public good, and that is the crowded situation today and the situation which you and I must recognize in the operation of our properties.

By some custom there is a God-given right to strike that is recognized by the politicians, but I don't believe it is recognized by law. Instead of regulating the operator and the coal miner, in the name of common sense, why don't they regulate the strike and remove the cause?

I believe in uniform wages. There is no industry in the world that needs uniform wages more than the coal industry. With every man making his own wage at every mine, you sell your coal, you don't sell your product, and I don't believe in that, but when you are working under a uniform scale of wages you have to sell your product and not your coal.

My opinion is that the first of next April will be a repetition of last April. My opinion is that by the first of next April those districts that regulate the price of their labor by the law of supply and demand will be able to meet market conditions by reducing their labor to meet the market conditions. You can't have Mr. Lewis shut down the mines of the Central Competitive Field on the first day of next April, or you will lose control of your properties. There is no middle course with the United Mine Workers. We, the operators, say that we won't deal with the national officials but we will deal with our own officials—that is non-union. Why, it was evident for the Pittsburgh district to make the statement on the last day of last April: "We are ready to deal with the United Mine Workers but we won't deal with the national officials."

In conclusion, there is just this I want to say: The great coal industry must recognize, irrespective of what some people think, that they have an obligation to the public; they must recognize that the public has some rights in their property and they cannot so operate them as to injure the general public. They cannot by strikes and suspension force situations by which there is a demand made for coal that will warrant a certain scale of wages, because it isn't fair to the public; and between now and the first day of April force the whole industry of the Central Competitive states to so shape itself that if it is unable to take care of its own affairs, it must get such assistance as will give it at least protection.

* Abstract of address of C. E. Sharpe, president Deep Run Coal Co., before the American Mining Congress, Cleveland, Ohio, Oct. 13, 1922.

Bradley Defends Policies of Non-Union Operators*

During the long depression of 1921, when coal was a drug on the market, when the coal industry was ready for the hands of the universal receiver, the great Southern district was producing 80 per cent of its maximum.

That illustrates a very important point. There must have been a reason for that, and what was that reason? It was the ability to adapt itself to changing economic conditions. You travel through those fields and you will find enormous collieries, tremendous operations, wonderful mining towns, adapted to the comfort and the convenience of the employee such as you will find in no union field, where the bitterness and distress of class hostility has been injected, so that the operator doesn't feel like giving that man a decent place to live.

There in the South, where we have this co-operative spirit, you will find the cheapest living, the cheapest rents, the cheapest store prices; you will find co-operation in reducing wages and in raising them. We know when we should pay our men more and we do it. We are not tied up by a contract, running through every conceivable up and down of economic depression and keeping the men from getting a decent wage in good times, and taking the work away from them in bad times.

We only wish that you had the same advantages.

When I think about it I feel that I simply can't express to you what it means to the operator who is on that basis with his labor. It is a partnership, and that is what it ought to be. It is a man-to-man relationship. There is no third party to come between telling the thrifty workingman that he is being cheated; no third party to come in and tell the honest, hand-saving son of toil: "Don't work so hard."

Why is it necessary to have an investigating commission for the coal industry when the coal industry has been investigated by a public committee every eighteen months for the last seven years? Why can't they take some of that sworn testimony and give it to a man like George Otis Smith and have him compile it and tell the story, with the affidavits to back it up? It wouldn't be enough of a smoke screen.

Now, this is what we are getting out of Washington. This coal labor problem—I feel very much about my coal business as I do about my garden. I have been fighting bugs and insects and plant diseases in that garden from early spring until late fall every year since I can remember. My bill for insecticide is more than almost the pleasure that I get out of the garden. And that is just exactly what I have been doing with my coal business. I have been fighting the pests, the diseases, the assailants, and in West Virginia, by God, we fight them with a rifle, and so would you. You wouldn't let a sneaking skunk steal up and put a stick of dynamite under your house, would you; blow your wife and children to Kingdom Come ahead of you? I won't. I am for the gunman, the mine guard and every form of protection that I can get, as long as my government won't protect me! Let's have it out! That is what we are getting out of Washington.

Now we come to the crux of the labor problem. It is a question of the enforcement of the law that we have got. Labor courts, boards of conciliation—put them in the waste-

* Abstract of address of J. G. Bradley, president Buffalo Creek & Gauley Coal Co., Dundon, W. Va., before the American Mining Congress, Cleveland, Ohio, Oct. 12, 1922.

paper basket! Give the man who wants to work and who has the right to work the protection which he deserves—to work. There wasn't a time during this strike in the anthracite and bituminous coal industry that the mines could not have been manned by men who wanted to work, but they were afraid—afraid that they would be massacred, as they were at Herrin.

The public of the United States doesn't realize the crime that your union operators and the United Mine Workers have perpetrated on you. The public of the United States doesn't realize that the price of fuel for the future is today in the hands of the labor obligarchy, which has every intention of emulating Lenine and Trotzky; they are jealous because they haven't beaten them to it. And when you get the entire fuel resources of a nation in the control of such an unscrupulous, small group of men, you can sit around the table and say, "Now, John, you shouldn't do that," but it will get you nowhere.

Why should the public allow us to operate our mines if we haven't got the gumption to fight for our customers? They had better make their deal directly with the labor oligarchy; no use in counting us in. Why give us our profit? What have we done to earn it?

Before there is any other situation such as we have just come through, before another first of April, let us pray to God for the sake of the 110,000,000 people of the United States, who were held up by those controlling that 500,000—just as the highwayman in the night holds up the express crowded with people, so the leaders of this labor oligarchy have held up that 110,000,000—yes, let us see, that these high-paid public officials enforce the law; let us see that the public knows the situation so that they will demand that that law be enforced for their own protection.

Michigan Legislature Expected to Pass Fuel Bill Similar to New York's

Michigan's Legislature assembled in special session Oct. 10 to consider legislation to regulate distribution and cost of coal in the state and the Senate on Oct. 12 by a vote of 24 to 4 approved the measure submitted by the state's administrative officers, after slight amendments. One of the modifications limits application to coal and coke, releasing wood, oil and other forms of fuel, and another change eliminated authorization for appointment of a salaried fuel administrator.

The administration bill encountered rougher going in the House. It is predicted, however, that the House will pass the bill in modified form and that House and Senate will then harmonize the efforts of the two bodies.

The measure is modelled quite closely on the New York State law, though its provisions are said to be less drastic. It contemplates a system of licensing dealers and provides for seizure of coal or coke in possession of dealers.

ARGUMENT ON THE THREE SETS OF SUITS involving the validity of the Pennsylvania coal tax and valuation laws will be heard by the U. S. Supreme Court Nov. 13. Both sides urged that these test cases be expedited, so that if the decision of the Supreme Court be adverse to the state, the Legislature may have ample time to adjust its actions, regarding appropriations and otherwise, in accordance with the ruling. The principal fight is against the tonnage production tax and in this case several New England states are preparing to intervene on the ground that they have primary interest because the tax would increase the cost of coal to their consumers.

INDICATIONS NOW ARE that the distribution situation will have reached a sufficiently satisfactory state by Nov. 22 to allow Federal Fuel Distributor Spens to return to his regular position on that date, when his leave of absence expires. It is expected, however, that some machinery will have to be kept operative until the first of the year. Since much of the distribution work, however, would be of a routine character, there is nothing in the situation now to indicate that this cannot be handled by members of Mr. Spens' staff.

Spens Will Not Attempt to Fix Prices

The Federal Fuel Distributor has no intention of attempting price-fixing. This was brought out at a conference between John W. Davis, special counsel for the National Coal Association, and the law officer of the Fuel Distributor's office. Mr. Davis in a telegram to A. M. Ogle said: "Counsel for the Fuel Distributor assures me that the Fuel Distributor has no intention now or hereafter to attempt the fixing of prices. All efforts will be directed to moving coal.



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JOHN W. DAVIS

Former Ambassador to Great Britain, as special counsel for the National Coal Association, expressed the opinion that the price-fixing features of the Cummins fuel distribution act are unconstitutional.

He intimates, however, that in cases of clear extortion cheapest coal will be given preference. He is willing to meet any suggestion as to form or contents of the daily reports and urges co-operation by operators lest matters be thrown into state legislatures for more drastic laws. Personally I am of the opinion that the price-fixing features of the Cummins Act are unconstitutional, although recent decisions of the Supreme Court, notably those on rent laws, have been on questions of a similar character. I do not advise legal action until the Fuel Distributor or the commission takes some oppressive step. Until then I think the general attitude should be co-operative."

Denies Ohio Coal Will Be Forced Into Markets Outside the State

Emphatic denial was made by Commander H. H. Bouson, federal representative in Ohio of the Federal Fuel Administration, to reports that Ohio-mined coal will be forced into interstate channels, thus compelling Ohio dealers to buy from other states at exorbitant rates, because of the Ohio emergency control system.

"Statements to the effect that Ohio's fair-price list would deprive the people of this state of coal are not founded on fact," Commander Bouson avers. "Definite instructions on that very point reached us recently. State Fuel Administrator Neal, on his recent visit to Washington, was assured that any effort to evade the Ohio law through interstate channels would meet with a sharp check from the federal authorities."

ON PAGE 601 of *Coal Age* last week the Ohio fair-price schedule by districts contained an error in District 7, which should read as follows: "The counties of Trumbull, Portage, Summit, Mahoning, Medina, Wayne and Stark and the County of Columbiana except the townships of Washington and Yellow Creek, $4.86."

Coal Wholesalers Express Satisfaction With Personnel of Coal Commission

Wholesale coal dealers generally regard with satisfaction the personnel selected by the President to compose the United States Coal Commission and believe that considerable good will result from the fact-finding proceedings, according to Ira Cochrane, acting commissioner of the American Wholesale Coal Association.

Information received at the association's headquarters in Washington indicates that domestic demand, applied to bituminous coal only, is weaker than usual, which is attributed to late warm weather and to the expectation of many domestic consumers that prices will decline.

Transportation still is the limiting factor, as reported by the association, but Acting Commissioner Cochrane expresses the belief that the railroads as a whole have been performing remarkably well under the conditions with which they have had to contend.

Functioning of the Federal Fuel Administration thus far has been highly pleasing to the association of wholesalers, as the normal flow of coal traffic has been preserved without the confused haulings that were feared might result.

Rehearing of Coronado Case Denied

Rehearing of the Coronado coal case was denied by the U. S. Supreme Court in a ruling from the bench Oct. 9. Unless the original plaintiffs institute a new suit in the coal court, no other move is possible in the case.

In this case, a suit for damages against the United Mine Workers of America brought by the Coronado Coal Co. and others because of destruction of mine property in Arkansas during a strike, the Supreme Court on June 5, last handed down a decision of far-reaching importance, holding that labor unions, although not incorporated, are capable and liable for damages which result from acts of their members on an authorized strike in matters affecting interstate commerce. The court held, however, that it could not sustain an award of damages in this case because it had not been established to the satisfaction of the court that the acts were in restraint of interstate commerce during an authorized strike.

In the petition for rehearing the original plaintiffs contended that interstate commerce was involved because the damage was inflicted to prevent competition with mines in other states with which the union had contracts. The petition further urged an award of judgment on the ground that the lapse of time since the damage was suffered would "inevitably embarrass the further prosecution of the case."

Argument has been heard in the case of the Corona Coal Co. vs. the Southern Railway, involving assignment of cars to coal mines.

The case of the Hillsboro Coal Co. has been passed to be argued later.

Floating Coal Down the Ohio on Artificial Waves Leaves Many Barges Stranded

Government engineers have had considerable success at various times in creating artificial waves in the upper Ohio River to bring coal down from West Virginia mines toward Cincinnati, but a wave started Oct. 2 to bring down 50,000 tons of coal was a failure. The river is lower than at any time in fifteen years and when the pools of water above the various dams were released they spread out and moved so rapidly that the artificial stage didn't hold long enough to enable the tows to make much headway.

Out of ten fleets started all but one towboat got into trouble early and the Kanawha coal fleet is scattered at various points on the Ohio River, and will have to wait for a considerable rise before proceeding. In the meantime they may be laid in for the winter, as there have been seasons when there were no heavy rains or big river rises until after the first of the year.

One steamer lost two barges near Dam 28, when they hit bottom and sank. The steamer *Mitchell* went aground off Ironton, Ohio. The *Island Creek*—a towboat, which had been stranded on a bar below Maysville, Ky., for a week, managed to get off when the artificial wave reached her. She had a line of barges carrying between 5,000 and 6,000 tons, and at last reports was expected to reach Cincinnati. The *R. P. Gilham* reported tied up at Lock No. 35, near Maysville, where she would hold her tow until a better stage of water is available. Handling a coal tow is no easy matter with a good river, but with shallow water and an artificial wave, creating a strong current, towing becomes a serious problem. However, previous efforts to bring out a lot of coal through artificial waves created by manipulation of locks and dams have been successful.

Railroads Consume 300,000 Tons Less of Coal During July Than in June

Class 1 railroads consumed 6,586,000 net tons of coal during July, 1922, as charged to account 394, compared with 6,892,000 tons in July last year, according to a report of the Bureau of Statistics of the Interstate Commerce Commission covering 182 steam roads. June consumption was 6,787,000 tons. For the first seven months of 1922 these roads consumed 51,661,000 tons as compared with 52,514,000 tons during the same period in 1921.

The delivered cost per ton in July was $4.32, or 33c. above that for July, 1921. The per-ton cost for the year to July 31, however, was only $3.67 as compared with $4.37 during the corresponding period of 1921.

Fuel-oil consumption continues to gain. During July 120,626,000 gallons were used, as compared with 114,911,000 gallons in July, 1921. The figures for the first seven months of 1922 and of 1921 were 831,923,000 and 811,719,000 gallons respectively.

End Strike at Connellsville Union Mines

Non-union mines in the Connellsville coke region are all gaining substantially in output and man-power and the car supply is improving. The Taylor Coal & Coke Co. at Searight resumed operations during the past week.

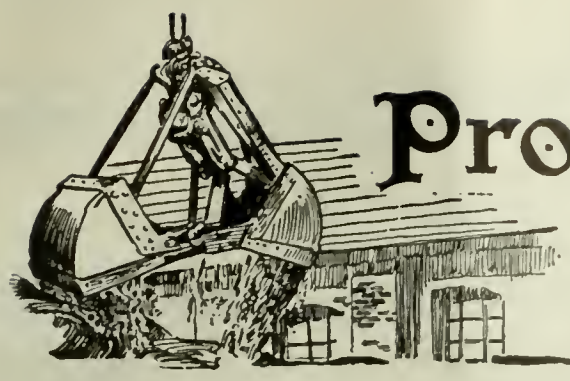
The strike at union mines along the Monongahela River has been settled. As reported last week, workers at the Diamond mine of the Diamond Coal & Coke Co. went out because they were asked to load Mather Colliery Co. (open-shop) cars, and the Lilly Coal & Coke Co. men quit because they were loading Pittsburgh Steel Co. barges. The Diamond miners stayed out only one day, but as a result of a meeting Sunday of several mines along the river the National Mining Co. mine, below Lilly, went out Oct. 9, and stayed out three days. They went back to work Oct. 12 and the men at Lilly went back the following day. The National Mining Co. is a union subsidiary of the United States Steel Corporation and the men quit rather than load Carnegie Steel Co. barges.

According to unofficial information there has been a steady return of men to work at the Leisenring No. 1 plant of the H. C. Frick Coke Co. during the last two weeks.

Restrictions on Bunker Coal Raised

An order raising the restrictions on bunker coal was issued Oct. 13. During the time that the restrictions were in force some 200,000 tons of coal which ordinarily would have gone to foreign ships has been diverted for American use. The accumulation of coal at ports and the rapid decline in prices at tidewater were regarded as sufficient indications that the regulation, which frequently imposed a severe hardship on shipping and on dealers and operators, could be cancelled.

THE NAVY DEPARTMENT has given permission to the City of Boston to use the coal unloading facilities at the Boston Navy Yard for coal consigned to the municipal coal yard. The plans for this municipal enterprise have been laid before the Federal Fuel Distributor and he has interposed no objection to the project.



Production and the Market



Weekly Review

Coal prices are still slipping downward and demand is but little improved, though signs are not lacking that the bottom will be reached before Nov. 1. Colder weather has strengthened the demand for domestic bituminous coal and this has been reflected in a better steam call. Industries normally go into the winter with increased stocks as a bulwark against poor receipts when transportation conditions are bad. This year has been the exception and buying has been on a hand-to-mouth basis. The prospect of still lower prices is now delaying purchases, but the recent touch of cold weather has shaken this resolve in a manner which indicates further buying action in the near future.

Demand has not yet revived sufficiently to hold prices. *Coal Age* Index of spot bituminous coal prices stood at 368 on Oct. 16 as compared with 380 a week earlier. This corresponds to an average mine price of $4.45, a drop of 15c. in the week. The previous week registered a decline of 29c. The trade expects the end of the price drop, which has been in progress since the middle of August, to await the advent of real cold weather, bringing with it deferred industrial and domestic demand.

Realizing Values, More Consumers Enter Market

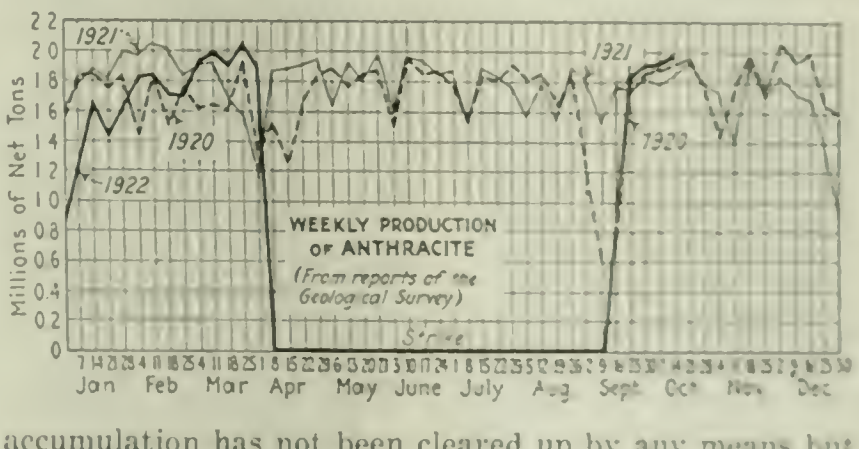
Some large consumers have realized the good values now offering, and the past week has seen heavier takings by the railroads and utilities. The rank and file of buyers, however, have not yet appeared in the market, except for day-to-day requirements.

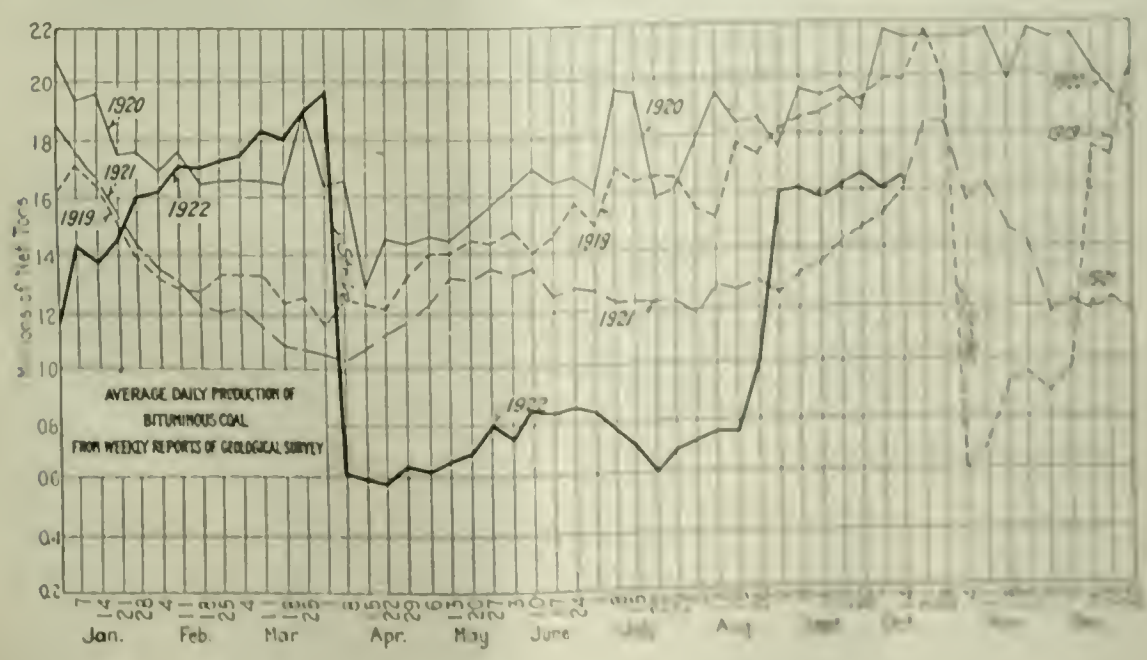
The market ranges from excessive dullness in New England to mild activity in the Chicago territory, which appears to be awakening to the fact that the time is short to obtain additional tonnage before the usual seasonal transportation difficulties appear. New York and other North Atlantic sections are experiencing better coal receipts via Tide and all-rail, offsetting the declining volume of British coal. Hampton Roads is in oversupply because of transportation congestion in the West, and coastwise factors are plying New England and North Atlantic centers with all the tonnage the market will stand, to the detriment of the all-rail fuels. Pittsburgh, Cleveland and Detroit are in more comfortable supply and inquiries are picking up with the recent cold spell.

Much transportation progress has been made during the past week. It has been possible to move large amounts of coal which were being held on sidetracks and in yards between the mines and destination. This accumulation has not been cleared up by any means but most of the railroads are beginning to make an impression on their accumulation of loaded cars.

Despite the large amount of coal still being held on railroad sidings, reports to Washington indicate that there are many cases throughout the country where coal is being sold for demurrage charges. Demands for priority have practically ceased.

Retail distribution of anthracite is progressing smoothly. Strict rationing of supplies has spread considerable tonnage over the East, but Western markets are obtaining little fuel. The Lakes have taken approximately 200,000 tons of hard coal since the strike ended, and it is not expected that the Northwest can





Estimates of Production

(Net Tons)

BITUMINOUS

Week Ended	1921	1922
Sept. 24 (b)	[illegible]	[illegible]
Sept. 10 (b)	[illegible]	[illegible]
Oct. 7 (a)	[illegible]	[illegible]
Daily average	[illegible]	[illegible]
Calendar year	[illegible]	[illegible]
Daily av. cal. yr.	[illegible]	[illegible]

ANTHRACITE

Sept. 23 (b)	[illegible]	[illegible]
Sept. 10 (b)	[illegible]	[illegible]
Oct. 7 (a)	[illegible]	[illegible]
Calendar year	[illegible]	[illegible]

COKE

Sept. 10 (b)	[illegible]	[illegible]
Oct. 7 (a)	[illegible]	[illegible]
Calendar year	[illegible]	[illegible]

(a) Subject to revision. (b) Revised from last report.

possibly obtain more than 50 per cent of its requirements to make this move.

The approval of the Federal Fuel Distributor, acting jointly with the Pennsylvania Fuel Commission, has been given to the report of the Fair Practices Committee, which recommends that, in the case of a number of the independent operators who have announced that they will observe a maximum price of $2.25, the committee's investigative efforts be deferred for the present in order that its efforts can be concentrated on cases where prices in excess of $2.25 are being charged.

BITUMINOUS

"Complete returns on soft coal production for the week ended Oct. 14 will show about 8,900,000 tons," says the Geological Survey. "During the five weeks just closed the output has been at an almost uniform rate varying little from an average of about 8,700,000 tons.

"The number of cars loaded on Monday, Oct. 9, reported by the railroads, was 40,209, the largest reported this year; but on Tuesday loadings fell off to 29,239 cars, a figure exceeded on several Tuesdays since the close of the strike. The total cars loaded on the first four days of this week shows an increase of 3.9 per cent as compared with the same days of the week before. Full returns on loadings for the week are expected to show an output of 9,800,000 to 10,000,000 tons."

TIDEWATER SHIPMENTS FOR SEPTEMBER 1922
(In thousands of net tons)

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	September Total	August Total
Coastwise to New England	125	28	48	736		937	761
Exports				56	8	64	62
Bunker	173	18	8	119	2	320	257
Inside capes		97	71	83		259	167
Other tonnage	317			309	18	644	573
Totals, September	615	143	135	1,303	28	2,224	
Totals, August	264	50	53	1,439	14		1,820

CUMULATIVE TIDEWATER SHIPMENTS, JANUARY TO SEPTEMBER 1919–1922
(Net Tons)

Destination	1919	1920	1921	1922
Coastwise to New England	6,351,000	7,979,000	6,055,000	8,247,000
Exports	6,061,000	15,375,000	8,942,000	1,357,000
Bunker	5,187,000	6,537,000	6,744,000	3,490,000
Inside capes	2,650,000	2,475,000	2,350,000	2,239,000
Other tonnage	7,945,000	6,606,000	5,421,000	5,880,000
Totals	28,194,000	38,954,000	29,512,000	21,213,000

Hampton Roads dumpings were 262,997 net tons during

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Sept. 18 1922	Oct. 2 1922	Oct. 9 1922	Oct. 16 1922†
[illegible]	Cleveland	$4 40	$4 40	$4 40	$3 56
[illegible]	Cleveland	4 60	4 10	4 05	3 31
Midwest					
Franklin, Ill. lump	Chicago	5 40	5 40	5 40	5 25@ 5 50
Franklin, Ill. mine run	Chicago	4 75	4 75	4 50	4 25@ 4 75
Franklin, Ill. screenings	Chicago	4 45	3 85	3 25	3 00@ 3 50
Central, Ill. lump	Chicago	5 10	5 10	5 10	5 00@ 5 25
Central, Ill. mine run	Chicago	4 55	4 55	3 60	3 25@ 4 00
Central, Ill. screenings	Chicago	3 60	3 35	2 80	2 00@ 2 75
Ind. 4th Vein lump	Chicago	5 25	5 25	5 10	5 00@ 5 25
Ind. 4th Vein mine run	Chicago	4 85	4 85	4 60	4 50@ 4 75
Ind. 4th Vein screenings	Chicago	4 60	3 85	3 80	3 00@ 3 50
Ind. 5th Vein lump	Chicago	5 10	5 10	5 10	5 00@ 5 25
Ind. 5th Vein mine run	Chicago	4 65	4 65	4 35	3 50@ 4 00
Ind. 5th Vein screenings	Chicago	4 40	3 60	3 35	2 75@ 3 00
Standard lump	St. Louis	4 75	4 75	4 25	3 50@ 5 00
Standard mine run	St. Louis	3 90	3 75	3 35	3 25@ 3 50
Standard screenings	St. Louis	2 85	2 35	2 10	2 00@ 2 25
West Ky. lump	Louisville	4 75	5 50	5 25	4 85@ 5 25
West Ky. mine run	Louisville	4 25	3 85	3 60	2 75@ 3 25
West Ky. screenings	Louisville	4 00	3 55	3 25	2 75@ 3 00
West Ky. lump	Chicago	4 25	4 25	4 50	4 00@ 4 25
West Ky. mine run	Chicago	4 25	4 25	4 10	3 50
South and Southwest					
Big Seam lump	Birmingham	3 45	3 75	3 45	3 45@ 4 00
Big Seam mine run	Birmingham	2 60	2 75	2 60	2 50@ 3 00
Big Seam (washed)	Birmingham	3 10	3 35	3 10	3 00@ 3 50
S. E. Ky. lump	Chicago	4 25	6 25	6 25	5 00@ 7 50
S. E. Ky. mine run	Chicago	4 25	4 75	4 75	4 50@ 5 00
S. E. Ky. lump	Louisville	6 65	7 00	7 00	6 50@ 7 00
S. E. Ky. mine run	Louisville	5 65	5 35	4 75	3 75@ 5 00
S. E. Ky. screenings	Louisville	5 50	5 10	4 10	4 00@ 4 25
S. E. Ky. lump	Cincinnati	6 85	6 50	6 50	6 00@ 7 50
S. E. Ky. mine run	Cincinnati	5 35	5 10	4 75	3 50@ 4 75
S. E. Ky. screenings	Cincinnati	5 25	5 00	4 00	3 50@ 4 50
Kansas lump	Kansas City	6 25	....	5 50	5 50@ 6 00
Kansas mine run	Kansas City	5 00	....	4 25	4 25
Kansas screenings	Kansas City	2 60	....	2 60	2 50

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in heavy type, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

INCLUDES PENNSYLVANIA STATE TAX

Market Quoted	Freight Rates	Latest Independent	Pre-Strike Company	Oct. 9, 1922 Independent	Oct. 9, 1922 Company	Oct. 16, 1922† Independent	Oct. 16, 1922† Company
New York	$2 34		$7 60@ $7 75		$7 75@ $8 15		$7 75@ $8 15
Philadelphia	2 19	$7 [illegible] $7 50	7 75@ 7 85		7 90@ 8 10		7 90@ 8 10
New York	2 34	7 [illegible] 7 75	7 [illegible] 7 75	$9 25@ 10 50	7 75@ 8 25	$9 25@ $12 00	7 75@ 8 35
Philadelphia	2 19	7 25@ 7 75	7 75	9 25@ 9 75	8 10@ 8 35	9 25@ 9 75	8 10@ 8 35
Chicago	1 95					10 00@ 12 00*	
New York	2 34	7 [illegible] 8 20	7 90@ 8 10	9 25@ 10 50	8 00@ 8 35	9 25@ 12 00	8 00@ 8 35
Philadelphia	2 19	7 85@ 8 15	8 05@ 8 25	9 25@ 9 75	8 15@ 8 35	9 25@ 9 75	8 15@ 8 35
Chicago	1 95					10 00@ 12 00*	
New York	2 34	7 [illegible] 8 20	7 90@ 8 10	9 25@ 10 50	8 00@ 8 35	9 25@ 12 00	8 00@ 8 35
Philadelphia	2 19	7 85@ 8 15	8 05@ 8 25	9 25@ 9 75	8 15@ 8 35	9 25@ 9 75	8 15@ 8 35
Chicago	1 95					10 00@ 12 00*	
New York	2 34						
New York	2 22	5 [illegible] 5 75	5 75@ 6 45	7 00@ 9 00	6 15@ 6 20	6 55@ 8 00	6 15@ 6 20
Philadelphia	2 14	5 50@ 6 00	6 15@ 6 25	7 00@ 7 25	6 15@ 6 20	7 00@ 7 25	6 15@ 6 20
Chicago	1 95					8 50@ 9 50*	
New York	2 22	2 75@ 3 50	3 50	3 25@ 4 00	4 00@ 4 25	3 00@ 4 00	4 00@ 4 25
Philadelphia	2 14	2 75@ 3 25	3 50	3 75@ 4 00	4 00	3 50@ 4 00	4 00
New York	2 22	2 [illegible] 2 50	2 50	2 25@ 3 00	2 75@ 3 00	2 00@ 3 00	2 75@ 3 00
Philadelphia	2 14	2 [illegible] 2 50	2 50	2 50@ 3 00	2 75@ 3 00	2 50@ 3 00	2 75@ 3 00
New York	2 22	1 [illegible] 1 85	1 50	1 50@ 2 00	2 00	1 00@ 2 00	2 00
Philadelphia	2 14	1 50@ 1 75	1 50	1 75@ 2 00	2 00	1 25@ 2 00	2 00
New York	2 22		2 00@ 2 50	.....	2 75	.....	2 25

*Gross tons, f.o.b. mines. †Advances over previous week shown in heavy type, declines in *italics*.

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 Inclusive	Sept. 5 to Sept. 30, 1922 Inclusive	Week Ended Sept. 30
U. S. Total	45.6	55.7		
Alabama	63.5	64.6	61.3	82 4
Somerset County	55.5	74.9	36.2	37.7
Panhandle, W. Va.	55.3	51.3	63.3	55.7
Westmoreland	54.9	58.8	80.5	55.9
Virginia	54.8	59.9	55 6	66 6
Harlan	53.3	54.8	19.2	22 6
Hazard	51.7	58.4	13.7	17.0
Pocahontas	49.8	60.0	34 8	34 6
Tug River	48.1	63.7	34.4	22.7
Logan	47.6	61.1	25 2	22 3
Cumberland-Piedmont	46.6	50.6	32.0	28 9
Winding Gulf	45.7	64.3	30.9	27 0
Kenova-Thacker	38.2	54.3	43.8	46 7
N. E. Kentucky	32.9	47.7	25.6	23.7
New River	24.3	37.9	30 5	26.9
Oklahoma	63.9	59.6	60.7	69 9
Iowa	57.4	78.4	84.1	80 2
Ohio, Eastern	52.6	46.6	48.9	41 2
Missouri	50.7	66.8	64 8	54 5
Illinois	44.8	54.5	49.2	48.3
Kansas	42.0	54.9	66.3	52 8
Indiana	41.4	53.8	47.3	49.7
Pittsburgh†	41.2	39.8	54.3	52 0
Central Pennsylvania	39.1	50.2	66.9	52 5
Fairmont	35.3	44.0	47.0	61 3
Western Kentucky	32.5	37.7	29.8	24.9
Pittsburgh*	30.4	31.9	67.3	55.5
Kanawha	26.0	13.0	12.2	13 3
Ohio, southern	22.9	24.3	41.9	42 0

* Rail and river mines combined.
† Rail mines.

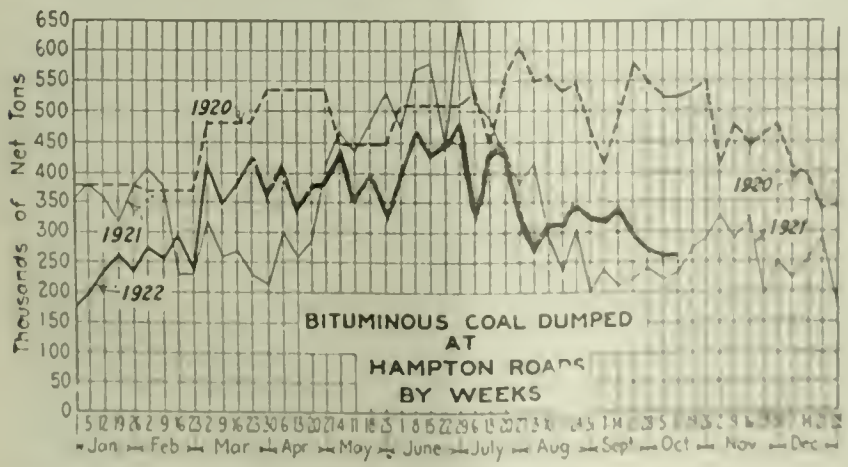
Car Loadings, Surplusages and Shortages

	Cars loaded All Cars	Cars loaded Coal Cars
Week ended Sept. 30, 1922	988,381	189,349
Previous week	973,291	187,896
Same week a year ago	904,831	180,354

	Surplus Cars All Cars	Surplus Cars Coal Cars	Car Shortage	
Sept. 30, 1922	5,843	3,486	130,325	32,148
Sept. 23, 1922	11,292	6,975	107,666	25,332
ame date a year ago	172,420	98,048	.....	.....

the week ended Oct. 12, practically unchanged from the preceding week. Coastwise markets—the bulwark of the Roads shippers—are in much softer condition and prices are being shaded to close sales. New England especially is in such comfortable supply that it is difficult to see where any considerable inquiry can develop before Jan. 1.

Lake dumpings were 1,053,873 net tons during the week ended Oct. 16, as compared with 1,179,298 tons in the preceding week. The season's Lake movement to date is 12,422,474 tons; last year it was 20,282,948 tons.

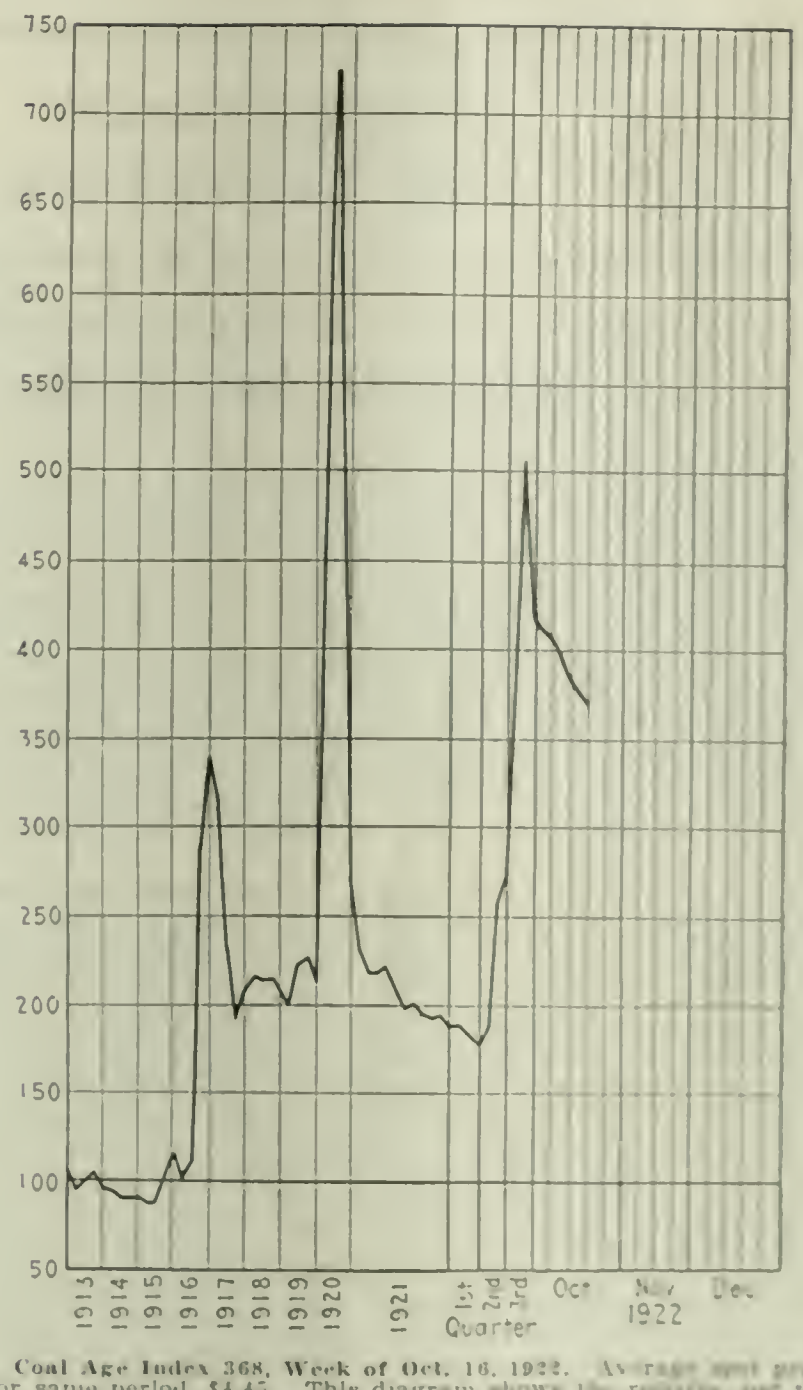


ANTHRACITE

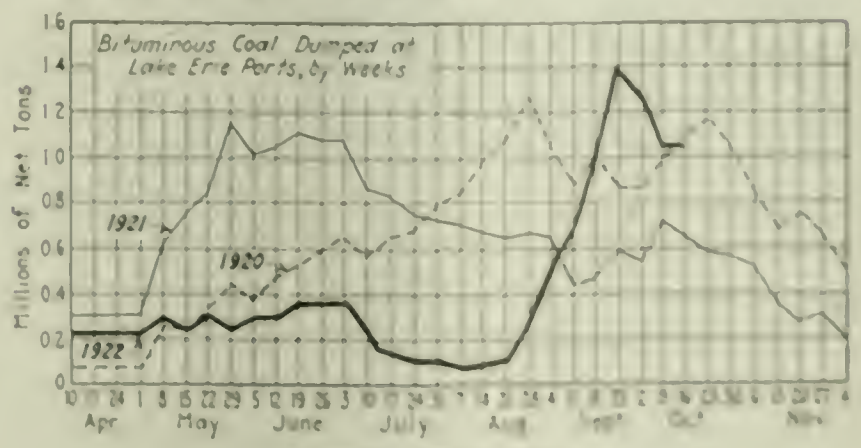
Production of anthracite continues to increase. The output during the week ended Oct. 7 was 1,959,000 net tons and loadings for the first four days of last week indicate an output of about 2,000,000 tons in that period. Much inconvenience is being caused by the slowness in the movement of steam sizes. There are now more than 150,000 tons of these coals between the mines and Eastern cities.

COKE

Production of beehive coke continues to increase slowly. The output during the week ended Oct. 7 was 171,000 net tons, 11,000 in excess of the preceding week. Coke prices are at last breaking, but the supply is still too costly and limited to tempt additional blast furnaces to resume.



Coal Age Index 368, Week of Oct. 16, 1922. Average spot price for same period, $4.45. This diagram shows the relative and the actual prices on fourteen coals, representative of nearly 75 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions [illegible] and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918" published by the Geological Survey and the War Industries Board.



ESTIMATED MONTHLY CONSUMPTION OF COAL FOR MANUFACTURE OF COKE

(Net tons)

	Commercial Production Ovens	Commercial Beehive Ovens	Total Coal Consumed
1917 Monthly average	[illegible]	[illegible]	[illegible]
1918 Monthly average	[illegible]	[illegible]	[illegible]
1919 Monthly average	[illegible]	[illegible]	[illegible]
1920 Monthly average	[illegible]	[illegible]	[illegible]
1921 Monthly average	[illegible]	[illegible]	[illegible]
June, 1922	[illegible]	[illegible]	[illegible]
July, 1922	[illegible]	[illegible]	[illegible]
Aug., 1922	[illegible]	[illegible]	[illegible]
Sept., 1922	[illegible]	[illegible]	[illegible]

[illegible] Assuming a yield in merchantable coke of [illegible] per cent of the coal charged in by-product ovens, and 63 4 per cent in beehive ovens, the Bureau gives [illegible] report.

Foreign Market And Export News

Continental Orders Replace American Business On British Market: Prices Strong

British admiralty and large dogs are heavily loaded for October and early November delivery. A number of the leading owners are out of the market. Continental demands are active and substantial exports are being received from South America. With the exception of bunker coal for which there is a steady demand, other sizes are abundant and easy.

Freights during the week ended Sept. 28 made another slight gain, according to a cable to Coal Age, advancing from 1,344,000 tons to 3,177,000 tons.

Little business is now being done with the United States in South Wales, though Canada continues to be a good customer. The class of coal in which the business is being done is of the dry steam variety, which is evidently being employed as a substitute for anthracite. These Canadian orders have served to steady the market, and the downward trend of prices in Wales appears to have been arrested. In one or two cases prices have been cut to encourage the Continental and South American buyers.

In one week at the end of September a falling off of 45,000 tons was registered at the Welsh ports, chiefly owing to the slacker American demand. The European shipments also were lower, while the Admiralty orders were more than doubled.

The Yorkshire field continues to be steadily occupied. The pits are now able to sell all the best steam coal they can produce and prices are steady. The industrial demand is strengthening a little and the public utility companies are laying in large stocks. Operators are accepting easy prices for unscreened sorts to keep their pits clear. The chief European destinations for Yorkshire coal are Germany, Norway and Sweden.

Germany is a very active buyer in the Newcastle district and the orders from this source and from other European countries about compensates for the loss of a great part of the American business. Among the orders received in this area are one of 180,000 tons of steam coal over the next six months for the German State Railways, 5,000 tons of best Durham steam coal for shipment during October for the Norwegian State Railways, 2,000 tons of special Wear gas coals for Randers at 30s. 5½d., and smaller orders from other European railway companies.

There is very little change in the Scottish market. One or two shipments have been made to America and Canada, and there remains a small order to fill here and there in this direction.

French Fear Domestic Coal Shortage

Coal of the Nord and Pas-de-Calais has become more active still and domestic demand is especially pressing. A few collieries are restricting their shipments in provision for a strike which may break out before Nov. 1. A shortage of domestic coal is apprehended as soon as winter sets in.

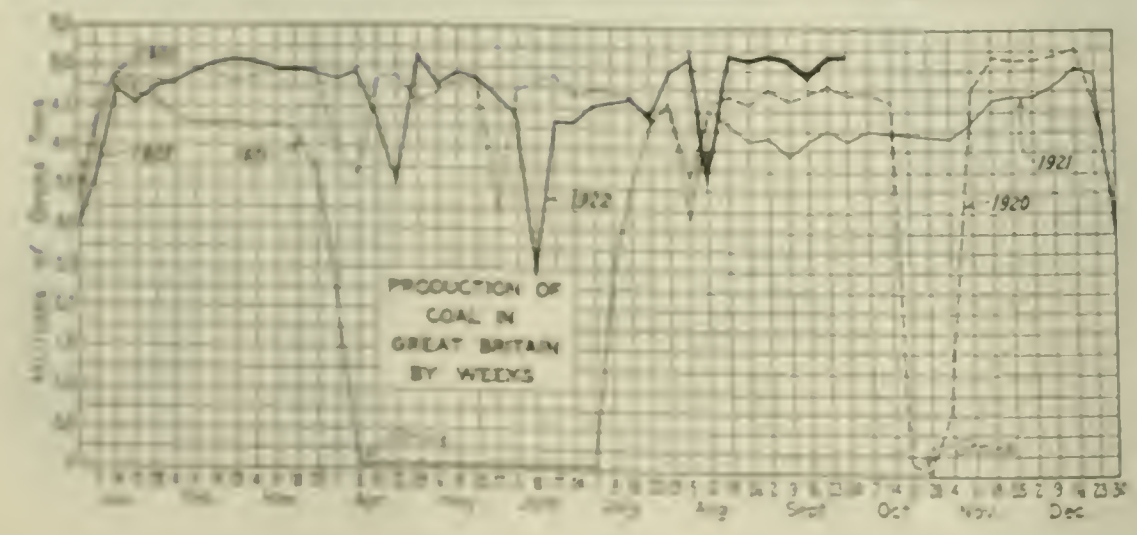
The outcome of the present conflict between operators and men may be determined when the French Parliament reassembles. Should, however, collieries of the Nord and Pas-de-Calais obtain no relief from their present cost price they will again be in none too enviable a situation as soon as British competition reasserts itself.

Mines of the Nord and Pas-de-Calais have published their official schedule of prices for the fourth quarter, which is the same as for the third quarter, less summer bounties which are now off.

FRENCH MINE PRICES

[illegible]	40fr.@ 58fr
[illegible]	87fr.@ 107fr.
Raw of mine 26-25%	63fr.@ 66fr.
Raw of mine 30-35	67fr.@ 71fr
Briquets, pea	105 fr.
Washed pea	70fr @ 92fr.
Washed small	57fr.@ 74fr.
Washed nutcoke	105 fr.

The adjusted price of German coke delivered to French blast furnaces by the Société des Cokes de Hauts-Fourneaux has been maintained for October and November at the same limit as for September—95fr. at the Franco-German frontier. On the other hand, French collieries of the Nord and Pas-de-Calais have reduced the price of the metallurgical coke they supply to the said Societe, in view of its being pooled with German coke, to 92fr. for November from a previous limit of 95fr.



Hampton Roads Pier Situation

	Week Ended Oct. 5	Week Ended Oct. 12
N. & W. Piers, Lambert Point:		
Cars on hand	1,397	1,460
Tons on hand	85,763	98,631
Tons dumped	121,923	91,821
Tonnage waiting	. . . .	12,650
Virginia Ry. Piers, Sewalls Point:		
Cars on hand	1,301	954
Tons on hand	81,100	57,450
Tons dumped	53,647	101,756
Tonnage waiting	9,923	9,500
C. & O. Piers, Newport News		
Cars on hand	614	772
Tons on hand	30,700	38,600
Tons dumped	59,202	41,242
Tonnage waiting	1,550	1,600

Coal Paragraphs from Foreign Lands

BELGIUM—Activity in the coal market is still great in both industrial and domestic descriptions. Large orders have been received from Paris, Switzerland and Holland.

SPAIN—Since the end of the strike in the Asturias, Barcelona has received over 50,000 tons of that coal, but demand continues strong. A good number of industries are studying the use of Asturian coal in place of British owing to the rise in price of the latter.

The following are among the latest mine quotations of the Central Hullera Asturiana: Screened and lump, 50@52 pesetas, small gas, 35, small steam, 33, metallurgical coke, 60@67, blast furnace coke, 38@40.

Pier and Bunker Prices, Gross Tons

	Oct. 7	Oct. 14†
PIERS		
Pool 9, New York	$8.00@ $8.25	*$8.00@ $8.15*
Pool 10, New York	7.50@ 7.75	7.50@ 7.75
Pool 11, New York	7.25@ 7.50	*.00@ 7.25*
Pool 10, Philadelphia	7.25@ 7.75	7.25@ 7.75
Pool 11, Philadelphia	7.00@ 7.50	7.00@ 7.50
Pool 1, Hamp. Roads	7.00@ 7.50	*7.00@ 7.40*
Pools 5-6-7 Hamp.Rds.	7.00@ 7.50	*7.00@ 7.40*
Pool 2, Hamp. Rds.	7.00@ 7.50	*7.00@ 7.40*
BUNKERS		
Pool 9, New York	$8.30@ $8.55	$8.30@ $8 50
Pool 10, New York	7.80@ 8.05	**7.85@ 8.10**
Pool 11, New York	7.55@ 7.85	*7.85@ 7.65*
Pool 10, Philadelphia	7.50@ 8.00	7.50@ 8.00
Pool 11, Philadelphia	7.75@ 8.25	7.75@ 8.25
Pool 1, Hamp. Rds.	7.60@ 7.65	*7.15@ 7.50*
Pool 2, Hamp. Rds.	7.60@ 7.65	*7.15@ 7.50*
Welsh, Gibraltar	40s. f.o.b.	40s. f.o.b
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	50s. f.o.b.	50s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	42s. t.i.b
Welsh, Algiers	41s. 6d. f.o.b.	41s. 6d. f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b.	65s. f.o.b.
Welsh, Madeira	45s. 6d. f.a.s.	45s. 6d. f.a.s.
Welsh, Teneriffe	43s. 6d. f.a.s.	43s. 6d. f.a.s.
Welsh, Malta	42s. 6d. f.o.b.	42s. 6d. f.o.b.
Welsh, Las Palmas	43s 6d.f.a.s.	43s 6d.f.a.s.
Welsh, Naples	42s f.o.b.	42s. f.o.b.
Welsh, Rosario	52s 6d. f.o.b	52s. 6d. f.o.b.
Welsh, Singapore	52s. t.i.b.	52s. t.i.b.
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Welsh, St. Michaels	50s. t i b.	50s. t.i.b.
Welsh, Alexandria	40s f o b	40s. f.o.b.
Welsh, Port Said	51s. 6d. f.o.b.	51s. 6d. f.o.b.
Welsh, Oran	40s. f.o b.	40s. f.o.b.
Welsh, Fayal	50s. t i b.	50s. t.i b
Welsh, Dakar	46s. 6d. f.o.b.	46s 6d. f.o.b.
Welsh, St. Vincent	46s. f.a.s.	46s. f.a.s.
Welsh, Montevideo	50s f.o.b	50s f.o.b.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	Oct. 7	Oct. 14†
Admiralty, large	27s.@ 28s	**27s 6d.@ 28s.**
Steam, smalls	16s.@ 16s 6d	16s.@ 16s 6d.
Newcastle		
Best steams	25s.@ 26s	**25s 6d.@ 27s.**
Best gas	23s.@ 23s 6d	**23s 6d.@ 24s.**
Best bunkers	22s 6d @ 23s.	**22s 6d@ 23s 6d.**

†Advances over previous week shown in heavy type; declines in *italics*

North Atlantic

Cooler Weather Fails to Stimulate Coal Market

Prices Firm Only on Good Grades—With Car Shortage Acute, Shippers Confine Efforts to Regular Trade—British Coal No Longer a Market Factor.

Colder weather has failed to cause much stir in the coal market. Only good grades are salable at firm prices, while the poorer qualities are forced to sell at lower figures. Shippers are not active in soliciting orders, as they are barely able to take care of their regular trade, so acute has the car shortage become.

Some large consumers have realized the good values now offering and are taking in a limited tonnage for storage, but the average buyer is still restricting his orders to current requirements. British coal has ceased to be a market factor, but this has been replaced by heavier American receipts, both by Tide and all rail.

PHILADELPHIA

No improvement is noticeable in the bituminous trade, the consumer holding off as usual, while the producer is not soliciting trade, being busy distributing tonnage to his regular trade. Car shortage is still a very serious problem.

Quite some complaint is heard of poor quality coal coming into the market, but this usually springs up when coal of the better grades is not to be freely had. With the consumer's attitude of waiting for lower prices, he is at the same time inclined to become more critical as to quality. The railroads now seem to be accumulating better stocks of engine fuel and are reported to have close to a month's supply ahead, or in prospect.

Prices are still inclined to weaken. Nothing seems to shake the consumers' confidence in much lower prices and they congratulate themselves that they are slowly achieving this result. Contrasted to this attitude we know of some large consumers who have contracted for blocks of tonnage of the best coal at prices that closely approximate the present spot market.

At Tide there is only ordinary business in bunkering, and only a minimum of shipments for export. British coal also seems to have ceased to be a factor in the market.

CENTRAL PENNSYLVANIA

Car shortage is about the only thing interfering with production. On the lines entering the central region and in the region reached over the New York Central, the supply of cars is only 30 per cent of requirements.

The miners are working in full force throughout the union areas. The non-union mines are rapidly gaining in car loadings and to all intents and purposes the strike in the non-union operations is over. The Berwind-White Coal Co., at Windber, where the battle was most bitterly contested, is making daily gains in production.

Prices quoted at the mines are: Pool 10, $4.25@$4.50; Pool 9, $4.50@$4.75; Pool 1, $4.75@$5. Lower grades are quoted at $4.

BALTIMORE

Now that winter is approaching rapidly the seasonal jump in demand for storage in anticipation of traffic congestion to come later might well be expected. So far this has failed to materialize and even the larger industries are going ahead without much reserve.

The easy market has had the tendency of preventing any further jumps in price and in some cases there has been a recession, this being especially true of gas coals. With the call for soft coal coming from sources that normally use only anthracite there is noted a particularly strong demand for lump but there has been so little screening done that dealers are at a loss to know where to get the lump for this trade as they recommend.

The situation has strengthened the call for English coals, even though they are selling much above the American lump. Following the importation of 88,789 tons of British coal at Baltimore from the latter part of August till Oct. 15, it is reported that other ships will shortly arrive. The October arrivals were two with a total of 13,586 tons. The first export movement noted since last April came on Oct. 9 when a schooner sailed for Cuba with 2,434 tons. The last previous export movement was on April 10, when 2,916 tons cleared for Cuba.

NEW YORK

No buying to amount to anything has come into the market and prices show little tendency to advance. At the same time the decline seems to have been checked, in the better grades of coal at least. There has been no improvement in the situation. If anything, it is worse.

With such a state of affairs prevailing when the railroads have nothing to contend with in the way of adverse weather conditions, it is easy to surmise what will happen when low temperatures make their appearance. Yet the average consumer is making no effort to get stocked up against such a time. The hope of getting coal cheaper by waiting is the actuating motive in nine cases out of ten.

Few of the operators are willing to commit themselves over a period of months at the prices now prevailing in the spot market. They are fully as confident as the buyers when it comes to predicting the future course of prices, the only difference of opinion being as to which way the cat is going to jump.

In all-rail territory, owing to the scarcity of orders, shippers have been sending somewhat more coal to Tidewater than the local market can absorb readily. Some of it has got on demurrage and is causing some unsettlement. Between 1,500 and 1,600 cars were reported standing at the piers at the end of the week.

Current quotations are shown in the Weekly Review.

UPPER POTOMAC

Mines are not troubled so much by a shortage of cars as they were during a part of September and hence it has been possible to increase production somewhat on the line of the Western Maryland. Georges Creek production is not being increased materially but the deficiency is being taken care of in the Meyersdale field where many strikers are working. Aware of that fact, Georges Creek operators are bringing eviction proceedings so as to make room for men who will work. As it is necessary to dump all coal produced into Eastern markets the price is off.

FAIRMONT

Changes in the Eastern market have been very rapid and peculiar. Much coal billed to the Lakes is being thrown back on producers who have to find a market for it in the West and that is creating confusion. The B. & O. is assigning cars and that is only aggravating conditions connected with an acute car shortage. The Tidewater demand is extremely light. Coke production is being increased.

South

BIRMINGHAM

Buyers of steam coal are maintaining a rather indifferent attitude toward the market. Consumers are placing orders for immediate needs only with requests for prompt shipment, and are apparently evidencing no desire to stock coal. The principal demand is coming from small industries and utilities in Alabama, Mississippi and Georgia, while some run of mine is being sold for heating public buildings.

A few days of cool weather has created a more insistent demand for domestic. Conditions incident to an increased supply have not improved, the light demand for steam, together with the shortage of equipment retarding both production and movement very materially. Prices for all grades of domestic are stiff. Quotations on steam have eased off to some extent.

Car supply on the Southern the past week has shown some little improvement, but the situation as a whole is little if any better than a week ago. Production is around 345,000 tons per week.

VIRGINIA

Virginia mines are recovering in a measure from the handicap of a car shortage. The output has been increased to 66 per cent, with C. C. & O. mines leading all others. Although there is not a stiff demand for coal, no losses have been sustained so far from a lack of orders, owing to the shortage of equipment.

Anthracite

Rigid Domestic Rationing Eases Tension in East

Western Markets Still Await Hard Coal—Too Late to Avert Shortage in Northwest—Independent Quotations Are Reduced—Steam Sizes Burdensome.

The domestic situation is more reassuring as strict rationing has distributed a little coal over a wide area of the East. Western points are not expected to receive much tonnage for another 60 days. The Lakes are beginning to get hard coal—200,000 tons since mining was resumed—but it is realized that winter will find the Northwest far short of its requirements.

Independent quotations show a lower range. There is less tendency to buy $12-coal, and the majority of the independents are adhering to the $10.25 maximum for the family trade. Steam sizes are in heavy oversupply and the market has softened perceptibly.

PHILADELPHIA

Cold weather has brought a snap to the retail trade that is not denied by the dealers. The movement is calling strongly for coal. Most yards are on the verge of emptiness. To complicate the situation many consumers have been found who have duplicated orders and often refuse coal when it is delivered.

Wholesale prices seem to be reaching a stable basis now, as the efforts to bring the independents into line by the fuel commission seem to be nearing success. However, it is still believed that a few of the small independents will continue to charge $9.50. So far nothing has been given out as to the policy of two or three concerns who were reported to be asking $12 to $13. It is the belief that there is no law by which the commission can set prices, and some intimate that it is illegal if they ever attempt to.

Many soft spots have developed in the steam trade, and while the companies are still able to dispose of their production without resorting to their storage yards, the independents are finding it difficult to move theirs. Price shading is in evidence.

NEW YORK

The substitution of all harrows and soft coal is blamed in part for the accumulation of steam coals. They are looking up on the producers to assist that is showing no little promise although it is realized that the turning on of steam heat will create a better demand for buckwheat.

The quantity of steam sizes at Tidewater is not only demoralizing the market, but it is causing delay in unloading cars. Barley is the weakest size.

It is a seller's market in the sizes above pea and a buyer's market in the sizes below. While there is a strong demand for the coal at the circular prices, retailers are not quite as willing to pay upward of $12 a ton as they were for a time after the resumption of mining.

Consumers are not quite as clamorous as dealers had feared they would be. A large tonnage of soft coal has been placed in apartment houses, business buildings, schools and public institutions of all kinds. This has made more tonnage available for use of the small consumer, and with a careful rationing of the supply a large percentage of the public will have a little anthracite by the time it is actually needed.

BALTIMORE

Dealers are being swamped with orders now that there is a snap in the atmosphere. Less than 60 per cent of immediate needs, entirely outside of any coal for storage over the winter is now running here. Dealers are sticking to small lot deliveries but even this does not meet the situation as consumers generally are refusing to take bituminous coal as a substitute.

In view of the fact that Baltimore dealers are still getting practically only independent coal at high prices the majority of dealers are still forced to sell the more popular grades at $16 per gross ton. Officials of the Maryland Distribution Committee who have been investigating conditions have openly laid the greater part of the trouble to this fact.

ANTHRACITE FIELDS

The mines are all working to capacity and they have not been hit as badly by the car shortage this week. There are no labor disturbances anywhere in the region.

There is no demand for the steam sizes. Some of the companies are complaining about this.

BUFFALO

The demand keeps up, but people understand the situation and do not try to get coal in quantity. Nobody is getting more than about half as much as was received a year ago. Lake shipments are also cut down.

Lake shipments last week were 71,700 tons, of which 29,500 tons cleared for Milwaukee, 21,200 for Duluth and Superior, 14,200 for Chicago and 7,500 for Sheboygan. Freight rates are 50c.@55c. to Chicago, 50c. to Milwaukee, 45c.@50c. to Sheboygan and 40c. to Duluth.

BOSTON

Shipments are slowly dribbling through all-rail, and practically every well-connected dealer has had a fair month's quota since mining was resumed. Tidewater dealers have perhaps had better receipts in proportion, but this is due rather to eccentricities of car-supply than to any design on the part of shippers.

Prepared sizes are being distributed in sparing amounts, but during the mild weather there was very much less public anxiety in evidence than was expected. Householders have apparently concluded that somehow or other they will manage to get through the winter and they are gracefully accepting the situation. Or, it may be, the situation is not as distressful as has been made out.

Coke

UNIONTOWN

Coal buyers are retaining their advantage in the market by limiting purchases to a minimum and operators, faced with the problem of keeping their working forces together are forced to close sales at figures they claim out of proportion to present production costs. The car situation is a bit easier. Because of the railroad situation, the carriers are keeping close check on cars placed for loading and are demanding that a consignee be named as shortly as possible after a car is loaded. That condition also helps to soften the market.

The strike of Connellsville miners has ceased to be a matter of public interest. At practically all the larger plants there are groups of "hold-outs" but at the same time many of them have returned to work.

The trade is quoting $3@$3.25 for steam coal. Three-quarter lump is $3.25@$3.50 with byproduct, $3.50@$3.75.

CONNELLSVILLE

The break in Connellsville coke prices has begun at last. A few days ago sales were made at $11 and more was offered freely at that figure without finding takers, resulting in some sales being made at $10.50. The market has ample room for further declines, since coke has frequently sold at less than its natural ratio to coal, according to the formula of 1½ tons of coal at the market price plus the cost of coking. With the coal market at $3.50, and the coking cost, with the present high wage scale, about $1.25, the formula would make $6.50 as the coke price.

Foundry coke has also declined, but somewhat sluggishly as some foundries, not well posted, have been paying close to the old prices. The market is now quotable at $12@$12.50.

The condition no longer obtains of there being an indefinite number of blast furnaces waiting to resume and willing to pay the open market price. Pig iron consumers in general evidently are unable to pay present prices, while furnaces could not make lower figures except with cheaper coke. As furnaces get into operation deliveries are made on old contracts and thus the need of consumers to buy pig iron in the open market is reduced.

The *Courier* reports coke production during the week ended Oct. 7 at 91,100 tons by the furnace ovens and 35,250 tons by the merchant ovens, a total of 126,350 tons, an increase of 7,670 tons.

BUFFALO

Demand continues light, for the local plants are running actively and they are able to supply the furnaces pretty well. At the same time the coke situation at the big Pennsylvania oven centers is not good.

Chicago and Midwest

Regional Market Seems Ready for Upturn Now

Domestic Demand Continues Heavy and Steam "Buyers' Strike" Gives Signs of Breaking—Car Service Improves Only Slightly.

Continuance of a heavy domestic demand and very little, if any, improvement in car service by the roads keep the markets of this region about on the level of last week. While it is true there is no rush of steam buyers and a good deal of those grades are getting into distress almost daily, yet railroads are taking heavier tonnages for their own use and other big steam consumers are displaying more interest in deliveries on contracts. With the approach of colder weather the coal industry gets into a better position temporarily—only to prepare gloomily for greater difficulties later on.

Car supply throughout southern Illinois is still in the neighborhood of 30 per cent, while northern and central fields are down to 45 or 50 per cent—and glad the service is no better. West Kentucky is running about 20 per cent of the time and Indiana fields somewhat less than half time. Prices generally throughout this section are unchanged from last week, except in Kentucky where a slight weakening of mine run and screenings was noticed.

CHICAGO

A tightening up of the domestic market, after the slight softening, and a certain uneasiness on the part of some of the big steam buyers who are still "on strike" are signs which coal men are reading just now. Many retailers who have not attempted to stock anything, are trying to do so now, finally concluding that domestic prices are not due for a drop. Householders who have been following to the letter the retailers' advice to buy only in small quantities, are now asking for a good deal more than the yards can deliver. The result is a considerable backwatering of orders followed by an epidemic of coal prescriptions signed by many doctors.

Some hard coal has reached here but only a little smokeless. The anthracite mine price quoted here ranges $8.50@$9.50 on buckwheat and pea and up to $12 on the larger sizes. Smokeless mine run and lump sells for $6.25@$7 except the little which is jobbed.

Several elements are combining to take some of the rigidity out of the "buyers' strike" among big consumers of steam coals. One is that a good many short contracts for oil expire at once and many may not be renewed. Another is that few industries are stocked with coal and the third is that it seems more apparent every day that the strangulation of rail transportation will not be relieved soon and cold weather with an inevitable rush of demand is due at any moment. For these reasons there are fewer coal contract cancellations nowadays.

WESTERN KENTUCKY

The general markets are weaker and with industrial consumers refusing to stock, and retailers buying only for immediate demand, producers are finding it harder to sell coal. Unless there is material improvement soon in demand either for domestic or steam, any increase in car supply just now would find the market slumping further. The reported car supply averages around 20 per cent on the L. & N. railroad, and about 35 per cent on the Illinois Central.

Many coal men here believe that retailers have kept consumers from stocking, in the belief that prices would be lower, and that with cold weather a heavy demand will develop for prepared. Right now there appears to be an increasing tendency for domestic consumers to take up better grades of clean mine run for heating use.

Lump coal which has been strong at $5 and over, is now quoted at $4.75 in some instances for off-grade, while supplies are being offered at $4.85@$5.25 in quantities. Mine run has broken to $2.75@$3.25 and screenings, $2.75@$3.

SOUTHERN ILLINOIS

Lack of rail equipment and failure to sell steam sizes stand out strong as obstacles in the Carterville field in southern Illinois. At one or two places a little steam is held without billing and if cars were plentiful there would be a lot of this stuff on hand. Railroads are buying again, however, and the car situation is just a trifle better than it has been. The demand for lump, egg and nut is unusually good.

Somewhat similar conditions prevail in the Duquoin and East Jackson field. In the Mt. Olive district working time is two or three days a week. The railroad tonnage is heavy. Several trunk lines through this district are tied up, especially the Wabash, which is unable to deliver to the terminal at St. Louis on account of lack of motive power on trunk lines out from St. Louis, principally the Frisco.

In the Standard field lack of orders for lump has seen mines with no-bills on track at night. The steam situation is unusually bad. Railroad tonnage is fair, everything considered.

ST. LOUIS

A little more seasonable weather has started the domestic demand on the cheaper grades. The light tonnage of Carterville is going at a premium of $5.50@$6 at the mine. The retail price is $9.50. Mt. Olive, which is available as a rule, is $4 at the mine and retails at $7.50. This makes Mt. Olive the popular coal

Country domestic and steam demand are both picking up. Locally steam is not selling, except from day to day. Very little coal is piling up in storage. Railroad movement has shown some improvement though hundreds of cars are held in East St. Louis on account of the inability of the Frisco and Missouri Pacific to handle them.

INDIANAPOLIS

Demand has been more active during the past week, due largely to the imminence of cold weather. Most of the demand is coming from the domestic consumer and retail dealers generally are limiting their sales to three tons in order to have enough to go around.

There has been no particular strength in the price situation during the past week, although there has been a fairly ready market at the established prices. Domestic coal of the Indiana grades is retailing around $7@$8.50, while foreign-mined coal, such as Pocahontas, Kentucky and West Virginia, is retailing around $11.50 for the prepared sizes, with about 50c. lower for mine run. Demand for steam coal is fair.

LOUISVILLE

Heavy rains for the past several days are resulting in better river stages and packets are resuming operations. A number of coal tows stranded in the upper Ohio are expected to reach Cincinnati on the rise and some of this coal will come to Louisville and sister cities. General demand is slow. Everyone appears to be getting immediate supplies and at present prices there is no stocking demand reported. When the Lake movement stops this will throw more production to the industrial and domestic consumers, and may ease prices.

Retailers are hot over the fact that there is a range of $2 a ton and more between mine run and lump. A few retailers who have their own screening equipment are taking advantage of the fact, but others are endeavoring to get domestic users to take mine run.

It is hard to sell coal now, not only locally but north of the river and in other sections. There is a little better rural demand than there has been, but it appears as if the country generally is anticipating lower markets, and is not worrying. Car supply is reported at about 20 per cent on most lines, with the Illinois Central attaining about 45 per cent.

Canada

TORONTO

The volume of business is light with conditions unsettled and prices variable. Limited shipments of anthracite received from the Lake companies are being retailed at $15.50 per ton, the price fixed by the Fuel Controller, but some dealers are obtaining supplies from independent companies and selling considerably higher.

The price of $ in lump in carload lots, f.o.b. destination, ranges $8.75@$10.25, and Pennsylvania smokeless about $9, retailing for $12. Steam lump retails at $15.50. Representatives of British coal companies are making a strong effort to obtain a footing in this market and prices are lower.

Eastern Inland

Seasonable Temperature Tends to Stabilize Market

Active Call, with Prices Up, for Domestic Coal—Condition Reflected in Steam Section—Car Situation Worse, Production Falls Further—Lake Congestion Slowly Clearing

More stability in the market has appeared with colder weather. Domestic coal is in active call with higher prices and the steam section gets a reflection of this. Prices on industrial fuels, however, are still weak. The Ohio fair-price list is driving much coal out of the state and causing an influx of "foreign" coal at advanced figures.

The car situation is worse and production has slipped down another notch. Old connections are being heavily worked and this leaves but little free tonnage offering.

Heavy Lake shipments have left a considerable tonnage of screenings, which are being absorbed with some price softening. The congestion at lower ports is clearing—cargo coal is being loaded faster than it comes in, and the 15,000,000-ton goal this season will be difficult of attainment unless Lake buyers become more active. It will be necessary to move approximately 1,000,000 tons weekly during the balance of the season to reach the above figure.

PITTSBURGH

Production continues at much the same rate as for several weeks past. There is somewhat louder complaint as to car shortage, this being due, apparently, rather to operators wishing to run at higher rates than to there being any decrease in the number of cars furnished the district.

The turnover in the spot market has decreased further. Consumers more or less supplied quite well by their regular sources of supply and there is little demand for odd lots in the open market. Prices have been softening and are likely to go lower unless there is a serious change in fundamental conditions. Consumers are exhibiting no disposition to stock coal and apparently expect materially lower prices when Lake shipments are completed.

The market stands at about $3.50 for gas grades of steam, $3@$4.25 for byproduct, $4@$4.75 for best gas, all mine run, and about $3.25 for best domestic 1½-in. lump.

EASTERN OHIO

Stabilization of the spot market resulting from a more plentiful supply of coal overtaking immediate needs and the lower temperatures prevailing throughout this section have combined to create a more general and widespread demand. Inquiries from retail dealers have significantly increased during the past few days and retailers are besieged with orders from domestic consumers, the majority of whom have delayed filling their bins in the hope that domestic fuels might be obtained at lower prices than those quoted some weeks back. However, some of the larger operators assert that because of heavy shipments to the Lake there is an abundance of cheap slack in the market.

Car shortage and transportation disability continue to occupy the foreground as the main hindrance preventing maximum production. During the week ended Oct. 7, mines produced only 507,000 tons, which is about 49 per cent of capacity. This is a decrease of 15,000 tons under last wek and 35,000 tons under the second preceding week.

Cumulative figures indicate that up to Oct. 7 this field has produced 7,500,000 tons during the calendar year. The potential capacity for that period is placed at 24,117,000 tons, from which it will be seen that only 31.5 per cent of capacity has been produced.

The majority of spot prices on Ohio coals approximate figures set by the state authorities under the emergency legislation, but in some cases are less than the maximum. Eastern Ohio slack is $3.31, nut and slack, $3.31 mine run, $3.56, and various grades of lump, $3.81. Middle District slack is $3.99, mine run, $4.24, lump, $4.49. West Virginia Panhandle coal is being sold at approximately the figures prevailing on eastern Ohio. Very little West Virginia and eastern Kentucky coal is yet coming into this section because of the transportation situation and quotations on these coals are around $6.50 for mine run and $8 for lump.

Bituminous coal receipts at Cleveland during the week ended Oct. 7 were the largest in many months, total receipts amounting to 1,831 cars which is an increase of 560 cars above the quantity received during the preceding week. Industries received 1,548 cars and 283 cars were for retail yards, the increase being almost entirely in steam coal consigned to industries.

Lake coal is being floated faster than it is coming forward. Stocks on hand at the lower docks are decreasing.

BUFFALO

Jobbers are still declaring that it will not be long before the car supply is so small that it will be difficult, if not impossible, to move coal as fast as it is needed. The squeeze so confidently predicted has not arrived on schedule and the bold ones are hoping with no little confidence that the shortage will not be much if any greater than it is at present.

Somehow it is impossible to keep this country from booming, no matter how many snags it strikes. Maybe they are needed to keep us from forgetting how to steer the ship in a storm. We used to think and work in oxcart units, even in the days of plenty of people not so very old. Now we must think in automobile and aeroplane units and do it ahead of even their time or be run over. Maybe we can afford to give the union miner an automobile pay and have some left.

Prices vary as widely as ever. The range is $5@$5.50 for Pittsburgh gas lump, and Allegheny Valley mine run, $3.75@$4.25, with some No. 8 at $4.75 for lump. Slack is not as high as mine run, about $3.25@$3.50.

COLUMBUS

A reaction has taken place and all grades are stronger. Demand for lump is the strongest feature with sales made around $5.50 for Hocking. The regulations of the Ohio Fuel Administration relative to maximum prices are having the effect of driving the lump out of the state. Retailers in all sections are trying to buy stocks as the recent cold spell has forced the consumers into the market.

Retail stocks are almost nothing and the public is apparently waking up to the danger of the situation. Many of the dealers are compelled to buy West Virginia and Kentucky lump at high prices to take care of the demand. Retail prices are showing some declines with Hocking lump selling around $8@$9. West Virginia splints are $10@$10.50, and Pocahontas, when obtainable is higher.

Steam business is not as active, although railroads are taking a large tonnage. The Lake trade is now booming with a large tonnage moving from Ohio mines to the lower ports. Much of this is mine run which is bought around $3.25. Some mine run which is incapable of being screened is selling at slightly less figures.

DETROIT

Receipts are rather more liberal. According to railway figures, 1,396 cars were received in 48 hours ending at midnight, Oct. 11. Average daily requirements, excluding railway coal, are approximately 550 cars.

There is not a very active demand. The greater part of the business is apparently continuing on a hand-to-mouth basis, representing purchases by industrial plants that have exhausted their reserves. Assuming that a reduction of prices is likely to come after the close of the Lake movement, the retailers are striving to guard against being caught with too much coal acquired at present prices. The householder demand represents a makeshift to tide the buyer over to a time when he hopes to find anthracite available.

Smokeless lump and egg is $8.50, mine run, $6.50@$6.75. Hocking lump and egg is $6, mine run, $3.75@$4, nut, pea and slack, $3.25@$3.50. Pittsburgh No. 8, 2-in. lump is $5, mine run, $4@$4.25, slack, $3@$3.75, Fairmont lump is $5, mine run, $4.50@$4.75, slack, $4.50. Kentucky lump and egg is $6@$6.25, mine run, $4.75, slack, $4.50@$4.75.

NORTHERN PANHANDLE

Mines are experiencing difficulty in securing all the cars they need, and in moving coal in the usual channels even after cars are secured. Lines to the Lakes are choked with loads. The fact that so many mines load railroad fuel is helping to maintain an output. Prices are lower all along the line in view of the large volume of coal turned back from the Lakes.

Northwest

Coal Cargoes Up Lakes Not So Numerous Now

Unprecedented Shipments Fill Demand During Past Weeks—Rail Coal Is Arriving Too—Low-Grade Stocks on Hand Worry Dealers.

The tremendous flow of cargo coal up the Lakes gave evidence, at the end of last week, of slacking off considerably and the keen edge of Northwest demand was somewhat blunted so that nobody worried much even though cold weather is arriving and household demand for hard coal is getting brisker with small shipments to satisfy it. In some markets the price of anthracite continues to stick around last year's scale. Since the general advance on smokeless coals a short time ago there have been no further ascents of quotations on any domestic coals.

A fair flow of rail coal continues, some of it crossing Lake Michigan by carferry from the East, some coming up from Illinois and some from the lignite fields of North Dakota. The result is so much coal is here that dealers who stocked lightly on lower-grade fuels during the summer anticipating a worse October condition than prevails, are having trouble unloading.

MILWAUKEE

The coal situation is improving with recent heavy receipts at the docks. There is plenty of soft coal but anthracite is bound to be scarce. But if no rail blockades occur during that season the supply may prevent discomfort. At present anthracite is being sold at the prices current before the strike. Anthracite is moving to the Northwest very freely by rail, carferrying across the lake.

Coal cargoes are coming in faster than at any time this season. Thus far in October seven cargoes of anthracite and thirty-eight cargoes of soft coal have reached the docks, the former aggregating 56,200 tons and the latter 336,316 tons. Cargo receipts since the opening of navigation to date aggregate 56,900 tons of anthracite and 1,627,271 tons of soft coal.

Following is the complete schedule of prices promulgated by the dock companies on Oct. 1:

Anthracite (retail) Egg, $15.75; stove, $16; nut, $15.95; pea, $14; buckwheat, $11.50.

Bituminous (wholesale) Pittsburg, Hocking & Youghiogheny, $9.75; pile run, $9; screenings, $9. West Virginia screened, $10.25; pile run, $9.75; screenings, $9.75. Pocahontas screened, $13.75; mine run, $9.75; screenings, $9.75; smithing, $11.75. Illinois and Indiana screened, $10.25; pile run, $9.75; screenings, $9.75. Coke, large sizes, $16; pea and nut, $13.

MINNEAPOLIS

The wholesale trade is pretty well over its fears of a serious shortage and is now studying the opposite danger of having too much of the high-priced but lower-grade soft coal, which had to be bought when coal first became available. The better coal is now available, and it is a commercial puzzle what to do with the poorer grades on hand.

The fuel distributor has made an announcement that the Northwest is reasonably assured against any serious shortage of soft coal. This has been realized for some time past, since it became apparent that there would be a reasonable functioning of the railroads. It is true that the interior has not been buying heavily. So far movement from docks is some 20 or 25 per cent lower than a year ago.

It is anticipated that prices on both soft coal and hard will average at least $1 a ton higher than a year ago, although no new hard coal has reached these cities, and no new prices have been announced.

The demand for steam coal is limited. Buyers are awaiting lower prices. They may win in their position, for there is accumulating a certain amount which will doubtless have to be offered at reductions.

DULUTH

Official figures just made public confirm reports that there was a heavy falling off in shipments from the docks during September. Only 16,178 cars went out, of which approximately one-third were loaded from Duluth and two-thirds from Superior. Last year 18,735 cars were shipped.

Receipts of bituminous coal during September were gratifying. In all 1,489,000 tons were received as compared with 657,170 during the same month last year, but anthracite receipts were only 10,600 tons as against 182,600 tons in September last year. For the season to Sept. 30, receipts of anthracite aggregated 27,600 tons, as compared with 1,380,000 tons last year, and bituminous receipts were 1,963,800 tons against 7,186,426 tons last year.

Prices on anthracite have been set as the same as during the latter part of 1921. Coal will go from the docks as follows: Stove, $12.90; nut, $12.75; egg, $12.50; pea, $11; buckwheat, $8.50. Anthracite is being allocated by the fuel administrator at St. Paul. The four cargoes which were received this week were sent to North and South Dakota, the Mesaba iron range cities and villages and to Duluth and Superior. Bituminous prices remain firm as last quoted.

Beside the four anthracite cargoes 52 of bituminous arrived here this week. It is thought that this will prove the high water mark in shipments as only 19 vessels are reported on the way.

New England

Steam Demand Still Quiet; Prospects Not Very Bright

Light Industrial Production and Use of Oil and Electricity Make Gaging of Requirements Difficult—Only Scattered Inquiry Expected—British Receipts Wane.

Demand for all grades of steam coal is extremely quiet. Inquiry is restricted to small users, and apparently there is little prospect of any comprehensive business for some weeks to come. The textile and other industries are still on light production and so much tonnage has been replaced by oil and electric power this year that it is more difficult than ever to gage probable requirements.

The trade seems to have settled down into an attitude where every sale is so much to the good, and only scattered inquiry is expected the balance of the year. Receipts of British coals are slowing down.

Pocahontas and New River shippers are sharing the general dullness. Receipts here are somewhat better on contract, due to marked improvement in dispatch at the various rehandling wharves, but spot transactions are very few. Coal at Newport News and Norfolk is not only in plentiful supply but accumulations show a material increase from day to day. The Western market is not proving as strong as anticipated, and that situation is throwing an extra volume to Tidewater.

While cargoes of British coal are still coming in and more are on the way, the harbor congestion is rapidly clearing up. So far as we can learn there are practically no new sales except of tail-ends that the shippers find themselves obliged to dispose of. On these latter the average price has ranged $6.50@$7 delivered alongside, although in a few instances coal has been sold on cars at the same figures. September showed heavy receipts of foreign coal but by the end of October the trade expects to see the last of these cargoes.

For the Pennsylvania grades there continues only mild inquiry. Orders are especially scarce within easy reach of Tidewater where Hampton Roads coals can be had at reasonable prices. More than a few operators represented in this market are obliged to consider shutting down through lack of business at prices that will pay the present wage scale. Some of the mining interests have already set a minimum price, and unless current demand takes a brisk curtailed production is inevitable.

Cincinnati Gateway

Domestic and Smokeless Exceed Gas-Coal Values

Drop in Steam Price Duplicated in Gas and Byproduct Quotations—Competition Expected to Cause Further Reversion—Lake Business Waning—Rail and River Shipping Grows.

Domestic and smokeless fields are the star features in the Cincinnati market just now. They have crowded gas coal from the center of the stage. The precipitous drop that was taken in the price of steam coal a week ago has been followed with a loss in values on the part of gas and by-product. Those who are market wise report that there will be even further recessions because of the pressure of competition that is being brought to bear by other fields thru those marketing through this focal point.

The Lake business continues to dwindle, although there is still a large tonnage headed that way but there are no cargo takers here now and little buying is being done to help along the supplies piling up. Rail and river shipping is a growing feature here with several companies announcing that they intend to expand in this direction.

HIGH-VOLATILE FIELDS

Kanawha

Kanawha mines are still laboring under the handicap of a car shortage which limits working time to two days a week. The market for steam coal is decidedly sluggish. That the price is not lower is of course due to the shortage of cars and the limitation it imposes upon production. Byproduct is in somewhat better demand than steam, and prepared grades, being extremely scarce, are still on a high level. Failure of industrial buyers to place orders is looking for a scarcity of the prepared grades, which is of course augmented by the shortage of cars.

Logan and Thacker

The tonnage in the Logan territory is but little more than a third of normal. Production we are not able to make accurate Lake deliveries and are in general experiencing difficulty in getting coal to their customers in the West which affects the spot market. Buyers are accepting coal in small lots with a view to forcing still lower prices.

The only factor which prevents unsettled conditions in the Kanawha Thacker field is a shortage of cars. Railroad facilities, however, have been somewhat improved. The best market is in the West but prices are undergoing many changes and the general run is on a lower level than Ohio fixed prices. The Lake movement is somewhat better and cars are coming back in larger numbers.

Northeastern Kentucky

Little improvement is to be observed in transportation conditions. Mines are not producing more than 25 per cent of capacity. There is a little freer demand at the Lakes and it is possible to get more coal through. Prices show a downward trend, at least as to steam coal which ranges $4@$4.75. Prepared grades are much higher. Gas coal is in better demand than steam fuel.

LOW-VOLATILE FIELDS

New River and the Gulf

With an inactive market for smokeless in the East, generally speaking, and particularly at Tidewater where coal has accumulated to some extent, a limited production in New River territory almost suffices to take care of the demand for mine run. The limited car supply is having a tendency to check the downward trend of prices. Mine run is commanding as high as $6.50 in certain Western markets.

Gulf mines are not operating more than two days and a half a week owing to poor transportation facilities. There is no probability that there will be any immediate improvement in the situation. Poor transportation facilities make less difference than would be the case if there were a stronger demand in Eastern markets and particularly at Tidewater. Better markets in the West are not helping Gulf producers, however, inasmuch as the railroads are unable to furnish facilities to move coal to such markets. There are more miners in the smokeless fields than there are jobs.

Pocahontas and Tug River

Conditions on the N. & W. appear to be somewhat more conductive to a larger production, but mines are not producing in the aggregate more than half of potential capacity. The bulk of the output is still being forced into Eastern markets owing to the inability of shippers to get much coal through to the West. The Tidewater market is decidedly sluggish.

Although there has been a slight improvement in the Pocahontas region, the reverse is true as to Tug River mines where for a time recently production has been cut to the very quick owing to transportation disabilities, which precluded a large movement to Western markets. Although there is not a particularly brisk market, the demand is still in excess of the supply, since mines are hardly producing enough to take care of contract requirements.

CINCINNATI

The smokeless situation is in rather a bad way because of the scant number of smaller cars to move coal to the inland markets and the endeavor on the part of the larger companies to live up to their contract requirements. What coal there is falling into the hands of the wholesalers is held at prohibitive figures. Little or no screenings are coming through and this makes its price on the basis of the run of mine.

Domestic buyers are flocking to this market in increasing numbers as a natural result of the cold spell. While there are a large number of mines turning to making prepared, as a result of the drop in the price of mine run yet the supplies are still inadequate.

The car supply is still in a horrible shape. Coal River, Cabin Creek and other Kanawha fields that have shipped only a small amount in many months are particularly hard hit, now that they have labor available.

The retail situation is in a cluttered state. Householders, caught with bare cellars when the cold snap came, are clamoring for coal. There is no change in prices.

West

DENVER

Production in Colorado, according to many of the larger operators, is less than 50 per cent of normal, thanks to bad transportation. However, all Colorado points are well taken care of as the supply is delivered by system cars, which are kept within the confines of the state.

All classes of coal are plentiful in supply in Denver with the exception of anthracite. Anthracite production has been stopped in Colorado on account on the car shortage. No changes in prices at the mines have been made since Sept. 1. Lump varies from $6 @$8. Nut is selling $5.50@$7.50, mine run, $4.25@$5.50, slack, $3@$4.50.

KANSAS CITY

The Kansas coal fields are getting better running time than the average of other fields and as a result the market is fairly easy and prices steady. Fuel oil continues a great factor. Some steam plants are still changing over to oil and some are changing back to coal, but on the whole, it would seem that in spite of what the operators have done in the way of reducing prices, oil is gaining. One reason for this is that when the operators made the price $2.50 for slack they had to make the price for domestic grades, lump and nut, $6, and this has caused such general dissatisfaction that there is difficulty in maintaining the $6 level. Much has sold down to $5.50.

SALT LAKE CITY

Business is still quiet. The weather continues summerlike and those who would buy coal for storage purposes are waiting for the findings of the grand jury, which set out a few weeks ago to examine the price-fixing charges preferred against the operators and dealers by a local newspaper. It is being stated that no indictments will be made.

The car shortage is hampering the mines and production has fallen considerably of late. One coal official declared it is now only 45 per cent of capacity. It is estimated that Salt Lake City has but 10,000 tons in its yards now.

News Items From Field and Trade

ALASKA

The Alaska Agricultural College and School of Mines opened at Fairbanks Sept. 18. A large number have made arrangements to enter. Miners all over Alaska wish to take instructions as soon as their working season closes. The school, organized and headed by Charles Ernest Burnett, formerly federal judge in the territory, opens with the largest library in Alaska, made up of gifts by individuals.

CONNECTICUT

The Elm City Coal Co., New Haven, has recently been incorporated to engage in the coal business. The capital stock is $25,000, and the incorporators include: Jacob Rodofsky, M. Y. Lifsher, and A. J. White; all of New Haven.

The Capitol Coal Co., of Hartford, has filed papers of incorporation under the laws of Connecticut to engage in the retail coal business The capital stock is $50,000, and the incorporators are: Jacob Berson; Joseph J. Berson; and Joseph J. Trachtenooth; all of Hartford.

ILLINOIS

The Callaway County Coal Co., which had been operating a strip mine near Carrington, Mo., for nine years, but which was recently dissolved, has sold its machinery and equipment to F. L. Crosby and Lester J. Miller, of Mexico; L. R. Herrick, of Farmer City, Ill., G. L. McCutcheon, of Canton, Ill., and Carter Norris, of Fulton, several former members of the old firm, who will operate a new corporation under the name of the **Cuba Coal Co.** The company has purchased 80 acres of land near Cuba, Ill., which, according to a government survey, has a decided advantage over the old Carrington field. The equipment is now being moved and the company expects to be in operation by the middle of November.

Coal has been found near Mt. Vernon, in Posey County, at a depth of 75 ft. A 30-in. vein was struck at 32 ft., but the thickness of the lower vein is more than 4 ft. The prospecting is being done by **Lawrence & Bratcher**, who have mines in Illinois. Work on the mine proper will be started in a short time.

The Verona Coal Co., Verona, has been incorporated with a capital stock of $15,000. The incorporators are: C. H. Fellingham, Fred Harford, R. J. Glenn, J. P. Handford.

Coal hoisting at the **Litchfield mine**, purchased several weeks ago at receiver's sale by **Harry Tanner**, Pana, will be in progress within a month. The mine has been sunk lower in order to tap a lower vein of coal. The present vein is six feet thick.

INDIANA

A petition for articles of incorporation for the **Chicago, Attica & Southern R.R. Co.**, which will take over and operate the abandoned Chicago & Indiana Ry., known as the Indiana coal road, will be filed with the secretary of state in Indianapolis soon. While the mines in the extreme southern section have been abandoned, the northern part of the line never has been developed. Brick and clay plants are strung along most every section of the line and many plants were threatened with extinction when the old line was abandoned. Charles F. Probst of Chicago and George Barnard, of Indianapolis, attorney and formerly a member of the Indiana public service commission head the corporation. Stock to the amount of $1,000,000 will be issued. The board of directors of the new company are in addition to Mr. Probst and Mr. Barnard, Roland G. Butler, Urbana, Ill., Shannon Nave, Attica, Ind.; Fred Lyons, Brook, Ind.; J. N. Rhode, Pine Village, Ind., and E. Scott Boone, Kingman, Ind.

The Dana Collieries Co. has been formed at Indianapolis for the purpose of mining coal. The company has a capital stock of $100,000 and the organizers are George Hilgemeier, Anna Hilgemeier and William K. Sprouls.

Felix M. McWhirter, president of the Peoples' State Bank in Indianapolis, has been asked by C. E. Spens, government coal distributor, to serve as a member of the advisory committee for handling the coal distribution problem in Indiana by keeping in touch with the Indiana fuel situation and informing the federal fuel administration of the needs of industry.

Mayor Shank of Indianapolis, has named five citizens to serve as a committee to work with the fuel administration in regulating distribution and prices of coal. Among the five named, two are out of the city, two have declined and one has accepted. **Arthur E. Bradshaw**, president of the Allied Coal & Material Co., has announced he will serve on the committee. The mayor has announced he will appoint others who will serve on the committee.

A consolidation is taking place between the **Indiana Bituminous Coal Operators' Association**, which is the old line labor organization of shaft mine owners, and the **Indiana Coal Producers' Association**, of strip mine men. The question of representation in Indiana on the new reorganization Committee of the joint operators' and miners' conference is now easily disposed of. The state gets two representatives, but since the strip association fuses with the main association, there is nothing in the way of giving the Brazil Block region one of the two memberships. The state will in reality have three seats because Phil. Penna, permanent chairman of the joint conference, is a member ex-officio.

KENTUCKY

In western Kentucky when strikes tied up other fields, miners made so much money that roads were full of miners who were traveling to their work in automobiles. Negro miners were always willing to buy a big car. Used cars were bringing 40 per cent more in the coal fields than in the cities. Today the coal car shortage is so severe that it is hard for miners to keep up even a "Liz" on surplus earnings. Reports of actual starvation conditions among miners of Tennessee and Kentucky fields have been made by the district office of the United Mine Workers at Knoxville, Tenn. Miners have been working but one day a week.

R. H. McCormack of Cincinnati **E. McConnaughy** of Dayton, and **C. H. Carson** of Kalamazoo, all of the Kearns Coal Co., were visitors at the Dudley and Marian mines in the Hazard district recently.

Earle B. Heffner, who was chief engineer for McKinney Steel Co. for the past five years and more, has severed his connection with the above concern. Mr. Heffner and associates have formed the **Heffner Elkhorn Coal Co.**, having 200 acres of coal on Marrowbone. This company plans on opening up this tract at the earliest possible moment and installing an up-to-date mine in all respects.

The Acosta Mining Co. has been formed by W. H. Cottingham, W. C. Burch and Ed. Purcifful.

The Smith-Alston Coal Co. has been capitalized at Hamlin Ky. for $20,000 and incorporation papers have been filed. The incorporators are M. V. Alston, G. B. Smith and G. R. Alston.

MISSOURI

The Carter Coal Co., of Wellington, has been incorporated with a capital stock of $60,000 and will promote and conduct a coal mine as well as a mercantile establishment in connection with it. The incorporators are Fred D. Flocke, Charles G. Grumbo, August Alsing, Herman H. Limtong, H. G. Wille, Edward H. Kuhlman, Henry G. Drewel and Adolph H. Kuhlman.

MONTANA

At a meeting held late in September, in Butte, [illegible] miners, decided to form a union of their own to be in a position to treat with operators when necessary. Nothing was said about wages, leaving the impression that the men were satisfied with the present rates for the present.

Albert Griffin has severed his connection with the Keene Mine, Bair-Collins Coal Co., Roundup. Mr. Griffin was superintendent.

NEW YORK

In order to give greater attention to C-H business in western New York and Ontario, a branch office has been opened by the **Cutler Hammer Mfg. Co.** This office is located in Buffalo. B. A. Hansen, formerly located in New York, has been placed in charge.

J. B. Clark, Jr. has recently become associated with the Pennsylvania Crusher Co. as sales engineer, and will make his headquarters at the company's New York office. For a number of years, Mr. Clark has been associated with the Koppers Company of Pittsburgh in the erection and operation of byproduct coke plants, including the Seaboard plant at Jersey City.

Grant B. McLaughlin & Co., on Oct. 1 opened a coal office at 713 Mutual Life Bldg., Buffalo. Mr. McLaughlin was formerly connected with the Donner Steel Co. and will also look after the iron trade.

OHIO

C. A. Clyborne, president of the Three States Coal Co., with headquarters at Bluefield, was a recent visitor to the Cincinnati office of his company.

For the third time, the **Columbus Board of Education** has asked for bids for approximately 10,000 tons of lump coal for the winter fuel supply. The last date for opening bids has been fixed at Oct 23. On former occasions all of the bids were rejected.

Quite a few coal companies, mostly for mining and distribution purposes, have been chartered recently under the laws of Ohio. Among the number are: **Windsor Coal Co.**, Steubenville, capital, $25,000, to mine in Jefferson County, incorporators Harry A. Bell, Thomas Rock, Bates Williams, A. Barakat and S. S. Hill. **The Maghes Coal Co.**, of Byesville, capital $25,000, by Aaron J. Maghes, Samuel Barnicker, Jacob Weiner, James W. Bell and E. M. Johnston. **The Atlas Coal Co.**, Cleveland, capital, $10,000, by P. J. Van Dame, Samuel Horowitz, A. Lukowitz, M. Mergner and E. R. Walters. **The Cottage Grove Coal Co.**, of Akron, capital, $75,000, by Nathan M. Berk, S. Bernard Berk, Katherine Wyss, Ross Darling and George W. Coble.

PENNSYLVANIA

A State charter was granted at Harrisburg recently to the **Chestnut Hill Coal Co.** Pottsville. It has a capital stock of $[illegible],000, and David L. Griffiths, Pottsville, is treasurer. The purpose is mining and preparing coal for the market and the incorporators are David L. Griffiths, Ralph M. Griffiths and Albert Morgan, all of Pottsville.

The Shaffer Coal Co., Ohiopyle, has been incorporated with a capital of $25,000, H. P. Shaffer, Terra Alta, W. Va., is treasurer, and one of the incorporators, the others being H. C. Shaffer, Cumberland, Md., and C. A. Lambert, Ohiopyle.

The Delaware Lackawanna & Western R.R. Co. has appealed from the assessment of anthracite tax by Auditor General Snyder, and S. L. was for two months producing of coal in 1921. The appeal raises questions whether the revaluations should stand and whether coal used by the companies in producing coal should be taxed. The tax involved amounts to $[illegible]. The latter four months of 1921 are covered by the **Glen Alden Coal Co.** appeals.

A charter has been issued to the **Fair Coal Co.**, Scranton, with a capital stock of $25,000, N. R. Brown, Scranton, is treasurer. Incorporators are: N. R. Brown, Thomas Harrington, Scranton, and Joseph P. O'Donnell, Kingston.

TEXAS

John Williams, president of District 21, United Mine Workers, has been removed by Sam Mahon, [illegible] international president, following [illegible] of treatment of coal miners in the central western Texas coal fields about Thurber. Miners and other units in Texas Rangers sent into the district. It is alleged they have intimidated, threatened and otherwise attempted to prevent striking coal miners to go to work. Mr. Wilkinson has also telegraphed Attorney General Daugherty regarding the situation and has requested an investigation by the Federal Government. The miners have been on strike for about a year and a half.

VIRGINIA

The Elmwood Coal Corporation, Gilmanton, has been organized and incorporated with James W. Daniel as president and [illegible] as secretary. The authorized capitalization is $50,000.

The Brooke Coal Co. has been incorporated with $50,000 capital stock to [illegible] coal and timber in Brooke County. The incorporators are [illegible] and L. H. Sargent is president. [illegible]

WEST VIRGINIA

Claiming that the U. M. W. have refused to sign the agreement with him and that he is bound to pay the penalty for non-performance of the contract, H. M. Sage is [illegible] operators' association. The union has charged the operator with non-payment of the check-off for the month of August. The operator claims that the check-off was paid to the Charleston and Kanawha Coal Co., and that this company refused to turn over the money to the union. The operator claims that the check-off was paid to the Charleston and Kanawha Coal Co. by agreement with him until the Federal court decision was rendered, and that this company refused to turn over the money on the closed shop plea. The case is to be heard in the district court of the Southern District of West Virginia. Officials of the International Union and local officers of the United Mine Workers of America are named as defendants. Sage has also instituted attachment proceedings with a view to obtaining the payment of money withheld by the check-off throughout Harrison County. Many of the mines have been closed for a number of days and it is understood by other companies.

The Blue Ridge Collieries Co., a Virginia [illegible] has been granted a West Virginia charter. Capital is 15,000 shares of no par value stock.

Vice President W. G. Paik of the Kanawha Coal Co. at Charleston, was a recent visitor to Bluefield.

Organization of the **Slater Creek Coal Co.** in Charleston coal field presages development work on the affairs owned on a fairly large scale, the company being capitalized at $[illegible]. Its offices will be at Charleston, having an active part in the organization are: A. S. Guthrie, E. H. McNeil, W. P. Hoff, A. J. Peck and L. S. Carter, all of Charleston.

The Cedar Grove section of Kanawha County is to be the seat of operations of **the Cedar Grove Coal Co.**, of Danville, Boone County, which is capitalized at $[illegible]. Associated with J. J. McLaughlin of Danville in this concern are: Horace S. Meldrum, Paul Smith, Louise Theiling and Libbie Walker, all of Charleston.

BRITISH COLUMBIA

Consideration of the coal mining returns for the past few months indicates that some records have been made in production. **The Western Fuel Corporation** of Canada during August had an output of [illegible] tons. As far as is known this is the greatest monthly output to the credit of the company since it began coal mining. The average production for a month is [illegible] tons. **The Canadian Collieries, (Dunsmuir) Ltd.**, also has improved its showing remarkably, production for August being [illegible] tons. **The Nanoose Wellington Collieries** had a production in August of 13,312 tons the best record yet hung up by this corporation. The same activity prevails in the Nicola-Princeton coalfield. **The Coalmont Collieries**, for instance, jumped their production to 18,059 tons. This is the highest mark reached by that concern. **The Middlesboro Collieries**, too, had an output of 9,500 tons, which compares more than favorably with past showings. Total production of the Provinces for this year to date approximates 1,600 tons which is an exceptionally fine record when it is remembered that the collieries of the Crow's Nest were closed down through strike from the latter part of March to August 28 last.

NOVA SCOTIA

The Gore Coal Co. has announced the discovery of a new seam of coal at a depth of more than [illegible] ft. This is the second seam located through drilling operations at Gore, and it is expected that shafts will be sunk shortly.

ONTARIO

The British American Coal & Ice Co., Ltd., of Ford City, has been incorporated with $40,000 capital stock. The provisional directors are Morris Shapiro, Arthur Stewart and Israel B. Levin.

York Coal Co., Ltd., of Toronto, has been incorporated with $100,000 capital stock. The provisional directors are James Franceschini, Harry H. Salmon and David F. Brazel.

WASHINGTON D. C.

The United States Civil Service Commission states that there is urgent need for eligibles to fill positions of junior engineer and deck officer under the United States Coast and Geodetic Survey, and that an examination for such positions will be held on Dec. 13-14, 1922. A prerequisite for consideration is that applicants shall have completed at least three and one-half years of a course in civil engineering leading to the degree of B.S. or C.E., in a college, university, or technical school of recognized standing. Graduation with one of these degrees is required before appointment.

Traffic News

[illegible] shipments of coal from the Kanawha and Cincinnati fields as well as any shipments from the Tri-State field, are said to be primarily responsible for the embargo [illegible] Coal Railroad will be in a position to handle [illegible] shipments is made evident by the announcement that the company has given orders for 3 new [illegible] cars. The coal carrier, however, will be well under way for the winter before these cars can be delivered.

Daily and weekly reports on freight car supply and distribution of all railroads [illegible] in Washington have been requested by the Department of Justice. The reports are to cover the [illegible] work of the railroads and are [illegible] to view of the present shortage of freight cars. The roads included are the Milwaukee, Great Northern, Northern Pacific, Chicago-Washington Harbor, Portland & Seattle, Grand Trunk Western & Canada, Canada Pacific and Toledo [illegible] Railroads.

In order to facilitate the handling of coal on the **Pennsylvania Railroad** orders have been issued for the [illegible] to [illegible] cars [illegible] Tuesday [illegible] cars [illegible] of the [illegible] of cars to [illegible] Information of the Interstate Trade Commission. By carrying supplies of coal [illegible] to be put [illegible] are [illegible] of [illegible] cars. **The Philadelphia & Reading R.R.** [illegible] the [illegible] [illegible] [illegible]

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

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When and Where to Apply Self-Restraint

WHAT a lesson the public is teaching itself on coal! A most remarkable demonstration of the great axiom that the destiny of the coal trade is in the hands of the consumer is being staged. There have been buyers' strikes on coal before but never under the conditions of today. Previous general withdrawals of consumers from the market, to the discomfiture of the coal producer, have always had a background of large stocks and were explainable as the normal result of falling prices on an overstocked market. They have always gone too far, it is true, and reacted in the end to the disadvantage of the buyer. Hitherto these long sweeps have had no guidance; they have simply been the expression of uninformed mass psychology.

Six years ago this week the country awoke to the realization that consumers' stocks were low, consumption was increasing and that a nationwide car shortage had developed. Prices at once reacted to new high levels. The coal shortage then begun lasted until the armistice. Conditions with respect to stocks, consumption and car supply are essentially the same today as in the autumn of 1916. The differences are only in degree; the relative positions are the same. Yet the price is falling.

The United States Chamber of Commerce has just completed a survey of the country and reports that although reserves of soft coal are "less than normally carried," the bituminous-coal situation "is becoming easier" and that there is no "general complaint as to price." Production of bituminous coal is no more than sufficient for current consumption and permits no stocking. "It should be borne in mind, however," says the Chamber, "that this is an average figure [of stocks] of small plants and large plants, and covers stocks varying from a few days' to two or three months' and in some instances even longer."

The self-restraint of the buyer is being intelligently directed. The mine price of soft coal is even yet high enough to call forth all the production the railroads can carry. The buyers are taking all the coal they can possibly get, but they are buying it without panic. From the standpoint of supply and requirements—as contrasted with demand—this is a sellers' market. Yet the buyer is so largely in control that he is really making the price on a large part of the output.

In 1919 the positions were reversed. The country was overstocked with coal, consumption was falling sharply. The coal producers, fresh from the lessons of the war, having been forced by the Fuel Administration to learn their costs, refused to be stampeded into price cutting. It was a buyers' market in the summer of 1919, if ever there was one, but the price was maintained by the self-restraint of the seller.

If it be granted that steady prices and absence of violent fluctuations in the market make for stabilization of the coal industry, then the obvious conclusion is that self-restraint should be preached to and practiced by the side that will be benefited thereby. Teach the public its responsibility in a two-sided game, as well as the coal operator. It is easier and more sensible to drive home to the buyer his selfish interest in not going wild and paying prices for coal that cannot encourage production and thus to prevent high-price scandals, and to give the operator the right and opportunity to protect himself against the ruinous low prices that obtain at other times, than to campaign against the natural and human instinct of the buyer to beat the price to the lowest level irrespective of consequences, or of the producer to refuse to take a handsome profit when it is offered to him.

The present concerted restraint of the coal buyer is not an accident. It is the result of broad national planning, conceived in advance of the fact. It exhibits a phase of the national coal situation that we trust will not be overlooked by the Federal Coal Commission in its study. It is true that the chapter is but opening, that the experiment may fail, but it is certain that future chroniclers of the coal question will look back on the buyers' strike of 1922 as a well-conceived stroke of national policy, carefully executed, and that credit for its conception and execution will be placed where it belongs.

Solving Hard Coal's Commercial Problem

COMMERCIAL production of large sizes of anthracite, including pea, averages around 50,000,000 gross tons per year. Of this, in normal years, the railroads take about 2,500,000 tons; gas plants, 700,000 tons, mainly the egg and broken sizes, and industrials some 1,800,000 tons, a total of 5,000,000 tons, or about 10 per cent of the prepared sizes. This represents a substantial and desirable trade.

It was generally recognized during the war that household use should have preference in distribution of the larger sizes and the allotments of the Fuel Administration to other than domestic consumers were cut as much as possible. The allowance for railroad use, for instance, was but half the normal taken for that purpose. Somewhat the same situation has arisen this autumn. With retail distribution of the favored sizes largely on a hand-to-mouth basis and consumers' reserves at a low point, hard-coal shippers are holding back other consumers and discriminating in favor of the small user.

A small industrial consumer of egg coal recently called on the president of an anthracite producing company to inquire as to the prospect of getting 200 tons, his winter's requirements. He was told that he had not the slightest chance, that he was "out of luck," that in fact he "had his nerve" to come in and raise the question. The buyer mildly stated that he well knew that he was a "non-essential" but that during the war

he managed to get his coal and wondered whether matters were now so bad that he could get none.

He was not only given no encouragement but was sent away with the feeling that there was no hope for him in the future. He at once set about installing coal-burning equipment in his plant. Thus a small piece of hard-coal trade was lost. There was no effort to convert him to the use of sizes smaller than pea, although at that moment the steam sizes were in oversupply. This coal-company official might have taken an interest in the fuel problem of this anthracite consumer, called in his engineer—if he chance he has one—looked over the plant, advised on proper equipment for utilizing junior sizes and thus saved an outlet for a part of his product that even in the best times is difficult to move.

Attention to small details is the foundation of successful enterprise. If this incident, involving one of the largest anthracite producing companies and one of the smallest consumers, is typical, and it seems almost to be, then progress in solving the real commercial problem in hard coal—the steam size—is certain to be slow.

Today and Yesterday

NEW occasions bring new duties, and the mining engineer should be as cognizant of this as anyone. A great change has come over the mining industry in recent years. A few years ago the need for exploration dominated every other need. Every mining man in the coal regions of Pennsylvania and later of West Virginia and Kentucky was a geologist, and the residents of those sections were hardly, if at all, behind. Every farmer had coal land to sell, every lawyer and real estate man (they did not then term them realtors) had coal land to lease or dispose of, and every merchant had in mind taking options on coal land or already had it cornered and for sale. The mining engineer's intensive study of geology, consequently, not only solved every-day problems but gave him a standing in the community that he could capitalize.

The day of exploration is largely past. A little of the earlier interest and need for coal geology remains and will always remain. There are still outcrops to be traced and drillholes to be bored; there are still a few unexplored areas in the more important fields; there are still possible extensions of old fields; there are waste and faults, but these matters do not stand where they once did as the leading problems of the engineer. It is a day not so much of exploration of doubtful, as of development of known, deposits.

In mining today we are no longer satisfied to use the natural forces of nature assisted by mechanical appliances. The study of mechanical engineering therefore is the greatest need of the mining man. He no longer can satisfy himself with geodetics, with the geology of the coal measures, the chemistry of mine gases, the physics of air and heat, as was once his wont. He has now to delve and delve deeply into electricity; he has to attain a mechanical mind. He cannot safely let the industry move away from him.

For a while he may be able to regard his mechanical brother as a man in an inferior branch of the service and "make away with it." Or again, for a season he can hide his ignorance of electricity by relying on the advice and place of the salesman of an electrical house. But let him not deceive himself; he cannot do it forever. Let him study now when he has the opportunity; let him ask questions today, when ignorance of electrical lore is still regarded with tolerance; let him gain experience while the chance offers, or the time will come when so much has to be learned that a busy man cannot hope to acquire it and when his mind, no longer as retentive and flexible as in early years, will fail to grasp what is presented to it. The coming executive is going to be well booked on electrical methods. Are you hoping to become an executive or are you expecting to continue in that position? You cannot do it if indifference to such matters prevents you from studying electrical methods.

How Nicely They Do It

A PAPER from DuBois, Pa., contains the heading "Road Work Suffers as Back-to-Mine Move Grows" and describes how the men are leaving their labor on the high roads to work at the mines. The road contractors, if they ever give a passing thought to the irregular way in which their industry functions, need not worry about their men being idle in the winter. The mines will take care of them at good pay, which is about three times as large as the contractors on road work are offering.

The reason why the employees of road contractors do not have an idle season is that they are willing to work at low wages and so can readily drift from one kind of a job to another. If the coal mines paid $2.80 a day to their men they would be deserted in slack periods, and the miner, finding work elsewhere, would make no complaint about the layoff. But because he gets about $8 a day he can find no place to go where he can do as well. He is therefore disposed to stay, working part time at the larger sum and making as much as if he worked steadily at the smaller. Thus he continues his residence around the mines and finds fault with the operator if for several days each week the working whistle is not blown.

If wages dropped at mine workings to $2.80 per day the last would be heard about the overmanning of the industry. Why is it overmanned? Because it pays best, because it is desirable work—cool in summer, warm in winter—also because, unlike most rough work, it is reasonably steady. Most roustabouts have to spend several evenings each month hunting for jobs. They are laid off for every rain and sometimes do not have a chance to return to work till the roads dry. They do well to average an even 200 days a year and then only by eternal watchfulness for odd jobs.

The mine appears to them to be a good opportunity for reasonably steady labor at a high rate. With the present pay the men cannot be driven away from the mines, but should it fall to road-making levels it would be easy enough to wash one's hands of one's men. They would be gone within a day after the work stopped, for then any other job would be at least as remunerative even if not as reliable or as easy as coal mining. The mine workers are always protesting to the public of their hardships, their great hardships—low pay, bad working conditions, irregular work, powder charges, house rent, doctor and hospital check-offs—but the overmanning of the industry proves that they stay, that once they have joined the coal-digging confraternity they will not leave the mines. By this sign they surely make a more conclusive answer to their allegations than anything the operators can say.

Detection of Waste of Time And Current at An Anthracite Colliery

By D. C. Ashmead*
Kingston, Pa.



Few Know Just How Many Hours Their Breaker or Tipple Runs—John Conlon Colliery Measures Idle Time with a Recorder—Also Checks Current Used by Hoists—Care in Detecting Grounds

NEAR the city of Wilkes-Barre is the independent colliery of John Conlon with an output of about 300 tons a day. It is supervised directly by members of the Conlon family with a supervision probably more careful and competent than is customary with a mine of such an output.

The Conlons have long recognized that one of the greatest sources of loss in operation arises from broken time during working hours. Delays in one section of the operation often tie up the whole plant, for nearly all the plant operations are dependent, not only ultimately but almost immediately, on one another. Without storage provision division of labor inevitably produces great loss of time and in mining operations each department must do its work with unerring schedule or almost all other departments will be obliged to wait for the slow department to come up to the mark, thus entailing considerable monetary loss.

Frequently the length of time wasted is far greater than is recognized. Delays are vexatious and we rather like to minimize them when estimating their importance. Because their length is rarely a matter of record, few steps are taken to reduce their number and duration. Hoists are not used to their full capacity, locomotives stand idle, breakers fail to operate. Everywhere are men and machinery on the job yet without doing work of value, adding to the payroll but not to the product.

To detect the wasted time in their collieries the Conlons purchased a number of Servis Recorders. The interior of one of these simple recorders is shown in Fig. 2. The recorder consists in part of a clock to which is attached a recording chart. This paper is graduated to show 10-minute periods. In the other half of the recorder is a pendulum to which a pencil is attached. The recorder is hung vertically, so that the

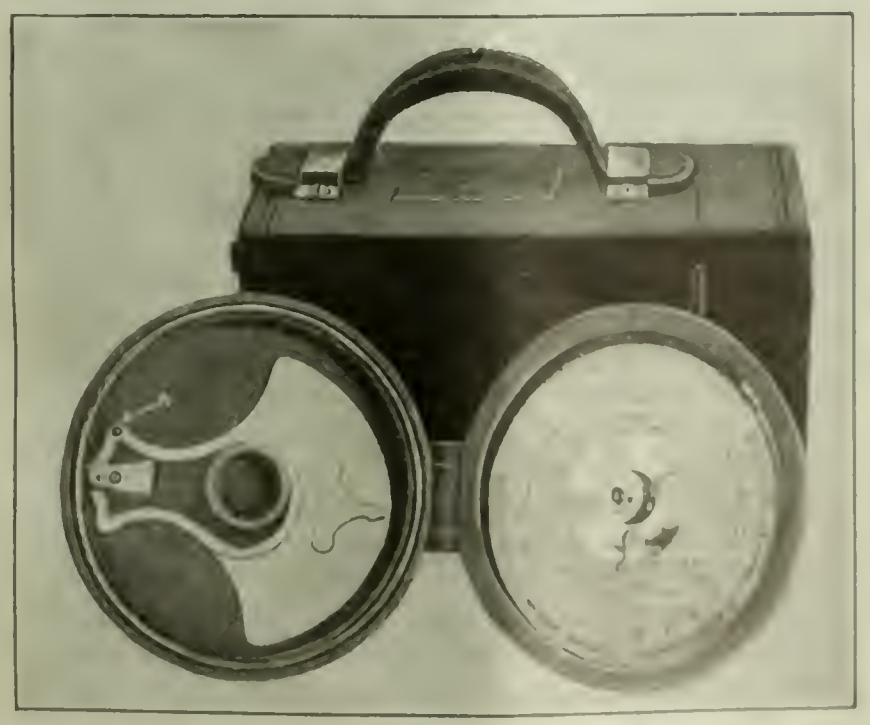


FIG. 1—RECORDER NOTES WHEN PLANT WORKS

Illustration is of interior of instrument. The right half is a paper chart which is revolved by clockwork. It rotates once in 24 hours. On the left is a pendulum in the form of a half disk and shown turned on one side. When the recorder is properly hung, the pendulum swings with the vibration of the breaker or mechanism to which it is attached. A pencil *A*, makes a mark on the chart whenever vibrations are to be recorded.



FIG. 2—CHART SHOWING WHEN BREAKER WORKED

From this chart the actual time of any delay and its length can be ascertained. When inquiries are to be made into causes for idleness, the story is already half told. After knowing the time is known the reason can be found and the cause determined. What suggests why, and why explains how the trouble can be avoided

*Anthracite Field Editor, *Coal Age*.

NOTE—Headpiece shows the John Conlon Colliery, near Wilkes-Barre, Pa. This is a long established, independent operation with offices at Hudson, Pa. About 100 men are employed.

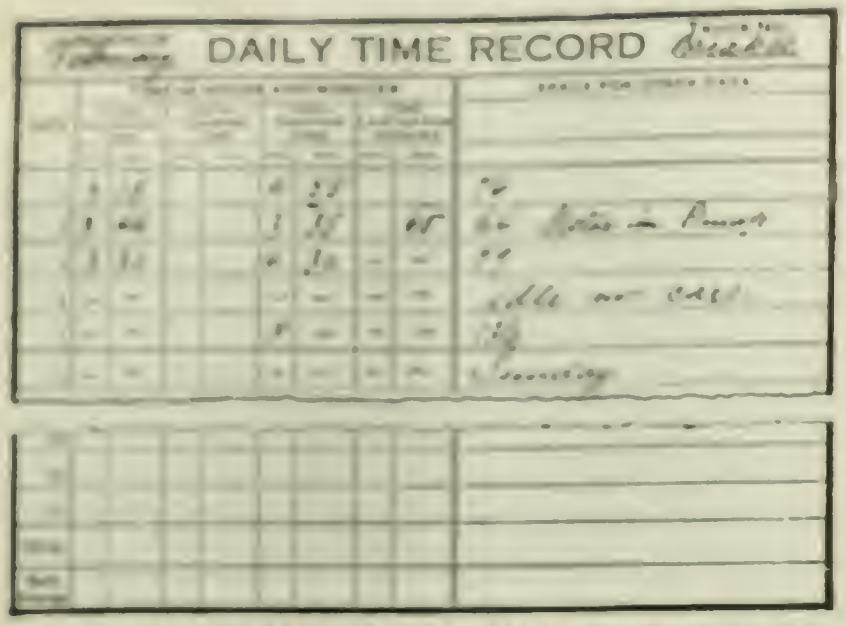


FIG. 3—TIME RECORD MADE FROM RECORDER CHART

pendulum swings free). The case is then closed and locked. As the machinery of the breaker on which the recorder rests vibrates the pendulum swings, making with each swing a mark on the recording dial. When there is no movement because the machinery or the breaker is idle no mark appears on the dial. In consequence the exact time during which the machinery is working is registered on the revolving platen. Every day these dials are collected and the time of full operation or its converse, the time of idleness, is measured.

Not only is the full time of operation shown but each stop also, and it is possible therefore to check up the entire operation of the breaker or motor by inquiring into the reasons for the particular shutdown. Finding out the causes of delay, some rearrangements may be made that will make such delays unnecessary in the future. Just the manner in which the records of this meter are made and used is shown in Figs. 2, 3 and 4. The first shows the actual performance of the breaker in one of its regular runs, the second shows how the results are tabulated day by day and the third expresses by means of a curve the operation of the breaker. By comparing the hours worked by the breaker and the number of cars hauled each day it is easy to determine if the breaker when working is at all times equally efficient.

So much for saving of time; now for savings of current. Two men employed to do the same work under precisely the same conditions will do it with entirely different expenditures of current. One man will be more efficient than another, and even where the efficiency of the least efficient has hitherto satisfied the management and is above the average, comparisons enable the

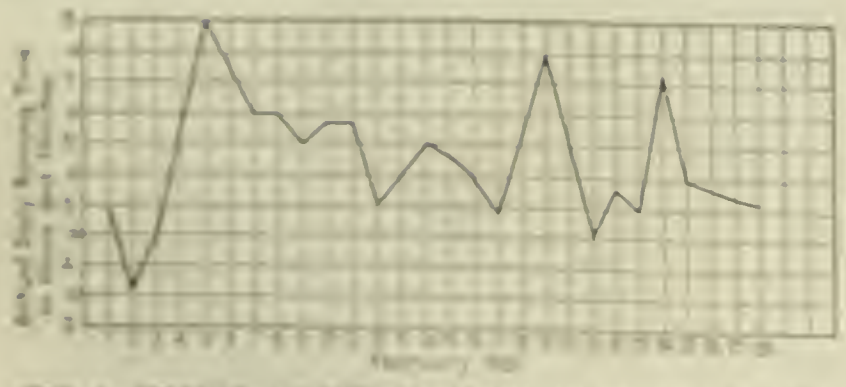


FIG. 4—RECORD OF HOISTING TIME IN FEBRUARY, 1911

officials and the man himself to see how his efficiency can be raised.

At this mine a hoist is installed which raises the coal through a short slope up a plane to the top of the breaker (headpiece). It was decided that the efficiency of the men operating the hoist should be tested. A Westinghouse graphic meter (Fig. 5), showing the current used, was hooked to the line. This was done without the engineer being informed. From the two charts thus obtained, parts of which are shown in this article, one engineer can be seen to be considerably more efficient than the other. In the first chart the engineer is shown to have used at times as much as 240 amperes and withal did not bring his loads as rapidly to the surface. It is evident that he threw the controller fully on when starting. On the other the other engineer used barely 160 amperes as a maximum and in most cases less than 144 amperes, and yet his hoisting time was shorter.

From these diagrams it can be readily deduced, therefore, that one engineer got out more coal with less

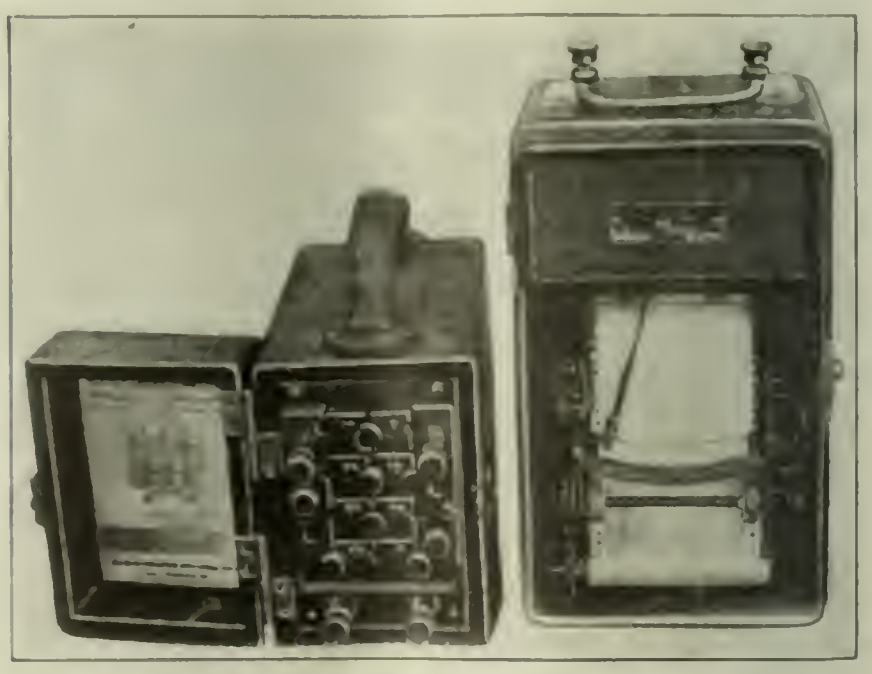


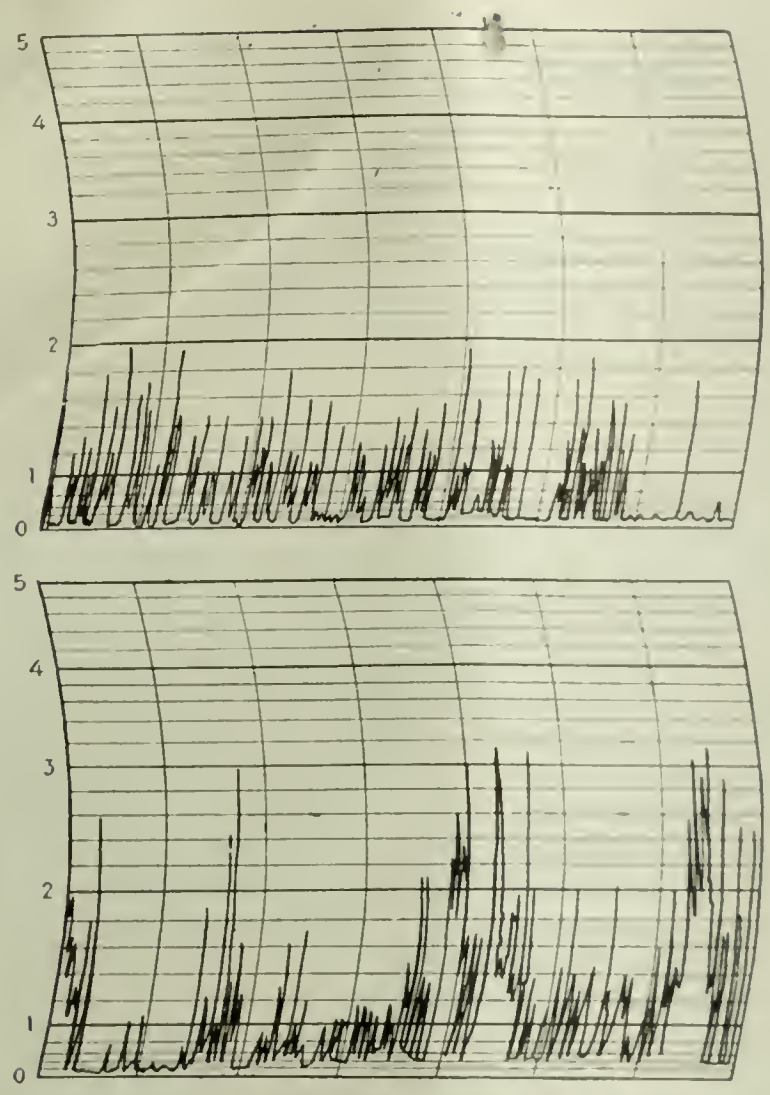
FIG. 5—GRAPHIC METER AND CONNECTIONS

This apparatus was used to ascertain how much power was being used to haul a car up the plane to the top of the breaker and how quickly the work was done.

power and in less time than the second engineer. Evidently with proper instruction the less efficient man could learn to do his work as well as the other man; if not he could be given work where his lack of co-operation or skill would not so greatly injure the company.

The use of electric power without the performance of work is one of the most unnecessary wastes of power around a mine. This type of waste is caused by short-circuits and grounding. At the Conlon Colliery much care is taken to prevent loss of power due to grounding, and for this the simple device illustrated diagrammatically in Fig. 8 is shown. A bank of four lamps (shown also in Fig. 9) connected in series is placed above the switchboard. Lamp No. 1 is connected to wire No. 1 from the transformer and lamp No. 4 with wire No. 3. A connection is made from the ground to a Westinghouse voltage relay. Another terminal of this relay is connected to a point between lamps Nos. 2 and 3. The other two terminals are connected with the leads to wires Nos. 1 and 3. One of these connections is in series with the no-voltage release coil on the main switchboard.

If there are no grounds on any of the lines, then the voltage of the ground lead is 186 volts. An increase



FIGS. 6 AND 7—RECORDS OF TWO MEN HOISTING SIMILAR LOADS ON INCLINE

The engineer whose power consumption was recorded in the upper chart, Fig. 6, used little power and, as can be seen by the frequency and regularity of his peaks, made more runs per hour. The second man was a current waster and did not land as many trips as the first man. He evidently needed instruction.

of potential of 4 volts in this ground will open the contacts on the relay and release the circuit breaker, on whichever line it happens to be.

In case of a ground in line No. 1, lamps Nos. 1 and 2 will light up; if in line No. 3, lamps Nos. 3 and 4 will light up, but if the ground is in line No. 2 all the lamps will burn brightly, in all cases increasing the voltage, which when normal is at 186. When the voltage rises

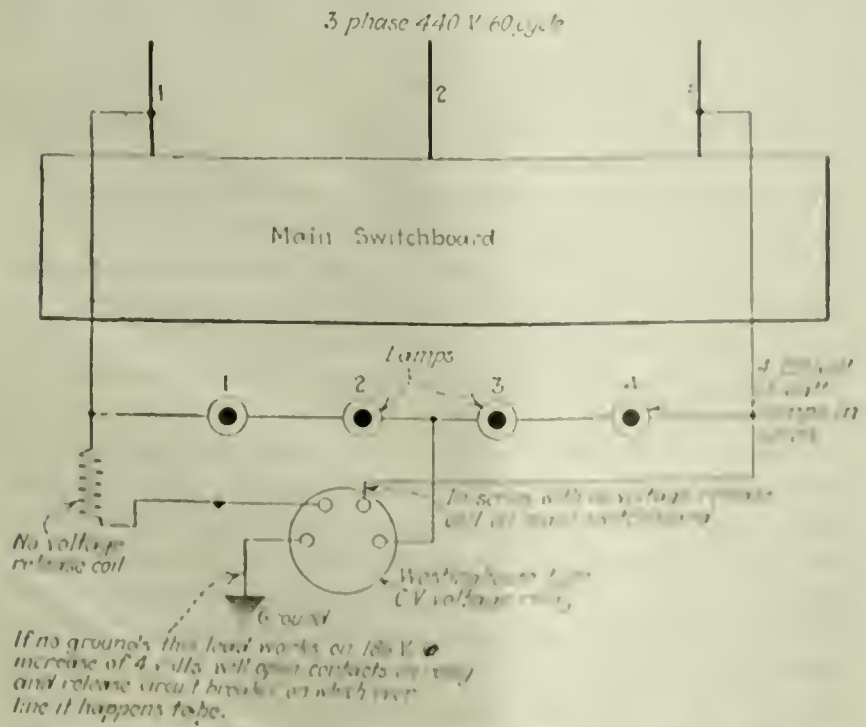


FIG. 8—ADJUNCT TO SWITCHBOARD LOCATES LEAKS

Short-circuits and grounding cause many current losses, preventing the power being used for useful purposes. To this device the Canton colliery gives much credit for lowering the cost of current to 9c. per ton.

in the ground above 186, the relay will open, breaking the circuit in the series coil on the circuit breakers and opening the circuit.

Having a system of this kind it is possible to detect instantly whether there is a ground in any of the circuits. Knowing this the electrician can locate the leak and make the needed repairs. It also tells him when the repairs have been made satisfactorily. When the lines have no grounds the lamps burn with a dull-red light.

By being able instantly to detect losses due to grounds and to ascertain what power is lost in electric machinery by inefficient operation this company has been able to keep its power bill down to about 9c. per ton of coal mined. No steam is produced at this mine. All the power is electric, and therefore with the proper testing apparatus and a man who understands its proper use large savings have been made. There are many



FIG. 9—WIRING OF LEAKAGE DETECTOR

In case of a ground in line No. 1, lamps Nos. 1 and 2 will light up. If one occurs in line No. 3, lamps Nos. 3 and 4 will light up but if the ground is in No. 2, all the lamps will burn brightly, in all cases increasing the voltage which, when normal, is at 186. When the voltage rises in the ground above 186 the relay will open, breaking the circuit in the series coil which forms part of the circuit breaker and opening the circuit

operations in the anthracite region which show a power cost running many times the figure given here, for anthracite unfortunately cannot be mined with as small a power consumption as most of the bituminous coal of this country.

STUDY OF THE PHENOMENA of coal-dust explosions has been continued by the U. S. Bureau of Mines during the present year in a specially designed steel laboratory gallery. This gallery is 10 in. in diameter and 14 ft. long, and is provided with a breeching that has a small cannon and relief valves. Dust under test is injected into the gallery at points spaced 1 ft. apart throughout the length of the gallery and compressed air is used for projecting the dust. A study was made of the interval between the time of projecting the dust and firing the cannon and the influence of the temperature and humidity of the air within and surrounding the gallery was determined. More than 200 tests have been conducted with standard Pittsburgh coal dust, in a part of which inert shale dust was used to limit or prevent the propagation of flame. The gallery has been equipped with the necessary pipes and meters to admit of the use of natural gas for the study of the influence of low percentages of gas on the explosibility of coal dusts. A number of dust samples from industrial plants and from coal mines have been tested in the gallery in connection with explosive hazard reports made by field engineers of the bureau.

Problems of Bituminous Coal Washing and Measures Now Being Taken for Their Solution*

Review of Washery Methods—Trouble with Wet Coal in Byproduct Coking—Why Wash Fine Coal?—Preferably Screen It Out, Wash the Coarse and Mix Washed Coal with Unwashed Fines

BY G. R. DELAMATER
Harrisburg, Pa.

IN THE last three or four years only a very few coal washeries have been constructed in the United States and it is not difficult to find the reason for this fact. During the past twenty years many washeries have been built employing the wet process with a wide variation in the method of its application. It would seem that a marked prejudice against this process in general is now held by practically all who are engaged in the mining and preparation of bituminous coal.

Until about ten years ago the jig in various forms was almost the only type of concentrator employed in the washing of bituminous coal. An exception was the Campbell bumping table, which has been installed in several of the largest washeries in the country. That the results obtained were quite satisfactory in many instances is proved by the recent construction of a second plant for the Cambria Steel Co. at Johnstown, Pa., which is one of the few washeries built in the last four years. Some effort has been made to introduce trough and log washers, but these proved unsatisfactory and attracted but scant attention.

Wet concentrating tables of various types, although extensively employed in ore-dressing plants, had never been used in this country for the preparation of coal, as it was quite generally felt that their capacity, considering the cost involved, made them impracticable for such use. Furthermore, their employment in ore concentration was confined to the small-mesh material, jigging of the larger sizes being the usual practice. No doubt this custom in a field generally conceded to be well advanced in the art of concentration had the effect of fixing the concentrating table in the minds of coal men as being unsuitable for treatment of the coarser sizes.

STAG CANON FUEL CO. INTRODUCES WET TABLES

The Stag Canon Fuel Co. of Dawson, N. M., probably was the first firm to attempt development of a wet table for the concentration of coal, both small-mesh material and some of the larger sizes. The results obtained attracted the attention of manufacturers of wet concentration tables and resulted in the development of several good types suitable for coal treatment.

Possibly the next development of importance was the introduction of the Dorr thickener to replace the old drag-conveyer sludge-tank equipment used as the first step in the reclamation of the washed coal from the water. Closely following this came the introduction almost simultaneously of the Wendell and the Elmore centrifugal continuous coal driers.

Rapid replacement of the beehive by the byproduct coke oven imposed an even greater need for improvement in coal-cleaning methods. For example, exceedingly wet coal charged to the beehive oven was not deemed objectionable and at times was even considered desirable, but coal with a moisture content in excess of 8 per cent charged to a byproduct oven usually resulted in a loosening of the carbon deposit on the walls of the coking chamber, thus creating leakages which seriously affected the yield of byproducts. It was found that in some instances the centrifugal drier so successfully overcame this difficulty that it was no longer necessary to store the washed coal in draining bins before it was charged. It should by no means be assumed, however, that the centrifugal drier always can be used successfully, as many conditions may be encountered where it would not be at all suitable.

BONSON TABLE GAVE QUITE PROMISING RESULTS

Various methods of dry concentration developed but probably the first to attract serious attention was the Bonson dry concentrating table. Promising results were obtained in its first application to coal, but, unfortunately, those in control of this process failed to co-operate with men of the coal industry thoroughly familiar with the requirements and conditions to be met. As a result the improved table failed to accomplish results equal to those achieved with the original device, and interest in this process died out completely.

The next development of note was the introduction of the "Chance Process" by the T. M. Chance Co., of Philadelphia, Pa. In this process sand is introduced into the water in a suitable container and by agitation is maintained in suspension, thus creating a liquid of high specific gravity. Separation of the impurities from the coal is accomplished in a manner similar to that employed in the laboratory float-and-sink test, where zinc or calcium chloride is used to produce a liquid of the desired specific gravity.

It would be well to mention here that some ten or twelve years ago J. R. Campbell, chief chemist of the H. C. Frick Coke Co., patented and experimented on a commercial scale with a calcium-chloride process, but while the separations were exceedingly satisfactory other objectionable features developed which caused the abandonment of this effort.

When the T. M. Chance Co. started development of their process on a commercial scale in the Pennsylvania anthracite field gratifying results were obtained; but it was found that with the rectangular tank which they were using they could not obtain a constantly consistent separation of the impurities from the coal. Upon adopting the old and well-known inverted Robinson cone tank, however, this trouble was overcome.

H. R. Conklin has under development at one of the breakers of the Hudson Coal Co. at Scranton, Pa., a process quite similar to the Chance method except that in place of a coarse granular sand a fine material is

*First part of article on coal-washing practice [second part and appear in issue of Nov. 8.

used, preferably of high specific gravity and ground to pass a 200-mesh sieve. This process necessitates the employment of a Dorr thickener to reclaim the solids by which the desired gravity of the liquid is maintained. This process has shown some highly encouraging results. Its development and introduction is now controlled by the J. V. N. Dorr Co., of New York. No effort has as yet been made to apply either of these processes to the cleaning of bituminous coal on a commercial scale.

Coincident with these developments came the introduction of the Trent process. This is a radical departure from all other methods employed in the cleaning of coal. By agitation the pulverized coal is mixed with water and a suitable oil. The oil has an affinity for the carbon but not for the non-combustible particles. An amalgamation of the oil and carbon results. The ash reductions accomplished are quite remarkable as compared with results obtained by other systems of concentration. Some difference of opinion exists concerning the reliability of this process for the reduction of sulphur, also as to its practicability for cleaning coal to be used in the manufacture of metallurgical coke

Dry Tables to Be Operated at McComas

Almost simultaneously with the introduction of these various processes Sutton, Steele & Steele, of Dallas, Tex., introduced a dry concentration table. The general apathy existing with regard to any wet process resulted in almost immediate interest being taken in this new table. A plant was built and put into operation in Oklahoma, another in New Mexico and testing plants were constructed both at Dallas, Tex., and at Welch, W. Va. Finally, a contract was given for a completely equipped plant to be built at McComas, W. Va., for the American Coal Co. This should be ready for operation about Jan. 1, 1923.

The present inactivity in coal-washery construction probably arises from the uncertainty in the minds of coal men as to whether a more satisfactory dry process has at last been found. Many coal companies are ready to contract for coal-cleaning plants but are patiently waiting for conclusive proof of the efficacy of the dry process through its additional commercial application before deciding between wet and dry processes for their own operations.

Within the past year two additional dry processes have appeared, one known as the Seagrave dry concentration table, now controlled by Walter J. Sykes, of Danville, Ill., and the other known as the Stebbins dry concentration table, being introduced to the coal field by Briscoe & Stahl, of Detroit, Mich.

While much is claimed for the Seagrave table, based on results said to have been obtained in ore concentration, no machine yet has been built and tested on coal, and therefore its value to this industry is unknown. The Stebbins table also is a Western development. It is reported that this table is being quite extensively and successfully used in ore and borax concentration. Testing and development has been under way at Detroit on both bituminous and anthracite coal with gratifying results. This table doubtless will be heard from in the future.

At present, therefore, the situation seems to be one of uncertainty, first because of dissatisfaction with old wet concentration methods and second on account of the incomplete development of both the new wet and the dry processes. Much of the dissatisfaction with any wet process arises not so much from any inability to accomplish satisfactory reductions in ash and sulphur content as from difficulty encountered in dewatering the washed coal, also from attendant coal losses and undesirable operating conditions resulting from wet coal of the smaller sizes.

The use of the thickener greatly diminishes coal losses in the smaller sizes, yet a question may be raised as to its suitability to coal-washing work as compared to that of the old drag-chain sludge-tank method on account of the moisture content of the reclaimed coal. As a water clarifier the thickener is far superior to the sludge tank, but the reclaimed coal product is in a fluid state while that of the sludge tank is a wet solid and in better condition for intermixing without further dewatering with the rest of the coal product of the plant.

By simplifying the equipment needed in wet concentration and by reducing the number of the operations needed, the objection to the use of water for that purpose will be removed, especially if the dewatering difficulties and coal losses can be eliminated. Granting this, wet concentration may yet hold a most important place in the cleaning of coal.

I have purposely neglected to mention another development introduced by myself about four years ago in which the screening of the coal plays an important part. Before taking up the details of this process I wish to emphasize the importance of the screen in the future of coal concentration. In many instances it will be found that sufficient ash-and-sulphur reduction may be accomplished if the coarse coal only is washed, thus necessitating the screening out of the smaller sizes before the washing process is begun.

With dry concentration close sizing of the coal has been found advantageous. Scant success has resulted from efforts made to dry-concentrate coal below 16 mesh, and the difficulties and expense encountered in eliminating obnoxious dust where attempt is made to clean such sizes make dry concentration of fines of doubtful value.

Jig for Lump, Air for Slack, Use Dust Raw?

While fair success is reported in dry concentration of the larger sizes it has yet to be proved that such sizes can be more cheaply cleaned in this manner than by a jig. In many respects the intermediate sizes would seem to be the legitimate field for the dry process. While it may ultimately appear that some coals can be more efficiently and cheaply cleaned by wet process and others by dry, it is more than probable that a combination of the two will suit the majority of cases. Thus the screen is sure to enter the coal-cleaning problems of the future.

Prior to the introduction of screening equipment of a type wherein the screen cloth is electrically vibrated at great rapidity without movement of the heavy frame of the machine, the cost of screening coal in large quantity and through comparatively small mesh made consideration of such a process prohibitive. The data presented herein, however, will show the possibilities of the use of this type of screening equipment.

Attention is particularly called to the fact that instead of washing all the coal, the fines were screened out ahead of the washery and only the oversize from the screens treated, the unwashed fine material being bypassed and mixed with the washed oversize coal

Instead of this resulting in a higher ash and sulphur

content in the finished product as compared to that obtained when all the coal was washed, it was found that with the ash and sulphur in the raw coal the same, a much higher yield resulted. It also was discovered that by the use of such a method a considerably lower ash and sulphur content of the finished product could be obtained even though the yield still remained above that resulting from washing all the coal.

I do not claim that such a method will apply to all cases, yet I feel that as the coal upon which tests were made was a mixture from more than one hundred mines in the states of West Virginia and Pennsylvania, the results obtained would indicate that such a method may apply to a greater or less extent to many if not most of bituminous coals. Each operator finding it necessary to wash coal owes it to himself to investigate thoroughly his own product in order to determine whether such a method of operation would be helpful to him.

I know of at least one instance where an operation supplying large tonnages of steam coal for power-plant use has found that its customers, while naturally desirous of obtaining low-ash coal, are more vitally interested in obtaining fuel of a constant-ash content, as this renders it easy to obtain consistently efficient power-plant operation. In this instance careful investigation has shown that by washing coal that is retained on a 1-in. screen and mixing with the washed product all coal that will pass this screen, a product results that is not only of almost constant ash content but is also much lower in ash than the average steam coal on the market. Furthermore, the washing of only the coarse sizes results in no difficulties from high moisture.

What if the Smaller Sizes Are the Dirtier?

The elimination from the washery of the smaller sizes of coal will strike many as inapplicable to their own washery problems for the reason that some of these smaller sizes have the highest sulphur content of any of the sizes present. That was true also of the coal used in these tests. It might seem quite reasonable to assume that, under such conditions, the smaller sizes must be washed, yet it is more than likely that but few washery operations have ever had carefully conducted tests made to determine to what extent the sulphur content of the final product is affected by any sulphur reduction that may result from the washing of these small sizes. The same also may apply to the ash.

I feel that it is reasonably safe to say that, on account of the lack of such investigations, few are in a position to know definitely the real effect of washing these small sizes. It also would seem reasonable to assume that little is known of the portion of the average bituminous coal which can be but little affected by washing and that, on account of such portion being washed, some of it may not only be found as a part of the coal lumps apart from coal found with the refuse but may account for a considerable portion of the free coal in the refuse. Another condition that was brought to light in our work was that there are in some instances certain sizes of the coal which are more or less non-coking.

During the time that I was in charge of the coal washery section of the U. S. Geological Survey, before the formation of the present Bureau of Mines, I frequently noted the fact that the majority of coal washeries in this country produced a rather low-ash refuse and that usually this was due to the presence in the refuse of considerable coal of the smaller sizes. This not only applied to coals of the Eastern states but also those of the Rocky Mountain district. Later experiences with coal from various parts of the country and from the Argentine Republic and Alaska have brought this situation more and more to my attention, with the result that the tests were made, the results of which will be set forth in a succeeding article. I have also recently made a study of this situation in the Alabama field. David Hancock, consulting engineer and chemist, of Birmingham, Ala., has made extensive studies the result of which quite conclusively prove this contention as regards much of the coal in that district. He has devised a special chart upon which are graphically shown in a surprisingly effective manner the results of float-and-sink tests made upon the raw coal, and the washed coal and refuse products of various coal washeries in that district. Others in that field also have proved by similar investigations that it would be advantageous to bypass the fine coal around the washery.

Sandstone Dykes Through Whitehaven Coal

AS USUALLY interpreted a dyke is an igneous intrusion passing across the geological strata. Thus defined a sandstone dyke is an absurdity. The material could not be of igneous origin but the crack in which the sand was found might have been formed by an earthquake and so be due directly to volcanic action. If, then, the term may be permitted, dykes of sandstone have been found in the coal beds of Whitehaven, Cumberland, England.

They were described at a meeting of the British Association for the Advancement of Science by Professor A. Gilligan. The Whitehaven sandstones, extensively exposed in the cliffs along the sea front, show no such signs of cracks and sand fillings. The sandstone probably rests somewhat unconformably on the Lower Productive Coal Measures, and it is believed that the earthquake action occurred shortly after the period of deposition of the Lower Coal Measures and not later. Only in one case is the crack a true fault, and then the displacement is only 2½ ft.

The average width of the dykes is from 2 to 4 in., but sometimes they increase to 10 in. or dwindle down to mere films. The dykes are sometimes split. Veins of calcite and barytes traverse the dykes longitudinally and transversely and lenticles of shale and coal also are of frequent occurrence in some portions of the dykes. Professor Gilligan said that he believed that the dykes were filled by deposition from the unconsolidated sands that ultimately formed the Whitehaven sandstone. In the discussion Professor Kendall mentioned one or two examples of earthquake dykes which he asserted had been filled by sand forced up from below.

For the Purpose of Determining Specifications for the construction of concrete stoppings in coal mines that may be developed on the public lands of the United States, the U. S. Bureau of Mines, in co-operation with the Bureau of Standards, is constructing in the experimental mine at Bruceton, Pa., a chamber in which it is proposed to conduct tests to determine the strength of reinforced concrete stoppings when subjected to a pressure up to 50 lb. per square inch, suddenly applied. The tests require the construction of a permanent stopping, which was completed at the close of the fiscal year, and a test stopping, which is under construction in accordance with a design prepared by the Bureau of Standards. The work is under the personal direction of J. W. Paul, chief coal mining engineer, assisted by H. C. Howarth.



Crested Butte Field Produces Four Kinds of Coal From a Territory Five Miles Wide

Anthracite and Three Grades of Bituminous Coal Are Mined in This Cold Timber-Line Region—Lava Flows Have Matured the Coal, Leaving Three Per Cent of Volatile Matter

By Charles M. Schloss
Denver, Colo.

NOWHERE, perhaps, in the world can a greater variety of coal be found in as small an area as in the Crested Butte field of central Colorado. Four kinds of coal, ranging from a bituminous of low rank to an anthracite of high rank, are all mined within a circular area five miles in diameter.

Crested Butte lies in the Elk Mountains on the western slope of the Colorado Rockies. The field is handicapped by its isolation and by the fact that all it produces and all it ships in must travel by a narrow-gage railroad and be transferred to or from standard-gage equipment. It prospers nevertheless, distributing its anthracite over the entire western half of the United States as well as north into British Columbia and south into Mexico. The transference point is Salida, on the Denver & Rio Grande Western R.R. Here the Rio Grande Southern narrow-gage road commences its 316-mile stretch to Crested Butte.

That region at its five plants mined in 1921 only 197,228 tons of coal, a little over 2 per cent of the total output of Colorado during that year, that output being 9,141,947 tons. The four coals mined are all high-grade coals. They are respectively non-coking bituminous, a bituminous making a strong coke, semi-anthracite and anthracite. They will analyze as in Table I.

TABLE I—ANALYSES OF CRESTED BUTTE COALS

Type	Moisture, Per Cent	Volatile Matter, Per Cent	Fixed Carbon, Per Cent	Ash, Per Cent	B.t.u.
Non-coking	5 52	34.64	56 39	3 45	13,250
Coking	2 46	34 43	59 60	1 51	14,011
Semi-anthracite	0 40	10 80	80 60	8 20	14,430
Anthracite	2 70	3 32	88 15	5 83	14,099

The non-coking coal is an excellent domestic fuel, the coking is the equal of any heavy-draft locomotive bituminous coal in the United States, and the anthracite fully equal to that of Pennsylvania. The latter has the advantage over the better known coal in that Eastern state in being much freer from dirt, rock and bone. It is, further, with one exception the only commercially developed anthracite west of Pennsylvania, the one exception being a small bed at Los Cerillos, N. M., near Albuquerque.

Because of its excellence, Crested Butte anthracite enjoys an unusually broad market, bounded by the Pacific Coast on the west, Mexico on the south, Kansas City and Omaha to the east, and Canada to the north. Some goes to Mexico, some to British Columbia; one car found its way as far north as Nome, Alaska. Denver consumes more than any other city, San Francisco is next, and Kansas City third. Kansas and Nebraska, however, are the large consumers.

The operators in the field have standardized on the following sizes: Nos. 1 and 2, 2½ in. to 5 in.; Nos. 3 and 5, 1¼ in. to 2½ in., and No. 6, ¾ to 1¼ in. Nos. 1 and 2 are adapted for large domestic furnaces and open grates; Nos. 3 and 5, for base-burners, kitchen ranges, small domestic furnaces, and open grates; No. 6, for domestic furnaces with small openings in the grates, kitchen ranges, laundry stoves and for banking furnace and range fires. On the refuse piles of Crested Butte a third of a million tons of anthracite dust have accumulated. It is only in recent years that a market for this "carbon dust" has been found. Smelters manufacturing zinc oxide for paints find it a prime fuel and reduction agent.

To the one who seeks the whys and wherefores of natural phenomena the Crested Butte field gives much material for investigation and study. Geologists basing their hypotheses on the presence of porphyry masses and eruptive mountains credit the variety of coal found here to a flow of eruptive rock emanating from the main range and covering much of the sedimentary strata. The intense heat of the incandescent liquid rock meta-

NOTE—The headpiece is a view of Crested Butte furnished by courtesy of Frank Bulkley, president of the Crested Butte Anthracite Mining Co., and *Mountain States Mineral Age*



Courtesy U. S. Geological Survey

MORE DISTANT VIEW OF CRESTED BUTTE FIELD WITH MOUNTAINS IN THE REAR

A truly mountainous region, some of the mines being 10,000 ft. above sea level. Buildings must be placed where snowslides will do least damage.

metamorphosed the bituminous to anthracite wherever it came anywhere near the coal. No trace, however, of the lava flow remains; it has been entirely removed by erosion.

Due to various rock movements the coal beds are more or less irregular in thickness. Many local, but not serious, faults are present. The roof and floor are either sandstone or shale. The bituminous beds vary in thickness from 4 ft. to 16 ft., the anthracite from 2 ft. 6 in. to 4 ft. The coal beds are either horizontal or on a moderate pitch. Many props are used, but their cost is not high. They are cut on the hillsides around the mines.

The coal at Crested Butte was discovered in 1879. Lack of shipping facilities delayed exploitation until 1881, when, upon the advent of the railroad, the first bituminous mine was opened. This same property has been producing ever since—more than 40 years.

From an engineering or mining standpoint Crested Butte offers nothing extraordinary. Its methods and machinery are not unusual. Two of the mine openings are so much higher than the railroad that gravity planes are necessary to land the trips at the dumps. The remainder are at tipple level. One mine sank a shaft but later abandoned it and began taking coal from another bed through a slope; the other openings are either drifts or slightly pitching slopes; the steepest has an inclination of 7 deg. Two are gaseous and use electric lamps; open lamps are used in the others.

In 1921 two shortwall coal cutters cut all the machine coal—only 3,641 tons. Longwall advancing methods are successfully applied by one company, room-and-pillar by the remainder. The machines operate in room-and-pillar workings. In 1921 55,323 pounds of black powder were consumed, that being used more than any other explosive. However, 5,415 lb. of permissible and 4,650 lb. of dynamite also were used. Haulage motors are conspicuous by their entire absence. Mules and hoisting drums substitute for them. Coal washeries and cleaning plants, likewise, are not found. Some refuse is picked out at the faces and the remainder in the screening plants.



Old Ruby Anthracite Mine, Now Abandoned

Note the trees around the plant growing up to levels near the timber limit. Climate is so cold that Japanese, Greeks, Mexicans and negroes avoid it.

Photo Courtesy U. S. Geological Survey

Cable Cut by Rock from Bottom Shot Fires Crevice Gas

Ignition of Gas in Atmosphere Filling Longwall Face Fatally Burns Eighteen Men, Doing Hardly Any Damage in Mine of Canadian Collieries, Ltd.—Shot Said to Be Flameless—New Electrical Regulations

EXCELLENT as were the safety provisions at the No. 4 Mine of the Canadian Collieries (Dunsmuir), Ltd., at Cumberland, Vancouver Island, Canada, gas nevertheless collected in it and exploded on Aug. 30, killing eighteen men. A report made by George Wilkinson, former chief inspector of mines for British Columbia, who was given a special investigation commission by William Sloan, Minister of Mines, details the circumstances and gives advice as to the manner in which a repetition of such a disaster may be avoided. Of those fatally injured on this occasion only two were British, one being a Russian, six being Japanese and nine Chinese.

Briefly, Mr. Wilkinson finds that the source of the trouble was a flash, or open sparking, caused by an arc in the electric trailing cable at the socket used to connect this cable with the main electric circuit. This electric cable furnished the necessary power for the operation of a coal-cutting machine. The latter, a Sullivan alternating-current chain cutter, was of a type approved by the U. S. Bureau of Mines for use in gaseous mines.

New Rules for Electrical Operations

"After giving the matter careful consideration," says Mr. Wilkinson, "I would recommend the adoption of the following rules as part of the Coal Mines Regulation Act and would further suggest that the use of electricity be fully investigated by the Department of Mines, so that, if possible, definite conclusions may be reached as to the conditions under which the use of this power underground in coal mines may be permitted." The rules recommended are:

(1) The terminals of main feed lines in no case shall be located within 50 ft. of any coal face. (2) The current shall be cut off and the cables made dead in that vicinity when blasting, and the current shall not be switched on again until blasting is finished and the places are examined and pronounced safe and until the cables have been examined and found free from any defect. (3) All permanent electrical installations and transforming stations underground shall be made fireproof. (4) All switches and terminal connections shall be protected or enclosed so as to prevent persons coming accidentally into contact with them, to avoid danger from arcs or short-circuits resulting from fire or water. Where there may be risk of igniting gas, coal dust or other inflammables, all parts shall be so protected as to prevent open sparking. (5) All cables used underground shall be covered with insulating material, and, where high voltages are used, properly armored cables of standard thickness shall be provided. (6) All trailing cables shall be of properly armored construction whatever voltage is used.

Confidence is expressed that these rules will give an additional margin of safety. Rules 1, 2 and 3, it is asserted, should be put in force at once. As for Rules 4, 5 and 6, it probably will require three months to obtain and install the armored cables and other material required to make them effective. Mr. Sloan already has taken the action necessary to give these recommendations the effect of law. Orders in council have been passed and from Oct. 2 the rules enumerated have been a part of the Coal Mines Regulation Act. In the course of "general remarks" the report reads:

"It was a small explosion to take such a heavy toll and only a combination of circumstances made it do so. Occurring on a longwall face many men were in the path of the flame despite the short distance it traveled. As most of these men were working at the face and the seam was not thick, they could not escape. It is my opinion that if the current had been cut off the cable while the shot was being fired there would have been no explosion, and the fireboss erred in not requiring this to be done seeing that the terminals of the feed cables were in such close proximity to the shot.

"The terminals of the main feed line should not have been located so close to the face and fixed flameproof terminals should have been used. I do not mean to infer that an arc could not have been created if the terminal boxes had been installed, for if the blow had been of sufficient force to draw the bare end of the connecting cable clear of the insulated material, an arc might nevertheless have been created, but the chances of this happening would have been decreased. It is questionable whether, owing to the quantity of gas liberated by the strata and the peculiar conditions existing, it would be wise to continue the use of electric mining machines in this section.

"Up to the present, because electric power has been used to only a limited extent in the mines of British Columbia, no specific regulations governing its use have been made. No doubt it will be used more extensively in the future as it already is in the coal mines of the United States and Great Britain.

Danger Lurks in the Cable Connection

"These electric coal-cutting machines were installed by the Canadian Collieries (Dunsmuir), Ltd., nearly seven years ago, and the recent accident is the first recorded. Though the machines are approved by the U. S. Bureau of Mines, their safety must be judged by the weakest link, which in my opinion is the cable and especially that connection which is in close proximity to the working face.

"Edison electric safety lamps are used throughout the mine. The only exceptions were the few flame safety lamps used for testing purposes. No one was permitted to blast the coal in this section, and most of the bottom lifting was done without blasting. Explosives were used only in places where the rock was so hard that it could not be lifted without it. Even then only permissible explosives were used.

"It is hard for the higher officials and the inspectors to watch every detail in a mine of this size. The terminals of the main lines are being moved from time to time, and this detail comes mainly under the control of the under officials. Enough electricians were employed to do this work, and an adequate number of certificated officials were employed to supervise it. In

addition to the large staff of regular officials, the company employed a safety engineer who holds a first-class certificate of competency. He constantly patrols the works inside and out, checking up and pointing out any defect that may cause accidents."

The mine has but one main entrance from which at a point 75 ft. from the portal two slopes diverge, No. 1 slope being 7,000 ft. long and running due north, and No. 2 slope being 9,000 ft. long and running north 45 deg. east. Levels have been turned off the latter slope in an easterly and westerly direction.

The explosion occurred in what is known as the longwall district off No. 20, East Level, No. 2 slope. Part of the face is machine-mined, the coal from that part being shoveled into cars by loaders. Another part is worked by hand miners. A trailing cable 200 ft. long connects the main circuit to the machine.

With reference to the condition of the mine as to gas, Mr. Wilkinson quotes the daily reports of firebosses from Aug. 28 to Aug. 29, the inspectors' reports for the months of June, July and August, and the gas committees' reports for the same three months. From these reports, he observes, it is plain that much gas is being made in this section of the mine, chiefly due to the roof breaking through to a small seam of coal about a foot thick which lies about 15 ft. above.

The firebosses' reports show that explosive gas has been found in small quantities in No. 3 level and other places in that vicinity and that a ½-in. gas cap was obtained at points along the roof line, but that it was less as the lamp was lowered and probably did not exceed ½ in. from No. 3 level to the end of the longwall face. No explosive gas or gas caps have been reported below No. 3 level.

According to the length of the flame caps and their relation to percentage, as shown in a pamphlet issued by the Department of Mines, the above-mentioned caps of gas are equivalent to 2.08 per cent and 1.08 per cent respectively. The low explosive limit is 5.5 per cent. The withdrawal point as set by the Coal Mines Regulation Act is 2.5 per cent, leaving a margin of safety of 3 per cent. But the margin in this case appears to have been 3.42 per cent.

Many Deaths but Little Explosive Violence

Mr. Wilkinson states that conditions as he found them in his examination of Sept. 1 indicated that the mine had been little damaged by the explosion. He goes on to tell in detail of the conditions in each level visited. Regarding No. 1 slant off No. 4 level* he says: "About a ½-in. gas cap was obtained in this place and an atmosphere that was explosive in a cavity on the right side of the roadway above the terminals of the main circuit of the electric power line. The trailer cable from the mining machine is connected with the main line at this point.

"A shot had been fired in the floor of this place, and it was almost simultaneously with the firing of this shot that the explosion occurred. A rock flying from the shot had come in contact with the trailing cable with sufficient force to break the insulation and bare one wire and had also torn one of the three connecting wires from the socket where they were connected with the main circuit. The shot had done its work well.

"No damage was done in this place but much dust was deposited on the timbers. The shotlighter with two of the workmen out of the place stood in No. 2 roadway off this slant about 30 ft. distant from the shot. They were slightly burned on the face, hands and arms. A car standing about 45 ft. from the face had not been moved. In No. 3 slant, No. 2 level, No. 1 place, there was no damage. A car was standing at the face and apparently had not been moved. The badly burned body of John Johnston, a miner, was found on the slant about 80 ft. back from the face.

"In No. 2 place, off No. 3 slant, No. 2 level, there were signs of considerable heat from flame. Two shovels were standing against a cog on the face line in this place. There had not been sufficient force to move them. In No. 3 slant a 5-ft. post was found with the saw in position for cutting. A car was standing undisturbed."

Ignition of Gas Rather Than an Explosion

Commenting on the evidence Mr. Wilkinson asserts that the outbreak may better be termed a burning of gas than an explosion. He adds: "It would appear as if the percentage of methane had bordered on the lower explosive limit. The flame passed up the longwall face with the air current. The shotlighter, who was standing 30 ft. below the point where he was firing the shot, was only slightly burned. E. McAdam, who was working in No. 1 level, about 700 ft. up the face, did not see any flame, consequently the distance it traveled along the longwall face did not exceed 750 ft."

It is stated that conditions point to No. 1 slant of No. 4 level as being the point of ignition. It was in this place that a shot was fired in the bottom, as described. The roof in the place is broken and full of slips and crevices, and there is a cavity which has a length of 8 ft., a width of about 1½ ft. and a height above the roof line of about 1.2 ft. Fissures and crevices extend back into the gob; to what distance and height is unknown. A fault with an approximate downthrow displacement of 3 ft. had been crossed by the place above this. It had run out before it reached this place, but it extended for some distance in the opposite direction. This resulted in a considerable area of exposed roof being badly broken, and no doubt the breaks in this roof continued upward to the small seam which overlies the one being worked. The crevices made by these breaks would provide a large storage space for methane, as the ventilating current could not be diverted to clear them. This gas also would be out of reach of anyone testing, as a safety lamp could not be got into the crevices.

Small quantities of explosive gas had been found in several places on the return side of No. 1 slant for some time prior to the explosion. This being so it is not safe to presume that the crevices higher up, which could not be examined because of their inaccessibility, also contained methane. The distance traveled by the flame was not great, and it died out after passing the working places in the disturbed area, showing that there was lack of explosive material elsewhere.

Commenting further on the cause of ignition it is stated that the main three-phase circuit was carried up No. 1 slant, No. 4 level, to a point approximately 16 ft. from the coal face and about 4 ft. from the end of the bottom lifting. The top cable was about 1.7 ft. below the roof line and the bottom of the cavity. The lower cable was about 3 ft. above the top of the rock to be lifted. Mr. Wilkinson speaks again of the break-

* Apparently all these areas relate to longwall district No. 20, East Level, No. 2 slope. This No. 1 slant is not the first level in the mine but the first in the district. Furthermore, the longwall face apparently extends from No. 1 level to No. 4.—Editor.

Moodlal, a permitted explosive, was used.

ing of the wire by flying rock following the firing of a shot and asserts that there must have been considerable flash from the arc so created. The break occurred only about 2 ft. from the cavity.

There were only two possible sources of ignition; one, the arcing of the electric circuit, and the other, flame from the explosive in the shot. The shot was a good one, according to Mr. Wilkinson, and the chances that any flame resulted are remote. It was some 8 ft. from the cavity, whereas the junction point of the trailing cable was only about 2 ft. distant. He adds: "From conditions as seen after the explosion I have to conclude that actual ignition must have been from flame or sparking from the electric wires."

References are made in the report to the evidence of the fireboss at the inquest to the effect that he had carefully examined the place before firing the shot and found no gas and also that he had examined the cavity in the roof with similar results. Mr. Wilkinson expresses doubts of this. It is possible, he says, that this was done, and that there was a change between the time of examination and the firing of the shot. However, assuming that the cavity was clear, so far as could be ascertained by the fireboss, the crevices above it no doubt contained gas.

On June 26, 22,000 cu.ft. of air were provided for the use of sixty-two men and eight mules; on July 25, 20,000 cu.ft. were supplied, and on Aug. 11, 25,000 cu.ft. were circulated for the same number of men and mules. The amount passing is nearly three times that required by the Coal Mines Regulation Act under normal conditions, according to Inspector Jackson's reports. Since the installation of a booster fan, electrically driven, for augmenting the ventilation the quantity passing in this district has been increased some 6,000 cu.ft. per minute.

Officials of the Canadian Collieries are said to have been faced with unusual difficulties in the ventilation of the mine, which is of large extent, having been operated for thirty years or more. Large extraction of pillar areas in the earlier days of operation, without any thought for the future, has made many difficult problems which the present-day management is endeavoring to solve. Thomas Graham, the superintendent, and his staff have made many improvements in the past five years. Among these are "the building of permanent stoppings with a gunite finish on main airways practically throughout the mine, the installation of a second fan of the Sirocco double-inlet reversible type with a rated capacity of 200,000 cu.ft. per minute against a 6-in. water gage and the construction of a new and separate return airway through the old works for practically the whole length of the slope."

Work Both Wood and Metal on One Machine

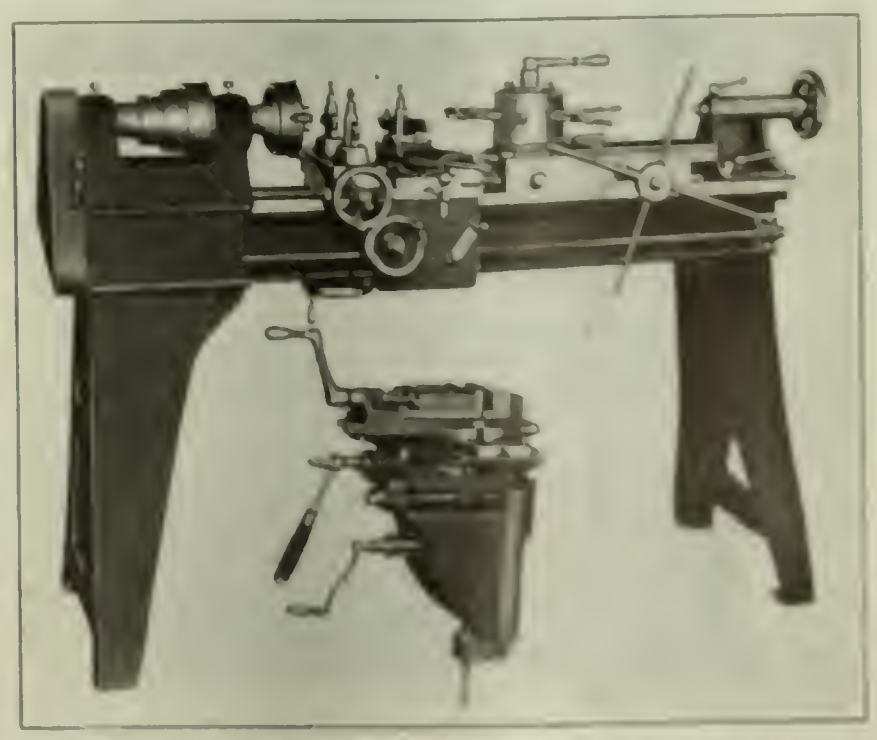
ONE of the "side issues" of every coal mine—one of those things that contribute nothing directly to the extraction of coal yet without which little coal would be produced—is the mine shop. In the old days this was a blacksmith shop pure and simple—a place where mules were shod, picks sharpened and drills and augers dressed. With the passage of years, however, the equipment of the mine has changed and similarly the needs of the shop. The electric locomotive, the coal cutter and various mechanical appliances of a similar nature necessitate a type of repair impossible with only forge, anvil and possibly hand drill press.

Of all the machine tools yet invented it is well recognized that the lathe, being the most flexible, possesses the greatest possibilities. American manufacturers have developed this machine to a high state of perfection; that is, they have developed many special lathes adapted to special uses. In the mine shop, however, particularly if this shop be small, the special tool is the type to be sedulously avoided. On the contrary, the kind of lathe most to be desired is an "all around" machine or what might be termed a jobbing lathe—that is, one upon which a great variety of operations may be performed without its being specially designed or adapted for any one in particular.

In the accompanying illustration is shown a lathe recently placed on the market and well adapted to the small shop having a variety of work to perform. This lathe is designed for turning either wood or metal and is made rigid enough to withstand the possible high-speed vibration of the former and the heavy cuts of the latter.

Possibly of most interest to mining men, however, is the large number of attachments with which this machine may be provided. For metal working these include grinders, buffers, millers, gear cutters, etc., and for woodworking they embrace sanders, grinders, buffers, polishers, band saws, jig saws, jointers, planers, saw tables, mortisers and the like. Of course, the procurable equipment includes raising blocks, a compound rest and a turret. Many others also are available, built especially to fit this machine.

Thus it will be seen that this machine is adapted to the performance of many operations. The attachments, such, for instance, as the band saw, take up far less floor space than would separate machines performing the same service. When not in use these may be taken off and set to one side out of the way. This machine is being built and marketed by the Little Giant Co., of Mankato, Minn.



METAL AND WOODWORKING IN A SINGLE UNIT

With this drill, grind, buff and [illegible] tool and cut gears. It will turn, drill, bore, grind, buff [illegible], bore, plane and mortise wood. In most operations [illegible] slight variations but unless [illegible] a complete machine shop would [illegible] unit even if not [illegible] of specialized [illegible]

Huntington Show Suggests Modern Ways of Reducing Coal Cost—II

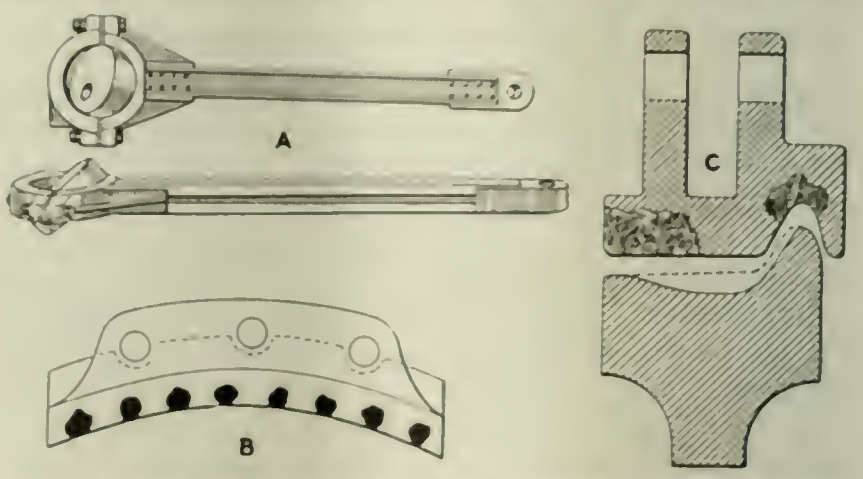
Abrasives for Keeping Tires in Condition—Self-Renewing Water-Softening Material—Means of Ridding Mine Towns of Typhoid—Buckrt Conveyors—Helical Gears



IN AN ARTICLE regarding the Huntington Coal and Industrial Exposition, Sept. 18-23, appearing in *Coal Age* last week, the wide, low, capacious mine cars of the West Virginia mining region as shown at several booths were described as well as an electric rivet heater and a mine hoist of large rope capacity.

At another booth was an exhibit of "feralun," the substance which, set in a brake wheel, wears off false flanges and so makes it unnecessary to take the wheels off their axles, to turn down the tires and replace the wheels, to lay off mine locomotives temporarily while this work is being done, and to renew shoes. Moreover, wear and tear on frogs and switches are prevented by this grinding, as also the derailments that are the result of false flanging. The cutting of fishplate bonds is avoided and electric welded bonds if attached to the upper part of the rail are protected from injury.

When the brake shoe with abrasive material imbedded in it has ground down the false flange, the body of the shoe that has no cutting abrasive rests on the main portion of the wheel, the part that runs on the rail and is worn by traction and sparking, and the cutting substantially ceases except as much as is necessary to keep



UNIVERSAL-MOTION ECCENTRIC AND ABRASIVE SHOE

A is an eccentric for use with shakers or in other places. With it proper alignment is a matter of no consequence, as the eye is a self-oiling ball. *B* shows locomotive shoe with abrasive material set in the tread and *C* a cross-section of such a shoe and part of the wheel on which it acts. When the wheel has worn down as shown the abrasive wears off the "false flange" and restores the surface.

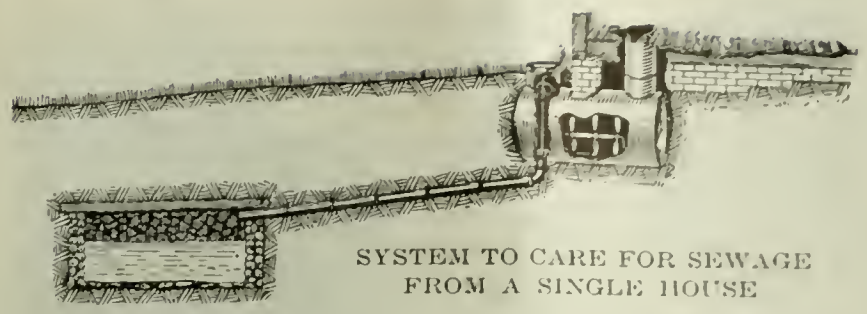
the wheels true. Abrasive shoes are put also on new wheels to prevent them from getting out of shape. The keeping of false flanges off tires saves the rail surfaces from much wear.

Interesting also was the exhibit of the Permutit Co. Permutit is a zeolite (so called because it intumesces or acts so rapidly as to be said to boil when acting on the hardness in water). It is a sodium aluminum silicate that exchanges its sodium for lime or magnesia when those elements come in contact with it in the form of the hardness in water. It has the advantage that it can be regenerated by passing through it common brine (sodium-chloride solution). In consequence when permutit is used to soften water before its introduction into the boiler of feedwater heater, the chemical after change need not be thrown away but can be used again and again after it has been regenerated by brine. The regeneration cycle is ordinarily arranged to take place at night, when the plants are closed, or two softeners are placed in parallel to give a 24-hour continuous serv-



SOFTENING PLANT AT HUNTINGTON, W. VA.

This unit was installed at the mine of the Huntington Coal Co., in Mingo County, W. Va. The plant delivers 84,000 gallons of hot soft water daily from a river containing an average of 44 grains of hardness per gallon. By use of two alternating units the water is softened continuously 24 hours per day.



SYSTEM TO CARE FOR SEWAGE FROM A SINGLE HOUSE

In this illustration the porcelain parts of the toilet are omitted. The fecal matter falls into a circular tank which contains a digesting solution. The material to be rendered innocuous and fluid is both moved forward and agitated by paddles, which themselves are set in motion by the opening and closing of the lid of the toilet. The overflow, a harmless effluent, passes to a cesspool and is absorbed by the subsoil.

ice, one softening the water while the other is being regenerated for further usefulness.

Overdosing the water does not produce any harmful effluent, no matter how soft the water may be. In consequence there is no need for watchfulness in this regard. In fact the rule is to overdose the water so that water of zero hardness may be produced. With hydrate of lime or soda ash a certain degree of hardness still remains in the water, because the bodies resulting from the reactions are themselves soluble in water and because colloids form which refuse to settle.

Another advantage is that permutit forms no sludge. In consequence the effluent does not need to be held for sedimentation and no sludge has to be discharged. Yet another quality of value is the rapidity with which the zeolite works. Permutit is said to do in 10 minutes what would take an ordinary reagent four hours to perform when cold. Thus the volume of water under treatment at any one time can be greatly reduced with reduction in the size of the treatment tanks. Pumps may not be needed, as the permutit treatment tanks are connected under pressure with the line and do their feeding under the line head.

All of which seems like a record of perfection. There is a drawback, however. Though the zeolite is never discharged it has to be regenerated with salt, which though cheap is not obtainable without expense. The lime treatment is only half as costly as the zeolite for temporary hardness. On the other hand, the soda-ash treatment is twice as expensive as the zeolite where the hardness is permanent. Viewed in that way where the hardness is half temporary and half permanent the zeolite treatment is just about as expensive as the combined lime and soda-ash treatment, chemically considered. However, the reduction in tank size and the absence of sludge is in favor of the permutit, and a further benefit is found in the fact that the water is softened to a zero hardness and does not contain any excess reagent or any soluble products from the reaction. Still, permutit, though the preferable as a softener of permanent hardness, cannot compete in cost with lime as a means of removing temporary hardness. Therefore the best practice is often to use lime for the latter and permutit for the former. Whether to do so is a matter for expert determination.

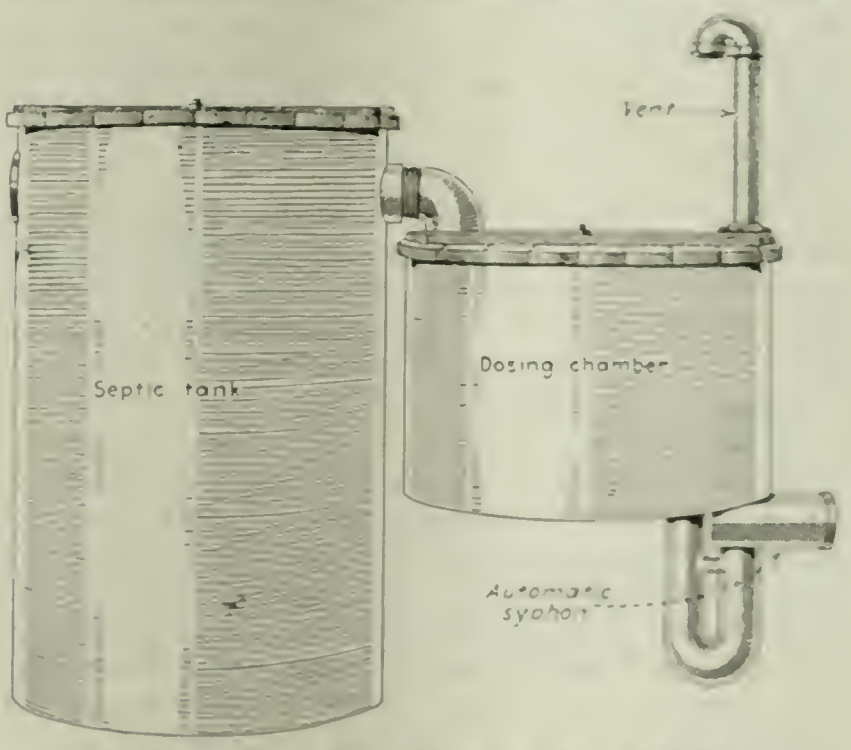


SIMPLER MEANS OF PURIFYING SEWAGE

The fecal matter falls into a tank above the floor level, is digested by the fluid contained therein and overflows through a pipe to a barrel drilled with holes. The purified fluid passes into the subsoil.

The Kaustine Co., Inc., exhibited its line of sanitary products and here it may be said that one cannot be favorably impressed with the sanitary conditions in mining villages with the houses perched often above one another and sewage seeping down from the imperfect vaults now in general constructed. The evil is perhaps not painfully apparent. It takes a medical man to realize it. There has been little objection made by the residents of mining villages, though they are the persons subjected to the evil effects just described. Still, many mine operators have sensed the dangers of seepage and flies and wondered whether they could not make their village more typhoid-proof.

I am told that the owners of many mining plants in West Virginia are not only aware of the danger but are ridding themselves of it. In the issue of *Coal Age* of Sept. 14 was a description of a convenience in the mines of the Ford Collieries Co. whereby the fecal matter was rendered not only innocuous but truly fluid by the use of a chemical. This outfit was furnished by the Kaustine Co. J. L. Murphy informs me that commercial caustic soda is not the only ingredient in the preparation used as a disinfectant, deodorant and digestant of this fecal matter but that, in order to make the action more rapid, many other ingredients are used and the strength greatly exceeds that—3 per cent—mentioned by Dr. R. R. Sayers as competent to perform the work demanded. Mr. Murphy says that as rapidity in operation is desirable, dosages are applied greater than those which if given plenty of time will do the work effectually.



WHERE MUCH SEWAGE IS TO BE TREATED

A septic tank is used first. In this no chemical is used. The microbes which work in the unaërated fluid below the scum that forms in this tank rapidly purify the sewage. The much-modified sewage overflows from this tank into the dosing chamber, where the assurance of complete purification is made doubly sure. It is discharged from this chamber discontinuously by an automatic syphon.

The illustrations herewith do not include the plumbing with its ventilation pipe and in some cases as shown there is no plumbing; only iron parts are provided, with an iron lid, as shown in one illustration. It has been found that porcelain parts fare but ill in some of the residences and even in the bathhouses around the mines.

All the illustrations shown are for single units, but multiple units are provided where these are desirable for schools, stores, bathhouses, churches, assembly rooms, clubhouses and like places.

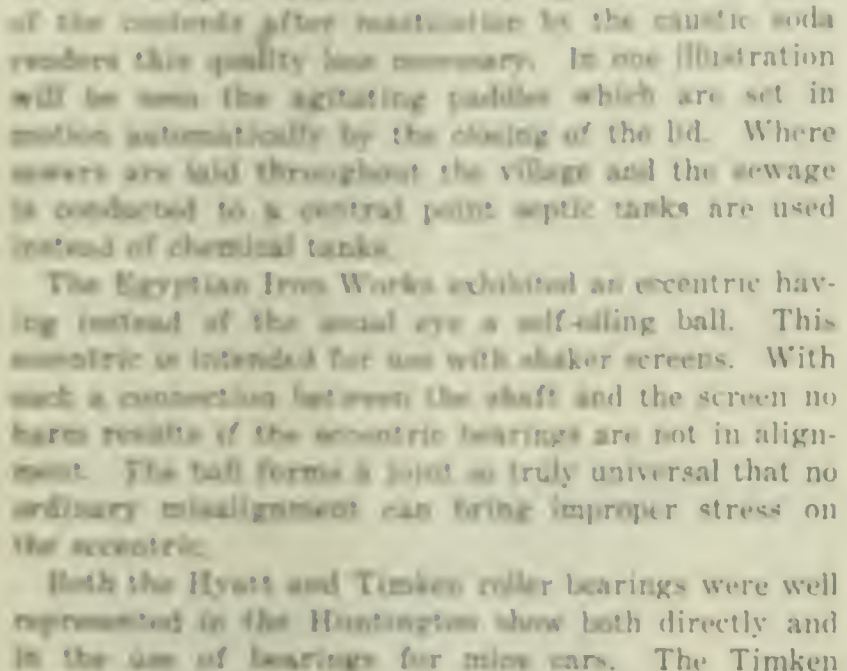
Caustic soda has a disastrous effect on galvanized vessels, as these are made of Armco iron, which is 99.84 per cent pure. This is covered with an enamel that is unaffected, it is said, by acids, alkalies or the elements. The top of the tank is fitted with a revolving trap which serves to keep the tank reasonably tight, but the nature of the contents after sterilization by the caustic soda renders this quality less necessary. In one illustration will be seen the agitating paddles which are set in motion automatically by the closing of the lid. Where sewers are laid throughout the village and the sewage is conducted to a central point septic tanks are used instead of chemical tanks.

The Egyptian Iron Works exhibited an eccentric having instead of the usual eye a self-oiling ball. This eccentric is intended for use with shaker screens. With such a connection between the shaft and the screen no harm results if the eccentric bearings are not in alignment. The ball forms a joint so truly universal that no ordinary misalignment can bring improper stress on the eccentric.

Both the Hyatt and Timken roller bearings were well represented in the Huntington show both directly and in the use of bearings for mine cars. The Timken Roller Bearing Co. lays stress on the ability to take up wear in the bearings while eliminating that in the running gear.

The Jeffrey Machine Co. showed a full-sized loading machine which loaded coal all the day long. The Westinghouse Electric & Manufacturing Co. had a bar-steel conductor-cable-reel locomotive running on trucks and both the Westinghouse and the General Electric Co. had an exhibition of their automatic substation equipment.

A. Leschen & Sons Rope Co. had a model illustrating its equipment at the mines of the Bradshaw Coal Co. at Bradshaw, W. Va., on the Dry Fork Branch of the Norfolk & Western R.R. The coal is 600 ft. above the railroad and the point nearest the railroad is 1,200 ft. distant therefrom. This company had been using a surface incline to reach the bottom of the hill and mules to haul the cars over the Dry Fork of the Tug River. The rope is supported only at the ends and it has a rated capacity of 125 tons per hour, or 1,000 tons per day of eight hours. However, one man can readily lower 50 per cent more and do it safely. The span is 1,320 ft. and the fall 580 ft., the cost for operation being approximately 1c. per ton.



TIPPLE AT THE STATION, BRADSHAW, W. VA.

The plan of bringing on a further level a grade 600 ft. above the railroad and approximately 1,200 ft. distant therefrom, through which the cars of coal from the mines were transported by means of the bucket over the hill.



ANOTHER VIEW OF ROPEWAY

Only two buckets are used, one going up while the other goes down. Rope incline handles 1,000 tons in 8-hour day.

The R. D. Nuttall Co. had a booth where were displayed the helical gear reduction units by which continuity of contact, reduction of noise and vibration are attained. With such a gear the load is transferred from the pinion teeth to the gear teeth progressively, gradually and without shock regardless of how badly they are worn. They do not drive by a series of impacts, as is inherently the case when an ordinary pinion drives a spur gear. It is asserted that the wear being uniform permits a new pinion to be applied to a worn gear with satisfactory results. Compared with ordinary spur gearing the teeth have a greater rolling contact and are provided with a large quantity of metal at their roots. Unlike a herringbone gear the pinion can float across the main gear without injury. These gears are suited for many purposes, among them for driving hoists and pumps. At the Carnegie Coal Co.'s plant at Atlasburg, Pa., a helical gear of this kind has been installed for driving a 12-ft. exhaust mine fan, replacing the steam drive.

The Nuttall firm also showed a trolley and pole head for holding it. This trolley is provided with a centering spring that brings the wheel back to its normal position. Instead of the pole head covering the sides of the pole it covers the top and bottom. In consequence when the trolley escapes from the trolley wire and hits against an offset in the roof or on the edges of cross beams, the blow falls on the steel fork and not against the wood of the pole. This prevents it from being shattered. The cable is firmly clamped to a grooved plate, using bolts instead of set screws. The motorman is almost sure to have a wrench with which he can tighten up the connection should that be necessary, yet is quite likely not to be provided with the wherewithal to tighten setscrews where these are used to clamp the connections to the trolley-pole head.

AT THE PITTSBURGH (PA.) experiment station of the U. S. Bureau of Mines, J. D. Davis, fuels chemist, and J. F. Byrne, research fellow, Carnegie Institute of Technology, have investigated the relative tendency of Pennsylvania coals to ignite spontaneously. The research consisted largely in the development of methods for the determination of the comparative sensitivity of coals to oxygen.



Problems of Operating Men

Edited by James T. Beard



Where Coal-Mining Practice Could Be Materially Improved

Examination Started Too Long Before Men Enter the Mine for Work—Practice in the North of England —Economy in Handling Coal at the Working Face

BORN in England and starting work at the early age of 13 years, for ten years I labored there as a miner's helper and doing various kinds of work about the mine, before deciding to come to this country.

Looking back over that early experience in England and judging it by what I have seen in American mines, I find there is much to be learned by way of comparison. In the fifteen years that have passed since I came to America, I have worked in many coal mines from southern Illinois to British Columbia. During that time, my eyes have not been closed to what has been going on about me and I find that many lessons can be learned through close observation and comparison of the means and methods employed in different localities.

Firebosses Start Examination Too Long Before Men Enter Mine

It was reading the numerous letters that have appeared in *Coal Age*, regarding the fireboss' identification mark, that leads me to offer a few comments on this work. I am deeply impressed with one fact; namely, in the large majority of cases, the fireboss starts his examination too long before the time for the men to enter the mine for work.

In Illinois, it was a common thing for a fireboss to start his examination eight hours before the beginning of the morning shift. I found that this was wholly in compliance with the coal mining laws of the state, where the mine examiner is required (Sec. 21) to examine the underground workings of the mine within eight hours preceding the time the dayshift goes on duty.

Let us assume, for example, that a fireboss begins, say at 1 a.m., to examine a section of a mine in his charge. In his examination, we will suppose that he finds a small quantity of gas in several of the places, but not sufficient to render work in those places dangerous.

Now, we will assume that a big cave takes place on the intake or return airway of that split, after the fireboss has completed his examination. As a result, the circulation is choked and gas accumulates in the section. Believing everything to be safe, the men are admitted to the mine and proceed to their several places. It is nothing strange that conditions such as these bring calamity.

At other times and places where the fireboss starts his examination only two hours previous to the entrance of the miners for work, I have known of places that were found to be clear of gas at the time the examination was made; but a cave occurring a little later would knock down a brattice and short-circuit the air, allowing gas to accumulate at the face in a very short time.

Booster Fans Installed in Mines, Menace to Safety

Again, I have observed gaseous places that were hard to ventilate and required a small blower or booster fan to keep them clear of gas. Let me ask, Who knows when the belt driving such a booster is going to slip or break; or when a cave will tear down the wire that conducts the power to operate the fan? Either is liable to occur at any time and the fan be put out of commission.

In some localities, bumps are frequent, causing roof falls that destroy brattices and short-circuit the air. This may take place at a time between the examination by the fireboss and the entering of the men for work.

Practice in North of England

Allow me just here, to refer to practice in the North of England, where the firebosses enter the mine only an hour previous to the beginning of the miners' shift. The mine manager is at the shaft bottom to receive the firebosses and give them any orders that might chance to be left by the night-shift overman.

The examination by the firebosses being completed, if everything is reported safe for work, the men are checked in, each miner being given a safety lamp before he leaves the shaft bottom. Every lamp has been examined and locked and often the men are searched for matches before being permitted to enter the mine.

It goes pretty hard with a man who is caught with matches on his person. The officials are sure to make an example of him, by imposing a fine or hailing him to court for imprisonment. At the entrance of each section, the fireboss in charge awaits his men and there is no chance for a man to enter his place when it has been found to be in an unsafe condition for work.

When a fireboss has admitted his men to their respective places, he devotes the balance of the shift to a careful examination of the shots and timbering, in each working place. All shots must be properly mined and tamped before they can be fired.

Improvements in Loading Coal Adopted in Montana Mine

I was pleased to note a reference made in *Coal Age*, Aug. 24, p. 288, to the improved method of loading coal at the working face, as adopted by the Keene mine management, at Roundup, Mont. It appears that the company have been studying more economical methods of mining and handling the coal at the working faces, in the rooms.

The plan adopted of standing from three to five cars at the face of a room, the cars to be loaded at one time, will expedite the work and reduce the cost of gathering cars in the workings. The new plan, no doubt, calls for an investment of several hundred dollars for extra mine cars; but this expense will be more than offset by the reduced cost of operation.

Coal-Face Conveyor System

In the mining of a seam of low coal overlaid with a good roof, allow me to suggest that there is much economy in the use of a conveyor system laid parallel to the coal face. Such a conveyor, operated by a small electric motor, will afford easy loading all along the face and will be found a profitable investment.

Not the least of the advantages of a conveyor system at the working face is the fact that little or no brushing of the roof is necessary. As the conveyor works along the floor, miners can load commercial coal with the greatest ease. A chunk of coal that requires two men to roll it onto the conveyor will generally be carried along without further trouble.

A conveyor system of this kind is generally protected by a series of cribs. As the face is advanced and the conveyor line shifted forward, new cribs are built and the old ones removed, allowing the standing area to cave. Whether a conveyor is installed or a track is laid along the face of the coal, there is provided an ideal longwall system that will prove a source of great

seeming in the operation of the mine and reduce the cost of production, which is a most important item in present-day mining.

In a pamphlet just received from England, I read that a large coal company offered a prize for the best solution of the question: "What is the most important job on the colliery?" While we are told that the judges decided that the general manager held the most important position at a coal mine, our own opinion is that the position of the fireboss is more important than that of any other mine official. It would be interesting if *Coal Age* readers would discuss this question, giving their ideas of the relative importance of mine officials.

Kemmerer, Wyo. WILLIAM ALLAN.

Steel Guides and Buntons in Mine Shafts

Steel cage guides and shaft buntons in use in Europe fifty years ago—Description of modern Belgian coal shaft in Campine region.

IN DESCRIBING the equipment of the Rosedale Shafts, in *Coal Age*, Sept. 7, p. 414, George A. Richardson appears to be under the impression that the use of steel rails as cage guides, in mine shafts, is something novel. He calls it a "revolutionary development."

As a matter of fact, steel rails have been used as guides in the deeper coal shafts of the European continent, ever since such rails have been rolled commercially, and that is, since the early stages of the Bessemer-process development, which would put us back fifty years, or say to the seventies.

But, even before that time, when railroads were using iron rails they were using rails as cage guides in Belgium. In the sixties, Alphonse Briart, a famous Belgian mining man of those days, replaced with iron rails the wooden guides in all the hoisting shafts of the Marchienne-Basseup Collieries. There were eight or nine of these shafts, some of which were deeper than 1,000 ft.

USE OF IRON RAILS AS SHAFT GUIDES FIFTY YEARS AGO

From the beginning, Mr. Briart made use of the heaviest rails procurable. At that time, two kinds of rails were being manufactured, currently, on the continent: the flanged rail with which we are familiar in this country and the two-headed type, which still survives in the British Isles. Mr. Briart used the former as cage guides, while the latter, placed on edge, served as buntons. More than half a century ago, therefore, rails were not only used as guides, but for buntons as well.

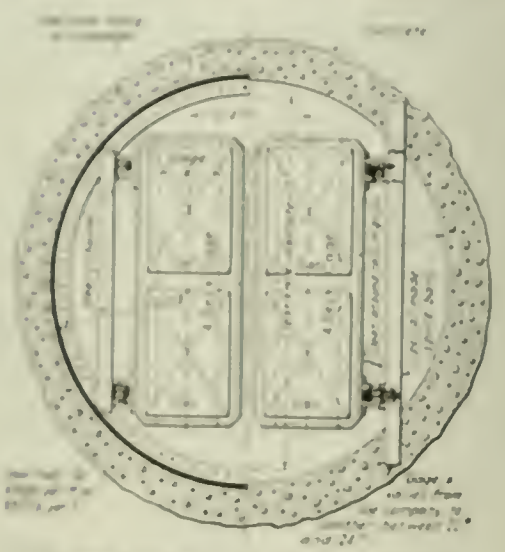
That mining men had their doubts about safety catches being effective on iron guides is proved by a certain amount of literature that found its way into the publications of the Mining Engineering Society. However, it was soon demonstrated by tests that various use

only stopped a cage more promptly on iron guides than on wooden ones, but did it without damaging them. The same kind of catches, acting on wooden rails, always slipped down on them for quite a number of feet, furrowing them terribly and making them unfit for further use.

TESTS PROVE STEEL GUIDES MORE EFFECTIVE THAN WOOD

During the seventies, when steel rails became available on the continent, they were employed as guides in preference to iron; and it was then very promptly and conclusively demonstrated that all the types of safety catches in use were as effective on steel as on iron.

In the accompanying sketch (Fig. 1) I have shown how steel guides were

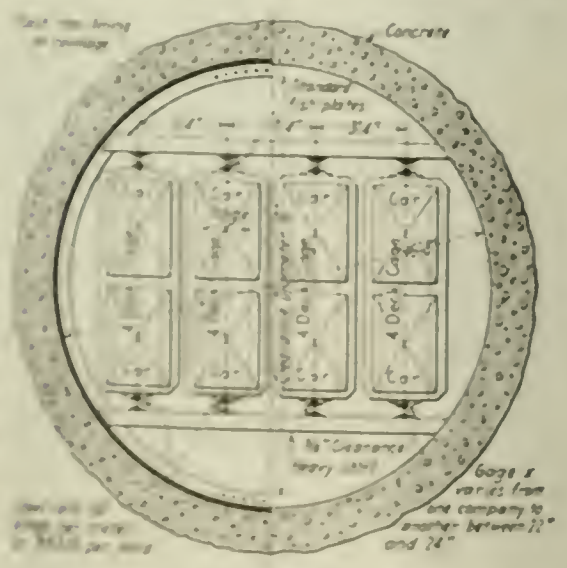


Cross-Section of Belgian Shaft Showing Steel Guides

sometimes installed in deep shafts, at the time when I gained my mining experience in Belgium, in the early nineties. The drawing is made from memory and the dimensions given are the only ones I am able to remember definitely.

HEAVIEST RAILS USED FOR GUIDES

In 1890, shafts 3,000 ft. deep were quite numerous in Belgium; and there were a few, in regular operation, at



Modern Belgian Shaft in the Campine Region

depths much greater than this. All of these were provided with steel guides and steel buntons. Nothing but the heaviest rails procurable were employed. The 50-kilog.-per-meter rail (99.3 lb. per yd.) has been manufactured continuously in Belgium ever since the late eighties.

The buntons shown in Fig. 1 were, I think, 30-cm. (12-in.) channels. I am certain they were not less than 25 cm. (10 in.). There was nothing cheap about such work. There could not be, considering the speed with which hoisting had to be done, in order to reach outputs of 800 or 900 tons, in eight hours, from shafts 2,500 or 3,000 ft. deep. Hoisting speeds of 10 m. (about 33 ft.) a second were then reached. Today, they hoist at speeds even greater than this, say 19 m. (about 61 ft.) a second being often maintained during 65 per cent of the hoisting operation.

DETAILS OF A MODERN SHAFT IN THE BELGIAN CAMPINE REGION

In Fig. 2 I have shown how a modern Belgian coal shaft is equipped. The example I have selected here is a shaft in the Campine region. I was in that shaft recently. There are two pairs of four-deck cages and two hoisting engines. Each cage-deck carries two cars. The dimensions given are the only ones I have noted, besides the following data:

This shaft is 2,350 ft. deep. The eight cars hoisted in a cage contain a total of 4.8 gross tons of coal. The cars themselves together weigh 2.4 tons. A cage weighs 4.5 tons. The rope hanging in the shaft weighs 6.6 tons. The total weight hoisted is, therefore, 18.3 gross tons.

As is usual in Belgium, this shaft is lined with cast iron, besides being concreted all around as indicated in the figure. The cast-iron lining, in this case, is 220 m. high (700 ft.), because of a corresponding thickness of quicksand which had to be frozen before the shaft could be sunk. The same sinking process has been used for all the shafts of the Campine region, on account of this quicksand formation, which is nearly constant over that part of Belgium.

While I was there, the double hoisting outfit, shown in Fig. 2, made seventy-six hoists, bringing to the surface 608 cars and 364 tons of coal in one hour, from a depth of 2,350 ft. I was told that this was less than the record, which then stood at 5,056 cars and 3,034 tons of coal, in a day of eight hours; or at the rate of 632 cars and 379 tons of coal per hour.

New York City. F. C. CORNET.

Driving Wide Rooms

Loading contest shows record output, per man, per day—Influence of width of rooms on output — Discussion asked.

IN THE issue of *Coal Age*, Aug. 10, p. 216, is given an account of the results of a loading contest that took place between two mines of the Standard Island Creek Coal Co., located at Cora and Taplin, W. Va., respectively.

The account gives the average daily output of two men, working at these

respective mines, as being 50.5 tons of coal, per shift, in the one case, and 45.9 tons, per shift, in the other; or, practically, the capacity of a 50-ton railroad car, per day, for each man.

This is a record output for a miner working in 4-ft. coal and drilling, shooting and loading his own coal without assistance. It is stated that one of these men was working in a double-track room, 36 ft. wide, while the other was driving two places, each 18 ft. wide.

Reading this account interested me, particularly as I have lately been endeavoring to convince our foreman at Coral, Indiana County, Pa., that he should widen his rooms from 20 to 36 or 40 ft., believing as I do that this would increase the daily tonnage, per man.

We are working coal 78 in. thick and overlaid with from 200 to 390 ft of cover. The seam which is the upper Freeport seam and is very soft, consists of 26 in. of top coal and 42 in. of bottom coal, separated by 10 in. of binder. The roof is mostly sandrock and taking the mine as a whole, it is considered very good. Occasionally, we strike a "cutter," where the roof will cut or shear from 3 to 10 ft. The floor of the seam is solid and very regular.

I would like to have the question discussed as to what influence, if any, the width of rooms have on the possible daily output, per man. It would be interesting to hear from some of the men of the Standard Island Creek Coal Co., on this question, giving their roof conditions and other data that would bear on the subject.

L. F. KLINGENSMITH,
Potter Coal & Coke Co.
Greensburg, Pa.

Inquiries Of General Interest

Triple-Compartment Hoisting and Airshaft

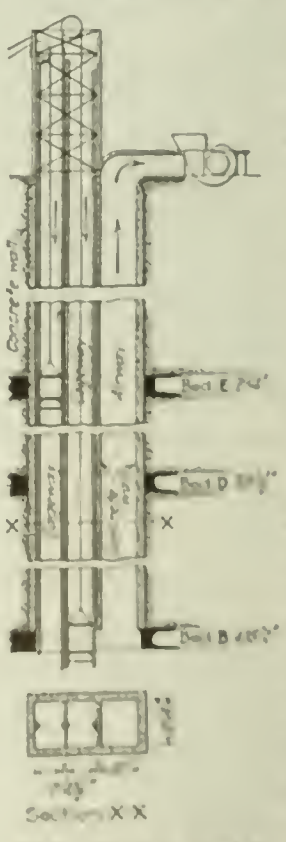
Double Compartment Hoistway and Airshaft Combined—Effect of Movement of Cages on Circulation of Air—Suggestions Regarding Design of Shaft and Its Equipment

HAVING in contemplation the sinking of an airshaft, at a point some distance in advance of our present workings and desiring to design and equip this shaft in a manner that it can be used as the main hoisting shaft, at some later time when the underground development has proceeded to an extent to make that advisable, we solicit the advice of *Coal Age* and its practical readers, in hopes of gaining information that will enable us to avoid mistakes that might otherwise be made.

In order to make clear the situation, I have prepared the accompanying sketch showing the cross-section of the proposed shaft, and outlining the headframe and hoisting sheaves above the shaft, together with the fan and fan drift connecting with the air compartment of the shaft. Below the sectional elevation is shown a plan of the shaft with its three compartments, comprising two hoistways for the cages and an air compartment in one end of the shaft.

As indicated by the arrows, the two hoistways are made the downcast and the air compartment is then the upcast for the mine, the fan being operated as an exhaust fan. In accordance with our best practice, the fan is set back from the shaft a short distance, as a safeguard against its possible destruction by the blast of an explosion, should one occur in the mine.

The shaft is to be lined with concrete throughout its entire depth and a 12-in., reinforced concrete curtain wall will separate the air compartment from the hoistway adjoining it. This curtain wall will extend from the top to the bottom of the shaft, thus providing separate intake and return airways in the shaft.



SECTIONAL PLAN AND ELEVATION OF SHAFT

It is assumed that the ultimate quantity of air circulating in the mine and passing through this shaft will be 200,000 cu.ft. per min. It is the intention to operate the cages at a maximum speed of 900 ft. per min. Briefly stated, this shaft will serve the following purposes: 1. Ventilation. 2. Hoisting and lowering men and supplies, and hoisting coal and rock from the mine.

As shown in the sketch, there are three beds of coal cut by the shaft; namely, beds, *B*, *D* and *E*. Hoisting operations will include the following: (a) Lowering supplies from the surface to the several levels, *E*, *D*, *B*. (b) Hoisting coal and rock from bed *B* to the surface. (c) Lowering coal from the two upper levels to bed *B*. (d) Hoisting and lowering men working in the several levels.

Having made this explanation, I would like to ask three questions, as follows: What effect will the presence of one of the cages at either of the upper levels have on the circulation of air in the hoisting compartment? 2. What effect will the travel of the cages up and down the shaft have on the air in the hoisting compartment? 3. What suggestion has any one to offer in the matter of design of the shaft, with a view to realizing the most satisfactory result from a ventilating standpoint?

It should be further stated that of the 200,000 cu.ft. of air, which is the proposed maximum circulation that will pass through the shaft, 150,000 cu.ft. will be required in the lowermost seam, Bed *B*, while the remaining 50,000 cu.ft. will circulate in the two upper levels, Beds *D* and *E*. I trust that this will make the proposition clear to all and hope for many good suggestions.

———, Pa. Chief Engineer.

This is an interesting proposition that we are glad to present to the practical readers of *Coal Age*, knowing that they will respond by giving many helpful suggestions respecting the design and equipment of this shaft, having in view the most economical and satisfactory results in its operation. By way of opening the discussion, we offer the following brief suggestions:

First, it is not assumed that this shaft is sunk so far in advance of the present working face in the old mine, but that connection with those workings will quickly provide a way of escape in case of accident in the new shaft, which would be necessary to comply with the Pennsylvania mine law.

While it is a common practice to sink a triple-compartment shaft, providing a double-compartment hoistway and airshaft combined in one there are serious objections to this plan. First, and chief of all, is the fact that an accident occurring in the shaft endangers the circulation of air in the mine.

It is true that, in this case, a 12-in., reinforced-concrete curtain wall separates the airway from the hoistways. But it is a question whether this curtain wall would withstand the terrible force of an explosion in the mine should one occur. In our judgment, a far better arrangement would be to sink two separate shafts, making one a hoisting shaft and using the other exclusively as an airshaft and escapeway in the later operation of the mine.

Answering the question regarding the effect on the air due to one cage being at the upper level and practically closing that compartment of the shaft to the free passage of air, or the effect on the air due to the travel of the two cages up and down the shaft, our experience has been that neither of these conditions have any very material effect

of each cage, however, should be built so as to permit the passage of air through them and the cages should not fit tight in the shaft, but a clearance of 3 in. at each end and 6 or 8 in. on each side of each cage should be provided.

In order to obtain the required division of the main air current, regulators will have to be placed in the two upper seams *D* and *E*, which would naturally take the larger proportion of the air, unless the current is thus restricted in them. We hope this question will be fully discussed from every angle by readers of *Coal Age*.

Examination Questions Answered

Kentucky Mine Foremen's Examination. Lexington, May 30, 1922

(*Selected Second-Class Questions*)

QUESTION—*Explain how natural ventilation in a mine is affected by the change of seasons.*

ANSWER—In the winter season, the outside temperature is generally lower than that of the mine and the cooler intake air, being heavier than the warm return current, an air column is produced that assists the circulation of the air produced by the ventilator.

Again, in the summer season, the outside temperature is generally higher than that of the mine. The result is, then, that the warmer intake air, being lighter than that of the mine, an air column is produced that opposes the circulation produced by the fan.

In general, therefore, a mine is more easily ventilated in the winter than in the summer season.

QUESTION—*What method would you adopt to have a continuous flow of air past the face of each working place?*

ANSWER—In the first place, a reliable means of producing the circulation of air in the mine must be adopted. Again, the air must be carried forward by means of well built stoppings, doors, air bridges and brattices, so that it will be made to sweep the face of the coal, in each working place. Frequent inspection of these appliances is necessary to keep them in good condition, such as to insure a continuous flow of air in the workings.

QUESTION—*What are the general requirements in regard to the distribution of air in mines, and what must be done when the current is seriously interrupted?*

ANSWER—The main intake air current must be divided into two or more splits, and the quantity of air passing in each split must be proportioned to the need therein. The number of splits must be sufficient to comply with the requirements of the mining law, so that the number of men working on a single split will not exceed what the law allows.

Should the air current be seriously interrupted, the men must be promptly notified and withdrawn from the mine. They must not be permitted to return, until the trouble has been removed and the mine examined and found safe for work.

QUESTION—*If the velocity of an air current is 725 ft. per min., in an airway 6½ x 8½ ft., what is the quantity of air passing per minute?*

ANSWER—The sectional area of this airway is $6.5 \times 8.5 = 55.25$ sq.ft. The quantity of air passing is then $725 \times 55.25 = 40{,}056+$ cu.ft. per min.

QUESTION—*Find the ventilating pressure in a mine when the downcast temperature is 60 deg. F., and the upcast 200 deg. F., the barometer being 30 in. The depth of both shafts is 300 ft.*

ANSWER—The weight of 1 cu.ft. of air in the downcast shaft is

$$\frac{1.3273 \times 30}{460 + 60} = 0.07657 \text{ lb.}$$

Likewise, the weight of 1 cu.ft. of air in the upcast shaft is

$$\frac{1.3273 \times 30}{460 + 200} = 0.06033 \text{ lb.}$$

Therefore, the difference of pressure, for a single foot of depth in this shaft is $0.07657 - 0.06033 = 0.01624$ lb. The depth of both shafts being 300 ft., the unit of ventilating pressure, in this case, is $300 \times 0.01624 = 4.872$ lb. per sq.ft. To find the ventilating pressure, or the pressure producing circulation in this mine, it would be necessary to know the sectional area of the airway, which is not given.

QUESTION—*What is meant by absolute pressure?*

ANSWER—The term "absolute pressure" describes the total pressure exerted on the air, which includes the atmospheric pressure (14.7 lb. per sq.in., sea level) and any additional pressure due a ventilator. The latter may be either positive or negative, according as the fan is blowing or exhausting air from the mine.

QUESTION—(*a*) *What is meant by ventilating pressure, in mine ventilation?* (*b*) *What is the unit of ventilating pressure?*

ANSWER—(a) The ventilating pressure, in mine ventilation, is the total pressure producing the circulation of air, in a mine. It is equal to the mine resistance, and is the difference of pressure between the intake and return airways.

(b) The unit of ventilating pressure is the pressure per square foot of sectional area in the airway or fan drift. It is found by dividing the ventilating pressure or mine resistance by the number of square feet in the sectional area of the airway. While the ventilating pressure is expressed in pounds, the unit of ventilating pressure is expressed in pounds per square foot. The unit of ventilating pressure is sometimes expressed as "ounces per square inch," 1 oz. per sq.in. being equal to 9 lb. per sq.ft.

QUESTION—*Explain the difference between ventilating pressure and absolute pressure.*

ANSWER—Ventilating pressure is the difference between the pressure on the air in the intake airway of a mine and that on the return air, in the same mine. It is this difference of pressure that produces the circulation in the mine.

QUESTION—*An airway, 16.7 ft. wide and 8.9 ft. high is passing 65,000 cu.ft. of air per minute. What is the velocity of the air current?*

ANSWER—The sectional area of this airway is $16.7 \times 8.9 = 148.63$ sq.ft. The velocity of the air current is then $65{,}000 \div 148.63 = 437.3$ ft. per min.

QUESTION—*If powder smoke requires 2 min. and 17 sec. to travel 149 yd., in an airway 10 x 12 ft. in section, what quantity of air is passing in the airway?*

ANSWER—The time, 2 min. 17 sec., is 137 sec.; and 149 yd. is $3 \times 149 = 447$ ft. The velocity of the air indicated by this observation is, therefore, $60(447 \div 137) = 195.76$ ft. per min. The sectional area of the airway is $10 \times 12 = 120$ sq.ft. The quantity of air passing in this airway is, therefore, $120 \times 195.76 = 23{,}491+$ cu.ft. per min.

QUESTION—*With a pressure, at sea level, of 14.7 lb. per sq.in., and the barometer 30 in., how far can you set a pump above the surface of the water, vertically, and not use rods for pumping? Show by example.*

ANSWER—The theoretical height of water column supported by an air pressure of 14.7 lb. per sq.in. is, $14.7 \div 0.434 =$ say, 34 ft. Owing to friction and leakage of valves, it is safe pumping practice to make the vertical height of the pump, above the surface of the water in the sump, not to exceed nine-tenths of the barometric pressure; or, in this case, $0.9 \times 30 = 27$ ft.

Seven-Hour Day Causes Increase of £30,000,000 a Year In Production Cost of British Coal

By C. H. S. Tupholme

A great deal of publicity has been given to the subject of miners' wages in Great Britain. There are other branches of productive activity in Great Britain, however, in which unemployment and short time are so prevalent and earnings so low that a great percentage of employees are compelled to subsist for long periods on the "dole." The latest official figures show that in such great industries as iron and steel, shipbuilding, and engineering, unemployment is much greater and employment itself more broken and irregular than in the coal-mining industry.

In considering the position of the British miner it is necessary to realize that even in these days of industrial depression he enjoys privileges denied to other workers. Relatively his lot is little worse—in some cases it is distinctly better—than that of workers in certain other trades —railwaymen and municipal workers excluded.

It is a popular assumption that miners are in receipt of wages only 20 per cent above those paid up to the period immediately preceding the war. This is a misconception. The average earnings of miners throughout the country work out at approximately 45 per cent more than the pre-war scale. Piece workers are allowed 14 per cent more than their old rates to enable them to earn as much in a working day of seven hours as they formerly did in one of eight. The miner also is privileged in respect to housing and fuel. At a time when accommodation is still difficult to obtain many miners pay nothing for their dwellings, or receive an allowance in lieu of rent. House coal, which is a fairly substantial item in the miners' domestic economy, is given to them either free of charge or at a price which little more than covers the cost of cartage. These two items have to be taken into account in considering the miner's position in comparison with that of his co-workers in other callings.

Leaders Allege That Miners' Earnings Are Too Low

The miners' leaders fully recognize that wages absorb the vast bulk of the proceeds from the industry, leaving the owners with a profit much less than the minimum provided for them in the terms of settlement of June, 1921. Nevertheless they persist in the claim that the earnings of the mine workers are below the "subsistence level" and need augmentation.

They now propose that the owners so raise prices to the general body of consumers as to provide a sufficient revenue from the sale of coal to afford the miners what they deem a living wage. This can only mean that there be some sort of selling combination by which coal prices shall be maintained at an artificial level. The principle is one diametrically opposed to the present methods and to the traditions of the mining industry, which before the war provided cheap as well as abundant coal. In other words, it is proposed to substitute for healthy competition a system of trustification entirely alien to the traditions of British commerce.

This expedient is likely to find little favor in the eyes of the consumer. It is directed to the same end as the proposal for a government subsidy—viz., the placing of a further burden on the community to extract an uneconomically high wage for the miner at a time when every section of the public is handicapped by high prices and overtaxation. The principle is vicious, since it is certain that if it were once admitted its application would be invoked by all other workers who considered themselves inadequately remunerated. But it is not the domestic consumer alone who would be affected by such a scheme. The great staple industries of the country—iron and steel, engineering, textiles and the railways—in paying more for their coal would find their working costs so increased as to necessitate restricted operations. The cost of living would again bound up, trade depression would become intensified, and there would be a great increase in unemployment.

One of the most serious effects of any arbitrary regulation of selling prices would be the crippling of overseas trade. The coal industry experienced the disastrous effects of foreign competition during and immediately subsequent to the period of coal control. If an artificial price is to be substituted for the open market price in international trade, nothing is more certain than the re-entry of competitors, and much, if not all, of the good effected during the past twelve or fifteen months will be undone.

It is vital that the industry should not carry a personnel in excess of its strict requirements, while it is equally necessary that every man employed should do a fair day's work. The introduction of the seven-hour day at a time when a return from artificial to economic conditions was foreshadowed was a measure which could not have been recommended had its advocates foreseen results. During this period of bad trade and uneasy markets, co-operation and solid, hard work have been more necessary than at any time in the annals of the coal trade.

The statutory reduction of working hours has had the effect of increasing the costs of production to an extent which has left its mark on the whole trade. This measure has necessitated the employment of large numbers of extra day-workers, and at the same time it has added to the cost of piece work in wages by 14 per cent. Wallace Thorneycroft and other authorities upon coal-mining matters variously estimate the increased production cost due to the act at from 2s. to 2s. 6d. per ton. At the present rate of output this saving would produce about £30,000,000 in a twelve-month, of which 83 per cent would be available as a supplement to mine workers' wages under the terms of the existing agreement.

While the relations existing between the mine owners and their work people are by no means unsatisfactory, it is obvious that much benefit would be derived by closer co-operation between the two parties. The employers are anxious to restore the industry to economic health and feel that if the men's accredited spokesmen take the long view and join with them in their efforts to this end, the most serious obstacles would be overcome. There are some factors, such as the exchanges and conditions abroad, which are outside the control of the industry; but others are amenable to control, and if these are approached in the spirit of conciliation much can be done to make the position of the trade more tolerable.

The deliberations of the National Coal Board will have proved valuable if they merely serve to elucidate the truth that better times for the miner and the industry generally are not to be obtained by schemes which are economically unsound and socially undesirable.

U. M. W. International Board Takes Steps To Restore Kansas to Good Standing

Steps to restore the autonomy of the Kansas district, No. 14, United Mine Workers, whose charter was revoked more than a year ago after district officers and a number of members of the district had been expelled from the union, have been taken by the International board of the Mine Workers, which is in session in Indianapolis. A convention of the Kansas district members has been called for Pittsburg, Kan., Oct. 25.

A constitution for the district will be drawn up at the convention and arrangements made for an election of district officers to take the place of the others. The question of reinstatement to membership in the union of Alex Howat and other officers and members of the district who were expelled from the union is to be considered separately. The charter of the Kansas district was revoked and Howat expelled after he had called strikes in violation of contracts

Preliminary Statistics of Production of Coal in 1921

(Exclusive of product of wagon mines)

Iowa

County	Sold to Local Trade and Used by Employees (Net Tons)	Used at Mines for Power and Heat (Net Tons)	Made into Coke at Mines (Net Tons)	Total Quantity (Net Tons)	Total Value	Average Value per Ton	Number of Employees — Underground — Miners, Loaders Etc. (a)	All Others	Surface	Total	Average Days Worked
[illegible]	[illegible]	[illegible]		23,821	$102,000	$3 95	60	8	6	74	193
[illegible]	[illegible]	[illegible]		609,397	2,301,000	3 81	2,335	590	273	3,198	92
[illegible]	[illegible]	[illegible]		198,738	982,000	4 94	371	131	46	548	159
[illegible]	[illegible]	[illegible]		309,888	1,195,000	3 86	412	188	55	655	179
[illegible]	[illegible]	[illegible]		58,092	212,500	3 66	106	39	20	165	163
[illegible]	[illegible]	[illegible]		108,410	431,000	3 98	163	113	41	317	124
[illegible]	[illegible]	28		11,590	39,100	3 37	15	7	4	26	201
[illegible]	[illegible]	[illegible]		236,823	887,000	3 78	269	125	45	439	211
[illegible]	[illegible]	[illegible]		47,751	171,000	3 58	74	14	10	98	139
[illegible]	[illegible]	[illegible]		583,188	2,140,000	3 67	699	273	96	1,068	149
[illegible]	[illegible]	[illegible]		1,519,291	5,501,000	3 62	1,919	783	217	2,919	172
[illegible]	[illegible]	[illegible]		750,351	3,070,000	4 09	1,017	497	141	1,655	179
[illegible]	[illegible]	[illegible]		50,499	135,000	2 67	66	19	10	95	175
[illegible]	[illegible]	32		21,553	90,200	4 19	91	28	10	129	127
Totals	[illegible]	118,559		4,531,392	$17,256,800	$3 81	7,597	2,815	974	11,386	148

Kansas

[illegible]	[illegible]	13,422		570,601	$2,047,000	$3 59	533	198	364	1,095	122
[illegible]	[illegible]	29,618		2,713,007	10,515,000	3 88	4,534	1,243	799	6,576	138
[illegible]	[illegible]	11,557		133,904	536,000	4 00	161	45	29	235	205
[illegible]	[illegible]	100		7,459	28,300	3 79	17	9	3	29	118
[illegible]	[illegible]	197		41,670	207,000	4 97	208	43	21	272	133
Totals	[illegible]	184,894		3,466,641	$13,333,300	$3 85	5,453	1,538	1,216	8,207	137

Kentucky

[illegible]	[illegible]	24,226		1,695,350	$5,068,000	$2 99	2,003	867	569	3,439	135
[illegible]	[illegible]	963		42,730	93,000	2 18	121	45	49	215	85
[illegible]	[illegible]	700		149,637	246,000	1.64	203	81	58	342	142
[illegible]	[illegible]	322		68,181	184,000	2 70	164	47	45	256	125
[illegible]	[illegible]	1,095		152,939	319,000	2 09	145	53	36	234	159
[illegible]	[illegible]	13,822		1,166,038	2,922,000	2 51	1,557	696	490	2,743	116
[illegible]	[illegible]	34,294	45,992	6,895,519	19,140,000	2 78	4,900	1,784	1,955	8,639	217
[illegible]	[illegible]	30,527		741,150	2,429,000	3.28	756	308	200	1,264	137
[illegible]	[illegible]	28,891		507,691	1,329,000	2 62	580	261	219	1,060	163
[illegible]	[illegible]	200		90,228	218,000	2 42	251	26	29	306	188
[illegible]	[illegible]	70		32,913	73,400	2 23	76	37	32	145	88
[illegible]	[illegible]	38,784		2,500,694	7,534,000	3.01	1,967	1,047	687	3,701	140
[illegible]	[illegible]	441		611,846	1,870,000	3.06	829	338	143	1,310	126
[illegible]	[illegible]	1,720		65,715	120,000	1.83	64	46	47	157	132
[illegible]	[illegible]	2,050		38,009	178,000	4 68	120	66	41	227	160
[illegible]	[illegible]	1,185		4,440,059	11,386,000	2 56	2,639	1,288	759	4,686	187
[illegible]	[illegible]	62,103	115,515	3,317,589	9,238,000	2 78	2,815	1,707	1,256	5,778	134
[illegible]	[illegible]	25,077		424,139	1,321,000	3.11	721	259	169	1,149	116
[illegible]	[illegible]			31,987	69,100	2.16	70	49	28	147	85
Totals	[illegible]	260,470	161,507	22,972,414	$63,737,500	$2 77	19,981	9,005	6,812	35,798	160

Western District

[illegible]	[illegible]	7,603		125,346	$309,100	$2 47	113	31	42	186	207
[illegible]	[illegible]	1,768		93,021	163,000	1.75	117	38	18	173	202
[illegible]	[illegible]			4,696	10,000	2.13	14	2	1	17	152
[illegible]	[illegible]	14,944		340,720	911,000	2.64	337	171	63	571	156
[illegible]	[illegible]	39,225		1,997,609	4,938,000	2.47	1,806	888	548	3,242	122
[illegible]	[illegible]	3,200		91,306	195,000	2.14	143	46	22	211	71
[illegible]	[illegible]	94,049		3,223,952	8,109,000	2 52	3,455	1,461	640	5,556	133
[illegible]	[illegible]	35,920		863,185	2,097,000	2.43	1,014	444	230	1,688	118
[illegible]	[illegible]	43,086		821,300	2,042,000	2.49	728	386	188	1,302	150
[illegible]	[illegible]	26,992		1,054,721	2,581,000	2.45	1,029	524	224	1,777	125
Totals	[illegible]	266,787		8,615,856	$21,355,100	$2 48	8,756	3,991	1,976	14,723	131
Totals & Equivalents	[illegible]	527,257	161,507	31,588,270	$85,092,600	$2 69	28,737	12,996	8,788	50,521	152

Maryland

[illegible]	[illegible]	22,548		1,497,077	$5,526,000	$3.69	2,265	735	552	3,552	136
[illegible]	[illegible]	4,748		330,663	1,076,000	3 25	699	243	174	1,116	69
Totals	[illegible]	27,296		1,827,740	$6,602,000	$3 61	2,964	978	726	4,668	120

Michigan

[illegible]	[illegible]	14,630		348,495	$1,729,000	$4.96	445	208	86	739	193
[illegible]	[illegible]	49,519		746,237	3,587,000	4 81	807	343	129	1,279	210
[illegible]	[illegible]	7,423		46,983	239,000	5 09	94	71	29	194	122
Totals	[illegible]	71,572		1,141,715	$5,555,000	$4 08	1,346	622	244	2,212	196

Missouri

[illegible]	[illegible]	9,245		527,804	$1,659,000	$3.14	663	257	114	1,034	225
[illegible]	[illegible]	121		10,538	45,500	4 32	34	7	4	45	226
[illegible]	[illegible]	39,202		726,347	2,934,000	4 04	106	22	778	906	107
[illegible]	[illegible]	1,229		39,690	125,000	3 15	51	16	71	138	74
[illegible]	[illegible]			16,128	45,000	2 79	41	11	5	57	179
[illegible]	[illegible]	2,969		91,646	372,000	4 06	158	55	20	233	177
[illegible]	[illegible]	1,533		32,191	130,000	4 04	64	18	34	116	128
[illegible]	[illegible]			95,279	327,000	3 43	33	7	95	135	163
[illegible]	[illegible]	571		4,514	17,400	3 85	5	1	12	18	66
[illegible]	[illegible]	107		11,654	68,000	5 83	52	5	5	62	159
[illegible]	[illegible]	337		15,240	50,000	3 28	35	26	9	70	72
[illegible]	[illegible]	18,619		540,421	2,316,000	4 29	1,006	480	145	1,631	162
[illegible]	[illegible]	691		89,747	428,000	4 77	177	99	13	289	157
[illegible]	[illegible]	10,149		473,985	1,784,000	3 76	931	219	69	1,219	151
[illegible]	[illegible]	1,555		13,921	52,000	3 74	55	13	8	76	84
[illegible]	[illegible]	6,873		324,836	1,274,000	3 92	627	192	52	871	194
[illegible]	[illegible]	[illegible]		476,117	2,058,000	4 32	979	372	98	1,449	189
[illegible]	[illegible]	771		42,026	166,000	3 95	94	24	29	147	101
[illegible]	[illegible]	[illegible]		19,537	64,600	3 31	30	6	23	59	147
Total	[illegible]	[illegible]		3,551,621	$13,915,500	$3 92	5,141	1,830	1,584	8,555	166

(a) Includes Calhoun County. (d) Chariton, Franklin, Ralls and St. Clair.

Statistics compiled by L. Moore, U. S. Geological Survey, Oct. 14, 1922

Federal Coal Commission Names Hammond Chairman And Proceeds to Map Out Program

By Paul Wooton
Washington Correspondent of *Coal Age*

The first act of the United States Coal Commission at its initial meeting, Oct. 18, was to designate John Hays Hammond as its chairman. The commission immediately plunged into a discussion of a program for its work. No formal announcement has been made as to how the work will proceed, but certain of its policies already are apparent. It is the intention of the commission to keep the public informed as to each step of its progress. It recognizes that in this way the public will be able to absorb more knowledge as to the problems of the coal industry. The commission recognizes that the only chance that it has to accomplish anything is to obtain public support for its recommendations. It is believed that if the public mind goes through the same processes that the minds of the commissioners will go through, they will be prepared to pass intelligent judgment on the conclusions. Frequently when conclusions constitute the first knowledge that the public has, much time must elapse before their real purport is understood. Thinking takes time. Recognizing that fact, the commission hopes to be able to carry the public along with it as the study progresses.

Lewis Invited to Informal Conference

The problem is so intricate that the commission expects to call to its aid each subdivision of the coal industry. One of its first acts was to invite into informal conference John L. Lewis, president of the United Mine Workers of America; Alfred M. Ogle, president of the National Coal Association, and S. D. Warriner, a leading anthracite operator, and to ask each to appoint a consulting committee, which is to maintain close contact with the commission and assist it by presenting such facts as may be called for from time to time.

Since E. E. Hunt is secretary of the commission, it is reasonable to suppose that he will resort to much the same form of organization that functioned so successfully during the President's unemployment conference—the plan also used at the conference on limitation of armament. At those conferences advisory committees composed of representatives of the varied interests concerned were used with great success. For instance, an advisory committee on storage would be composed of representatives of coal operators and of large consumers—those most likely to benefit or be interested in storage. This plan, if acceptable to the present commission, would be carried out in such a way that an advisory committee would be formed for each of the important problems within the industry. In this way the commission would be saved a large amount of work and would be furnished with much predigested material.

Since the commission must make its preliminary report on Jan. 15, advantage must be taken of all means to expedite the study. It is probable that the commission will call upon those most concerned to lend it some of their specialists. Only in this way can the commission procure the requisite skill necessary to its work.

Now that the commission is in action an opportunity has been given to judge as to its capability and as to the ability of the individual members to work together. The first sessions indicated that President Harding's mixture of two engineers, two lawyers, two economists, and a newspaper man is less discordant than some critics might expect. Apparently they will work well together. Judge Alschuler gave early evidence that he is experienced not only in weighing evidence but, as shown too in his packing-house experience, is skilled in obtaining evidence for himself.

Mr. Marshall is so well known for his quaint philosophy and his Hoosier directness that sight frequently is lost of the very practical way in which he reasons on problems which come before him. It already is apparent that any policy to win his support must be 100 per cent American. One of his acid tests is whether or not a man puts his American citizenship first.

Dr. Smith brings to the commission not only his own large store of knowledge acquired from having kept abreast with the coal situation day by day for a long period of years but his knowledge of the federal machinery and his acquaintanceship with the government personnel in Washington has made it possible quickly to co-ordinate the commission's work with the coal activities of the various federal departments. This is in direct contrast with the experience of numerous new boards and commissions, where there has been an exasperating loss of time before actual work could start.

Mr. Howell has a wide acquaintance with men and has an accurate knowledge as to the part coal plays in the industrial South. He has demonstrated a keen appreciation of the public's equity in coal.

No one could approach a task better prepared to serve efficiently than Mr. Neill. It has been just twenty years since he began his work with the Roosevelt Anthracite Commission. His connection with the anthracite industry has been almost continuous since. He also brings to the commission a knowledge of transportation, but above all he has a sympathetic understanding of each side of labor disputes.

Mr. Hammond, in addition to his understanding of the engineering phases of the inquiry, has a genius for organization which he is applying actively to the plan for the commission's staff.

An analysis of editorial comment in more than one hundred newspapers reveals that the *New York Call*, a socialist organ, is the only one commenting unfavorably on the personnel selected for the commission.

E. E. Hunt, Coal Commission's Secretary, Has Had Broad Economic Experience

E. E. Hunt, of Springfield, Ohio, has been selected as secretary of the President's coal commission. Mr. Hunt has been in charge of the study of intermittency in the coal industry which the Department of Commerce has been pursuing since last March. For the purposes of that study a sizable contribution was received from the Cabot fund. The study was an outcome of the unemployment conference, of which Mr. Hunt was secretary. Mr. Hunt had been associated with Mr. Hoover throughout the preparation of the report on waste in industry.



E. E. HUNT
Secretary, U. S. Coal Commission

Mr. Hunt was graduated from Harvard in 1910. From 1910 to 1914 he did editorial management work. With the outbreak of the war in Europe he was sent to Antwerp by the Committee for Relief in Belgium. He was in charge of the entire Antwerp district, in which he supervised the work connected with feeding and providing fuel

economics of the industry, but its technical data will be gladly and freely placed at the disposal of the commission.

"The Geological Survey has followed two general lines in its coal investigation under each of which a score or more of topics might be enumerated:

"(1) The extent and location of the underground reserves of coal, including the segregation and valuation of the public coal lands in the West. This appraisal of our national wealth in coal is a continuing project in which additional work is done each year.

"(2) The business of mining and marketing coal. The Survey's annual reports on coal production furnish a forty-year history of the industry, including not only statistics of production but also information on trend of size of mines and of companies, mine capacity, men employed and days worked, mining methods, prices and disposition of product.

"These records are not merely a statistical history of the industry. Each annual report contains extended comment by an observer devoting his entire time to the industry, on the economics of production and distribution. The important facts as to labor controversies, consolidations, changes in methods of mining and fluctuations of demand and supply are there referred to. The coal specialists of the Survey have been associated with the outstanding events in the industry throughout that period. E. W. Parker, in charge of coal statistics in 1902, was made a member of the Roosevelt Anthracite Commission. His successor, C. E. Lesher, was adviser to the Peabody Committee on Coal Production, and later chief statistician for the Fuel Administration. In fact the files of the Fuel Administration were turned over to the Interior Department and the coal specialists of the Survey are perhaps more familiar than anyone else available with the material in those files which bears upon the Commission's work. Statisticians of the Survey have been in attendance at the several investigations made by committees of the House and Senate in recent years and are familiar with the evidence presented at those hearings.

"For the past seven months the Survey has co-operated with the conference on unemployment in the preparation of statistics bearing on intermittent operation. The preparation of these exhibits, based largely on Survey records, has been in charge of F. G. Tryon, the present coal statistician of the Survey. I understand that the records will be turned over by the Secretary of Commerce to the Coal Commission.

"The technical and clerical staff which has built up all these records will be perhaps of more value to the commission than the records themselves. The staff have had years of experience in investigations of the coal industry and with their auxiliary equipment of mailing lists and computing and tabulating machines they may be of assistance in carrying forward new studies needed by the commission. The experienced clerical workers of the coal statistical unit were used as the nucleus around which the Fuel Administration built up its extensive statistical service.

"Closely co-ordinated with the Survey's work on coal is the corresponding work on coke, manufactured gas, natural gas, petroleum and electric power. The annual and current reports on production of these fuels and electric power and the special investigations made from time to time, such as the recent superpower survey, have furnished a body of material on the supply and demand of heat and power which the commission may wish to consult in weighing the place of coal in our national life."

Seven Injured by Slate Fall in Mine at Brownsville. Pa.; Three May Die

Seven men were injured, three probably fatally, in a fall of slate Oct. 10 in the Maxwell mine of the H. C. Frick Coke Co., near Brownsville, Pa. Pinned under the débris of the first fall, the seven men were helpless when a heavier second fall of slate enveloped them.

The seriously injured are Dewey Rankin, mine foreman; Steve Ritsky, assistant mine foreman, and Edward Queen, all of whom may die as a result of their injuries. Others injured are Peter M'Kenna, Fred Reynolds and two unidentified foreigners.

In a short time the men were dug from beneath the slate and carried to the surface.

A Public Policy for the Coal Industry*

By James A. Emery†

What does the outsider see in the coal industry today—not the prejudiced, nor the impassioned, nor the embittered, nor the merely selfish observer of your industry, but the citizen who has a sincere interest in the relationship of your great industry to the social and political problems that it is creating? During six months of deliberately suspended production he has perceived upon the one hand a solid, unified organization of workers, so powerful that it has been able to successfully resist not only economic argument but official persuasion; and on the other hand he has perceived a great industry of highly intelligent and responsible operators disintegrated and disunited, with no single responsible group or spokesman who could speak the collective thought and the collective judgment and state the collective policy of a great American industry!

Does that not suggest that there never was a more favorable, a more desirable, a more necessary moment in which this great industry should enter upon a highly systematic, organized self-examination, self-analysis and self-declaration of policy for self-government?

All the forms of government that we have had any experience with in this world must live under restraint and authority, and they either take that authority from without or they impose it from within; and the difference between popular and autocratic institutions is that the one finds its rule imposed upon the outside and the other imposes its rule upon itself by voluntary self-restraint established from within. Doesn't the coal industry need today a scientific, self-examination of its own facts?

It is essentially in the public interest that the control of private property shall be preserved within the limits of public interest; and these change with the intensity and complexity of public life, because government is no longer a mere maintainer of order. It must, under the circumstances of modern life, undertake to carry out production and distribution against arbitrary interruption, and these high obligations have fallen upon it with an intensing degree of necessity.

Appointment of Commission Due to Public Opinion

The public view of this thing, as I see it today, has been very fairly expressed in the appointment of a so-called fact-finding commission. My only anxiety is whether it will discover the facts or whether it will merely paint a picture of its theories. But no industry is so well fortified to meet the facts of life today as the one that knows itself, and by a critical examination is prepared to present, as occasion arises, an accurate picture of its own operation. And that is what American industries have been doing.

I would venture to urge upon the coal industry (to urge not only in its own interest but in the interest of the public as well, that ultimately will be the terrible sufferer if a public policy is established for the coal industry that does not correspond with the facts) the establishment of a public policy based upon facts. There is nothing that the American people have paid so terrible a price for, or have suffered for so much in the past ten years of their life, as the substitution of political answers for economic answers to economic questions. And no policy will succeed with the coal industry that is not predicated upon its facts.

First of all the coal industry cannot do better at this time, cannot fortify itself more successfully, than to undertake to organize for its own self-examination in the determination of facts with respect to itself. Until it knows itself, it cannot relate itself to others. And, secondly, it is for it to establish its public relations. I mean by that not only to make itself known as it is to the public, but to make itself known as it is to the public's representatives.

It is an easy matter to "cuss" Congress; we all do it, and then we rest ourselves by "cussing" the state legislatures or the local Board of Aldermen. But representative government is a mirror in which we reflect ourselves, because it not only pictures our virtues but it very accurately defines our defects—and the besetting sin of American business has been indifference to politics. God help the man who says that business ought to keep out of politics. Business ought to get into politics, because if this nation is going to endure it isn't going to have its policies determined by a mob, but it is going to continue to be what its founders believed it would be: an aristocracy of intelligence and character, directing a democracy of right and opportunity!

Who can organize and give direction to a public policy for the coal industry better than the men who know it? They will be listened to exactly in proportion to the breadth of enlightened selfishness with which they commend themselves to public attention. Remember, that if you don't sit in the saddle to correct evil and guide the horse of reform, there are many willing riders who think they can ride the beast better than you can.

The country has suffered from the social advice of gentlemen who could not fill pulpits to the satisfaction of a congregation. It has been advised on employment relations by men who never hired a domestic servant except in their wife's name. It has had great public policies established for it by gentlemen who had no responsibility for their utterance except the price of their lecture.

A people like ours, gentlemen, will live when we meet our public responsibility and take upon ourselves the responsibility to honestly perceive and undertake to accurately define, first, our obligations, and then I say with equal sincerity, and determination to assert and enforce our rights.

Advises Frank Facing of Employment Relations

I believe that with the coal industry demonstrating its sincere interest in the public welfare, it is in a position to present to the public, and its representatives, through self-organization and self-examination, an accurate picture of what it is and what its relationship to the public ought to be. But, gentlemen, I don't believe that we will ever accomplish for the coal industry what we hope to see accomplished—to preserve it from not only incompetent and unwise but invalid regulation—unless the industry is ready in an organized way to frankly face the problem of its own employment relations. I say that it faces invalid regulation. Why, I think that the field of coal regulation today is the last great battleground of local self-government, as opposed to overwhelming federal control.

The people of the United States have had ample warning of the situation that was bound to develop in the coal industry. Year after year the danger signs were lifted in the public sight, and year after year an indifferent and apathetic people refused to heed them. And now we come to emergencies, and emergencies always excite government under popular pressure to extreme exercise of unusual power. The neglect to establish social controls in the public interest, that would insure the protection of public right, protected in the person of private agents performing a semi-public service, has led us to the situation in which we are today, but not without considerable assistance from within the industry itself.

Nobody can read the history of employment relations in the coal industry, as spread upon the records of the courts of the United States, without perceiving that sometimes found the miners' union at times a convenient means of equalizing what it termed competition. You will recall that Aesop wrote a fable about the fox who lost his tail, and having lost it he spent a good deal of time in persuading other foxes that a tail was a useless appendage. And there have been operators who, suffering under union control and domination, have not only undertaken to persuade others that they needed it and didn't need the freedom that they enjoyed, but encouraged the union, without realizing what it was they were encouraging.

Today the field of employment relations in the coal industry represents a condition that threatens the economic

*Abstract of address before American Mining Congress, Cleveland, Oct. 11, 1922.

†Chief counsel American Manufacturers' Association

and social security of the United States. But when a great industry cannot adjust itself to changed economic conditions but must submit not to argument nor to reason nor to fact, but to force, it has lost control of the first function of management, and its first duty to meeting a public situation. The coal industry today knows that it is on an unreasonable basis, and it has just had demonstrated to it the fact that it cannot get out from under it.

An organization that is committed to the proposition that it deserves the full social value of its product and interprets that to mean its value less transportation is by its commitment to a public policy going to stop short of nothing but control, and that control can take two forms: One, the direct absorption of the industry, which it never expects to accomplish. The other, the political control, similar in form to that which was proposed for the railroads, in which the National Government will buy, for the high political influence of the miners' union, the possession of the mines which they, with the exertion of their political authority, will control. And yet, faced with this philosophy, knowing that they were contributing daily to the growth of a great organization, now numbering around 600,000 militant men, devoted as a principle of philosophy to the nationalization of the mines, the operator has become the recruiting sergeant for the proponents of nationalization and the collector of its funds, to be dispersed in the destruction of his own right of private property.

I think never did the call go out so strongly to American business men to recognize their great public responsibilities, and certainly never has opportunity more gracefully and yet more forcefully presented itself at the door of the coal industry to say to it, "For God's sake, gentlemen, establish the effective means of self-study, self-analysis, self-government within yourself, that you may demonstrate to the American people the realization of your responsibilities as the trustees and fuel agencies of our civilization, and having fortified yourself with the armor of fact and with the weapon of experience and information, analyzed and reduced to practical terms, proceed then, in the light of your experience, to undertake to organize your public relations with the people of the United States and with their agencies, as the effective means of providing defense for yourselves and an effective public policy to protect and promote the interest of the United States."

Surely the coal industry can and will meet the responsibilities of this hour and save us in other industries, as they save themselves, with our co-operation, our sympathy, our understanding, the hand of brotherhood extended to them, to assist them in the working out of their own problem, but calling upon them to provide the means of making co-operation good by establishing self-organization, self-control, self-direction and self-development within themselves, that in a single responsible voice or a single group voice may speak the collective thought and collective opinion of the coal industry to the American people and its representatives, not only with fairness, with breadth of mind and common understanding, but with a firmness that is determined alike to recognize its obligations and to assert, without fear of the consequences, its rights as citizens.

Municipal Departments of New York to Utilize Small Sizes of Anthracite

After a conference of the heads of municipal departments of New York City, Oct. 23, it was announced that during the coming winter the city would burn small sizes of anthracite. This will release hundreds of tons of domestic sizes of anthracite for household consumption, it was said. City Fuel Administrator Arthur A. Learoyd said that Commissioner Whalen would readvertise for bids on the substitute fuel agreed on to be used in city buildings.

IT IS HARD TO TELL what we when the world is coming to.—*Greenville Piedmont*

IF EUROPE DOESN'T WORK OR PEACE, she may be forced to rest or peace.—*Asheville Times*.

Retail Margin of Profit on Coal Fixed in Ohio Averages $1.86 Per Ton

Retail margins of profit on each ton of coal sold in Ohio, whether Ohio-mined or imported, have been fixed by Fuel Administrator Neal and approved by Governor Harry L. Davis. The average profit permitted retailers under the schedules is $1.86 and there are approximately 106 different margins fixed. This completes the first entire regulation by the state from the mine to the consumer under the emergency legislation recently enacted. Price margins are effective as of Oct. 20, giving five days for publication of notice to various dealers. The margin applies to the price at the mine plus the freight rate to the dealer's yard. The lowest retail allowance is 65c., in Gallia County, while the highest is $2.75, permitted in Cleveland. Under the new order where the customer makes his own delivery he is to have a reduction of 75c. per ton from the margins allowed.

Prices Ohio consumers must pay for West Virginia smokeless range from $9.99 to $11.34 a ton, in accordance with the official price list given out by State Fuel Administrator Neal. The prices are based on the federal maximum fair price of $6 a ton for West Virginia coal at the mines. Variance in transportation charges to Ohio points is responsible for the range. The price in Columbus is to be $10.09 to $10.29 a ton. In other cities they are: Cleveland, $10.74@$11.34; Sandusky, $10.64@$10.84; Toledo, $10.54@$10.74; Canton, $10.07@$10.84; Youngstown, $9.99@$10.94; Akron, $10.07@$10.84; Dayton, $10.39@$10.49; Marion, $10.04@$10.24.

Michigan Governor Seeks Aid of Congress To Fix Reasonable Prices at Mines

Legislation designed to regulate distribution and cost of coal and coke in Michigan having been approved by the Legislature and signed by Governor A. J. Groesbeck, the latter has arrived at the conclusion that the most direct way of holding down prices is to be found in establishing reasonable prices at the mines. He is urging the governors of various other states to join him in appealing to Congress for action to that end.

The Governor also is conferring with Conrad E. Spens, Federal Fuel Administrator, in the effort to obtain more reasonable prices on anthracite than are quoted by some of the independent operators, seeking business in Detroit with quotations of $12@$14 at the mine.

Dealers applying for licenses in Wayne County are required to report on the quantity of coal they sold last year, the amount they have sold so far this year and how long they have been in business. This information is expected to supply a basis for computing the fuel requirements of the state and for determining the eligibility of the dealer to be classed as a legitimate coal merchant.

The new Michigan law is quite similar to the legislation enacted in New York State, though the Michigan law is said to be less drastic in some of its provisions.

Coal Consumption by Utilities in August Highest of Any Month Since February

Electric public-utility plants consumed 2,814,141 net tons of coal during August, according to a recent report of the Geological Survey. This is the largest tonnage for any month since February and compares with 2,563,607 tons in July. Production of electricity in 1922 has been accomplished through steadily increasing use of fuel power, while water-power production has declined gradually from the high mark of the year attained in May.

Evidently the scarcity of coal has increased the use of oil and gas, as August saw a record-breaking output of electricity, averaging 131,100,000 kw-hr. per day, exceeding the June record by 2½ per cent and July by 5 per cent. The heavier production no doubt was due to the increase in the domestic and commercial lighting load brought about by the activity in the building industry and by the demand by industries who were forced by lack of coal to turn to public-utility plants for power.

German Coal Situation Proves Not as Bad as Pictured

By H. O. Herzog
Berlin, Germany

The annual report of the German National Coal Association, dealing with the production, evolution of prices, consumption and supply between April 1, 1921, and March 31, 1922, has just been issued. Of special interest is the balance of loss drawn after the final division of Upper Silesia. Of 75 mines which produced 43,800,000 tons in 1913 and approximately 30,000,000 tons in 1921, representing 75 per cent of the total production, 59 have gone to Poland. Measured by the production of 1913, the loss to the national wealth thus incurred is 400,000,000 gold marks per year. The actual loss of coal to the supply of the interior of Germany is, however, not so large as has been commonly stated in public, the fact that the province itself consumed the third part of the output, while another third part was exported under Entente control to surrounding countries, having more or less been kept from public attention. Actual shipments to the interior of Germany have averaged 12,000,000 tons during the last two years. The output of the mines remaining to Germany may for this year be assumed at 8,000,000 tons. Deducting therefrom the now greatly reduced local requirements, which probably will be 2,000,000 tons, 6,000,000 tons will remain for the supply of the German interior. The net loss to the latter, therefore, is only 6,000,00 tons per year.

The National Coal Association is an institution called into existence by the law of March 30, 1919, regulating the control of coal; it forms part of the organization provided for this purpose, the other members being the National Coal Commissary and the National Coal Council. The first named is the executive and the latter an advisory body, best described as a coal parliament. In this organization the Coal Association represents the producers; it is formed as a joint stock company with a nominal capital of 250,000 marks, in which the coal syndicates of the various districts and the States of Prussia and Saxony in their capacity as mine owners are shareholders. It does not transact business in the proper sense, having nothing to do with sales or distribution. Its object is the adjustment of coal prices in conjunction with the other members of the organization of control, and eventually to assume the function of the coal commissary.

Summarizes Country's Coal Situation

Although a few representatives of the labor class are sitting on its board of directors and also are represented in the board of managers, the Coal Association is more or less a combine of the producers' interests, wherein lies its chief importance as a public institution. This is reflected in the annual report of the association, which goes far beyond its actual object and is a summary on the whole coal situation.

The picture presented by a review of the production at the present rate and that of the past years is not at all hopeful. In no mining district has the pre-war average been attained, or the average of the short-handed war time been reached. The best result so far reported is that of Lower Silesia, where the output in 1921 was 84.5 per cent of that of 1913. The next best were Saxony, with 82.6 per cent, and the Ruhr district, with 81.8 per cent. The worst case is that of the Aix la Chapelle fields, with only 64.2 per cent. Upper Silesia, with 67.7 per cent, was only a trifle better. Considering that the output of 1913, upon which these figures are based, is the highest on record, these figures do not make a bad showing.

In nearly all cases, with the exception of the Aix la Chapelle district, a considerable recovery has taken place since 1919; in the Ruhr district, for instance, it was from 61.9 per cent to 81.8 per cent of the 1913 output. When, however, the means whereby this recovery has been achieved is taken into account, these figures have a sinister significance.

Over 1,000,000 men were employed in 1921 in German coal mining, including brown-coal mining, as against 660,000 in 1913. The increase of employees in bituminous-coal mining from 1913 to 1921 was no less than 263,000, or nearly 50 per cent. The output of the inside workers per hour in 1920 dropped to 116 kg. as against 136 kg. in 1913. During 1921 the average was even a trifle lower, showing a slight recovery during the first three months of this year. According to consecutive reports this recovery was only temporary. The efficiency of labor in the Ruhr district is at present about 85 per cent of pre-war standard and in Upper Silesia it is only 77 per cent. When it is considered that 840,000 men employed in coal mining produce now only 80 per cent of what 580,000 men produced in 1913, the standard of efficiency appears to be still lower or approximately only 55 per cent. Almost identical conditions prevail in brown-coal mining.

The quantity of coal at disposal for the supply of the country within the present frontiers, after deducting the Entent tribute and the compulsory export from Upper Silesia and ignoring small quantities of free export, averaged in 1921 75 per cent of that of 1913. The increased production of brown coal, amounting to 36,000,000 tons, is one of the few favorable aspects of the situation. The efficiency of brown coal has been estimated at 2/9 of that of bituminous coal, which is entirely too low, considering the progress made with brown-coal combustion. The report leaves out of discussion how the financial situation of the mines has been affected by the prevailing price policy. In touching upon the evolution of coal prices in comparison with the increase of wages and other component parts of cost and production the report leaves it to the reader to draw his own deductions.

Cost at Mines Moves Skyward

The increase of the net cost price at the mines exclusive of taxes and other levies is 49.76 times that of 1913. The cost of labor for one ton of coal during the same time has increased 51.93 times. It is interesting to note that in pre-war times the ratio between wages per shift and cost of labor per ton was 5.50 to 6.20 marks, while in April, 1922, the ratio was 177 to 322 marks. The relation has, therefore, charged from 1:1.2 to 1:1.82. Other details of production cost have increased above pre-war prices in a still larger proportion, as, for instance: Rails, 64 times; iron ties, 77 times; oil, 60 times; wire, 77 times; structural steel work, 100 times; boilers and piping, 110 times; electro-technical equipment, 65 times.

This demonstrates that the level of coal prices is maintained to a certain degree at the expense of the property of the mines, leaving them hardly any margin for renewal and extension. As a consequence the equipment is largely run down, especially in the case of coking plants.

While the National Coal Association is loyal enough in public to attribute these unfavorable circumstances to the general unfortunate situation, in private conversation bitter complaints are heard of the short-sighted price policy which prevented the accumulation of sufficient funds for renewal and extension while they were still possible. The time for such is now considered past. The only way out of the existing difficulties is the extension of the working time. Opposition of the miners to overtime has lately receded, but the concession made lately for three extra shifts of two hours each per week is, unless considered only as a start, entirely insufficient.

To sum up the situation, in 1913 Germany had a surplus of coal export over import of 14,000,000 tons; in 1921 76,500,000 tons of coal were left for the country's consumption as against 119,000,000 tons in 1913. The total deficit in the supply compared with the latter year, taking into account both bituminous and brown coal, was in 1921 38,500,000 tons, which, when added to the export surplus, shows a total loss of 73,000,000 tons. The deficit in supply has to be made up by imports as long as it is not covered by increased production. The next few months will show what

Effect of National Wage Agreement On British Coal Mines

Some interesting results of the working of the national wage agreement which has been in force in Great Britain for more than a year have recently been given out by the Mining Association, which body represents the operators in the United Kingdom.

The first quarter, Ca., immediately preceding the great stoppage, resulted in a loss to the owners of £14,684,936. This was the position when the strike began. The cost to the pits of the stoppage is estimated at a minimum of £[illegible]. The following table gives the results of colliery operation during the first year (to June, 1922) of the national agreement:

TRADING PROFITS

[illegible]	£103,872
[illegible]	484,685
[illegible]	712,065
[illegible]	918,384
[illegible]	5,504,586
[illegible]	1,325,749
[illegible]	41,609
[illegible]	22,959
[illegible]	45,810
	9,399,519

TRADING LOSSES

[illegible]	£52,349
[illegible]	141,799
[illegible]	13,618
[illegible]	17,921
[illegible]	49,344
	275,031

If the net trading profits are set off against the loss during the strike it is seen that the net loss was £1,328,962. In the corresponding period of 1913 the profits were £28,000,000.

From last November to June of this year the owners have paid out £2,500,143 to make the wages up to 20 per cent above the standard.

During the year under review the tonnage and profit or loss figures were:

	Tonnage Raised	Profit (+) or Loss (−) Total	Per Ton
[illegible]	[illegible]	+ £103,872	+ 0s 1 0d
[illegible]	[illegible]	+ 484,685	− 0s 10 0d
[illegible]	[illegible]	+ 712,065	+ 0s 5 5d
[illegible]	[illegible]	+ 918,384	− 0s 5 1d
[illegible]	[illegible]	+ 5,504,586	− 1s 6 6d
[illegible]	[illegible]	+ 1,325,749	− 1s 2 5d
[illegible]	[illegible]	− 41,609	+ 0s 4 0d
[illegible]	[illegible]	− 52,349	− 0s 8 2d
[illegible]	[illegible]	− 141,799	− 1s 5 5d
[illegible]	[illegible]	− 13,618	− 0s 11 3d
[illegible]	[illegible]	− 22,959	− 0s 8 7d
[illegible]	[illegible]	− 37,449	− 0s 9 0d
[illegible]	[illegible]	− 49,344	− 2s 9 0d
[illegible]	[illegible]	+ 9,124,244	+ 0s 10 1d

Note: The British pound is equal [illegible] at the present rate of exchange

Enginemen to Become Coal Operators

The Brotherhood of Locomotive Engineers is to enter the ranks of the coal operators, according to a statement by Albert F. Coyle, editor of the *Brotherhood of Locomotive Engineers' Journal*. "The Locomotive engineers are making a $[illegible] investment in West Virginia and Kentucky coal mines," said Mr. Coyle, "which means not only a fair deal for the miners but better and cheaper coal for the consuming public.

"The leading officers of the brotherhood have obtained control of more than 4,000 acres of the best coal land in the United States, situated on Coal River, in Boone County, West Virginia, and in Floyd County, the heart of the Big Sandy coal district, near Prestonsburg, Ky.

"The Coal River Collieries, as the new company is called, is owned by hundreds of locomotive engineers throughout the country, who have subscribed in small amounts to the capital stock of $[illegible],000,000.

"The engineers are not only going into the business of mining coal; they are also planning the establishment of retail yards to sell their coal at reasonable prices to railwaymen and other workers in the large cities. Locomotive engineers and their friends have already organized these auxiliary coal yards in Ohio and Michigan, and have placed contracts with their coal companies for delivery direct from the mine pits to consumers. It is estimated that the mines will have a capacity exceeding 6,000 tons a day."

Smokeless Output in August Exceeded That Of a Year Ago, Despite Car Shortage

Notwithstanding the handicap of a car shortage, 2,847,738 net tons of coal was produced in the four smokeless districts of West Virginia in August, according to figures just compiled. Output during the first eight months of 1922 exceeded by six and a quarter million tons that of the corresponding period of 1921. If production can be continued at the same rate during the remainder of the year, there is every prospect that 1922 will eclipse the banner production year of 1916, when 36,000,000 tons was produced.

The following is an analysis of smokeless production for August and for the eight months of the year:

AUGUST OUTPUT OF SMOKELESS COALS IN WEST VIRGINIA
(In Net Tons)

District	1922	1921	1922 Decrease	1922 Increase
Pocahontas	1,479,004	1,155,645		323,359
Winding Gulf	458,329	443,604		14,725
New River	511,990	510,200		1,790
Tug River	398,415	315,075		83,340
Totals	2,847,738	2,424,524		423,214
Totals, July	2,630,565	2,164,185		
Totals, June	3,777,558	2,869,574		
Totals, May	3,687,874	2,975,711		

The Norfolk & Western hauled 1,872,875 tons of the August output, the Virginian 432,103 tons and the Chesapeake & Ohio 542,850 tons. The total coal movement in net tons of the three roads during that month is shown in the following table:

HAULED BY NORFOLK & WESTERN

Pocahontas	1,474,370	Clinch Valley	185,645
Tug River	398,415	Kenova	143,320
Thacker	570,020		
Total			2,771,820

HAULED BY CHESAPEAKE & OHIO

Logan	764,450	Kanawha	152,860
New River	423,060	Coal River	120,150
Winding Gulf	119,790	Kentucky	236,820
Total			1,817,150

HAULED BY VIRGINIAN RY

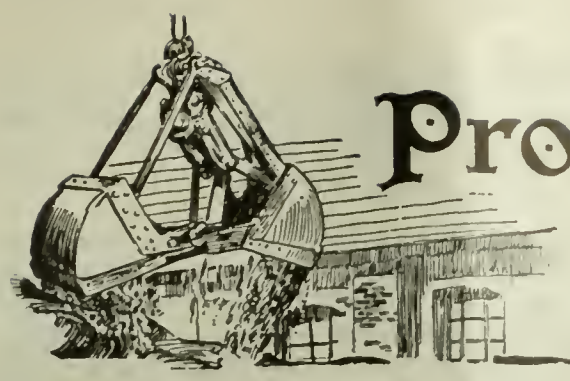
Winding Gulf	338,539	New River	88,930
Pocahontas	4,634	High Volatile	67,050
Total			499,153

Forty-Eight More Men Indicted for Murder In Connection with Herrin Massacre

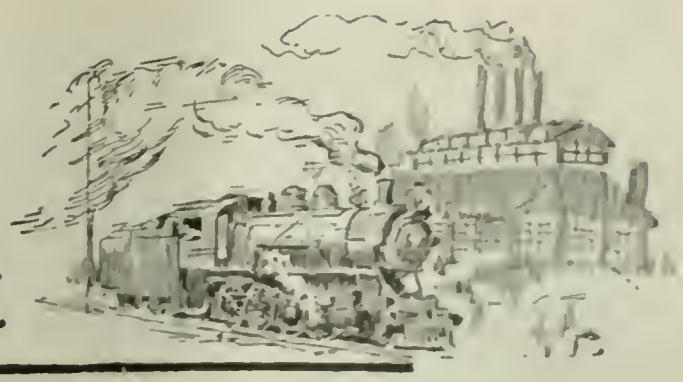
The special grand jury at Marion, Ill., finished its work on the Herrin massacre case Monday, Oct. 23, by indicting forty-eight more men for the murder of Ignace Kubenis, a victim who died of wounds since the jury recessed last month. Circuit Judge Hartwell says the indictments are illegal because returned at a term of court subsequent to the one at which the jury was impanelled. State's Attorney Delos Duty disagrees with him.

Only a few witnesses were heard on Monday, and they are said to have told of wounds inflicted on Kubanis, and which are said to have resulted in his death. This makes 434 persons the grand jury has indicted in connection with the rioting in which twenty-three men were killed.

MOST MEN'S IDEA of a living wage is about two dollars more than they get.—*Portland Oregonian.*



Production and the Market



Weekly Review

Colder weather has strengthened the domestic market. Industrial buyers, however, are as yet unchanged in their attitude of aloofness. Cars are so short and the steam market so weak that the net result is a continuation of the price decline which has been in effect for the last 60 days. *Coal Age* Index of spot bituminous coal prices receded to 352 on Oct. 23, a drop of 16 points from the preceding week; the average price corresponding to this index number is $4.26—the week before it was $4.45.

Car shortage is prevalent everywhere and poor transportation conditions make deliveries slow and uncertain, but circumstances indicate that there would be a heavy surplus of coal if the carriers were able to give better service. As it is, production is becoming more evenly balanced with current demand, and even the slight upturn in general industrial buying which has been brought about in the last ten days discloses the narrow margin between supply and demand.

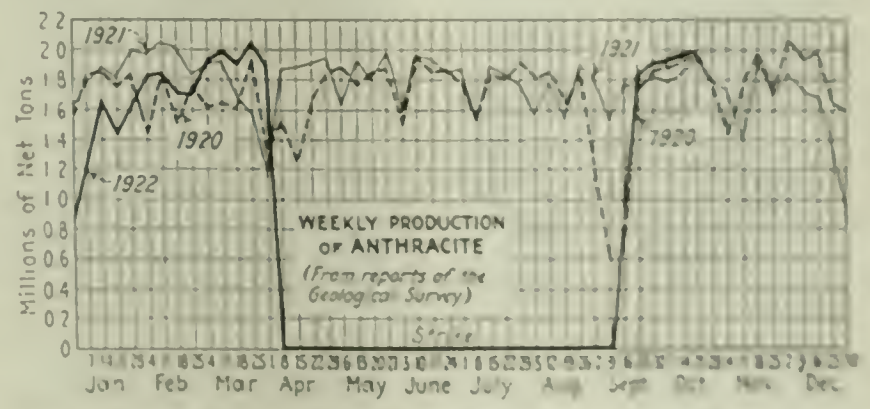
Even Railroads Have Delayed Stocking

The stocking program has not yet started. Even the railroads are not building up any appreciable reserves. The feeling seems to prevail that with the end of the Lake season and more seasonable domestic weather there will be plenty of tonnage then available to care for current needs and to build stocks. Day-to-day requirements constitute the main market activity and prices show a wide range. Some coal, caught on a poor market, sells off, while on the other hand a consumer in need of coal pays the higher quotation without a murmur. There is no complaint heard about the ruling prices, nor is the consumer evincing any apprehension about the state of the market when colder weather may be expected to interfere with the movement from the mines.

New England is deaf to the offerings being made to that market. Large consumers in that territory have sufficient coal on hand to await developments in November and December. The smaller buyer is taking some additional tonnage that he has been considering since last July, but the amount is not sufficient to check the declining current quotations, whether all rail or coastwise. British coal is still a factor along the Atlantic seaboard, but receipts are falling off daily.

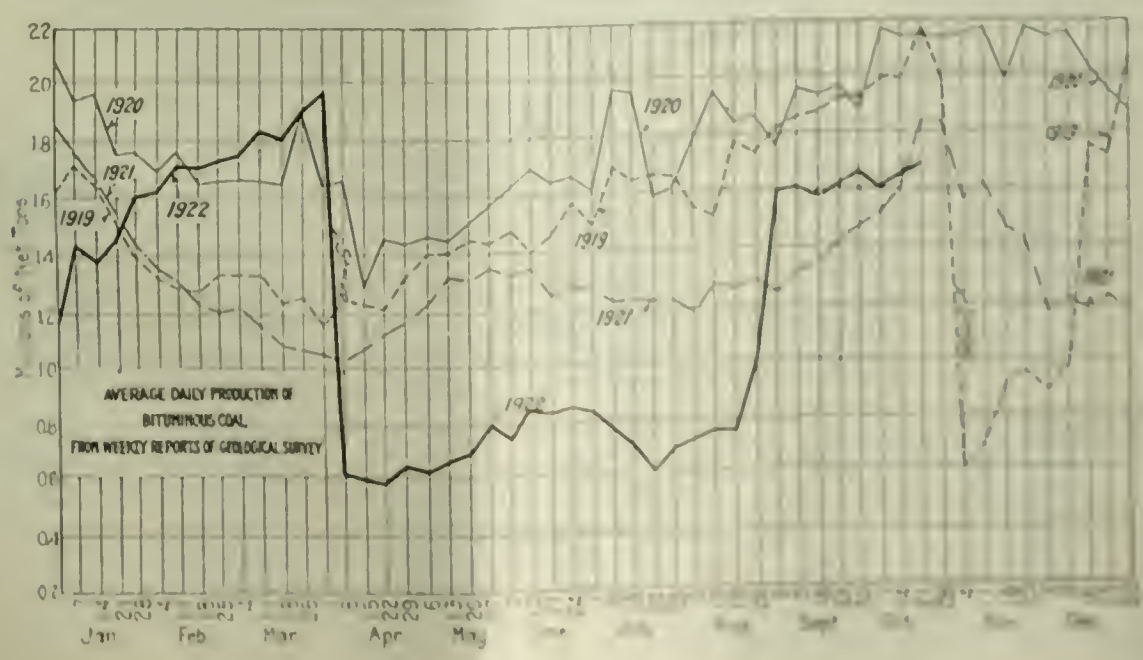
The Cincinnati gateway is feeling the competition of coals from outside territory and prices have softened all along the line. Eastern inland markets, however, feel the heavy drain on production made by the Lakes and railroads, and this section presents the firmest market of today. Chicago and Midwestern points are saturated with steam coals, produced in an effort to meet the onrush of domestic orders.

Anthracite domestic sizes are, of course, in heavy demand and the cold weather has brought urgent orders to the retailer. Movement still centers on the East, although Lake business is increasing. Western and



more distant points are receiving meager shipments, much of it at high independent figures.

Steam sizes are burdensome. Sales are slow and companies are running these coals to storage, while various railroad embargoes have been placed against their movement, as the congestion of these loads threatens to affect production of the much-needed family sizes.



Estimates of Production

(Net Tons)

BITUMINOUS

	1921	1922
Sept. 30 (a)	8,870,000	8,822,000
Oct. 7 (a)	9,134,000	9,254,000
Oct. 14 (a)	9,311,000	10,021,000
Daily average	1,615,000	1,670,000
Calendar year	414,285,000	296,774,000
Daily av. incl. Sun.	1,293,000	1,197,000

ANTHRACITE

Sept. 30 (b)	1,892,000	1,947,000
Oct. 7 (b)	1,964,000	1,933,000
Oct. 14 (a)	1,815,000	2,075,000
Calendar year	77,179,000	91,313,000

COKE

Oct. 7 (b)	85,000	121,000
Oct. 14 (a)	94,000	135,000
Calendar year	4,183,000	3,142,000

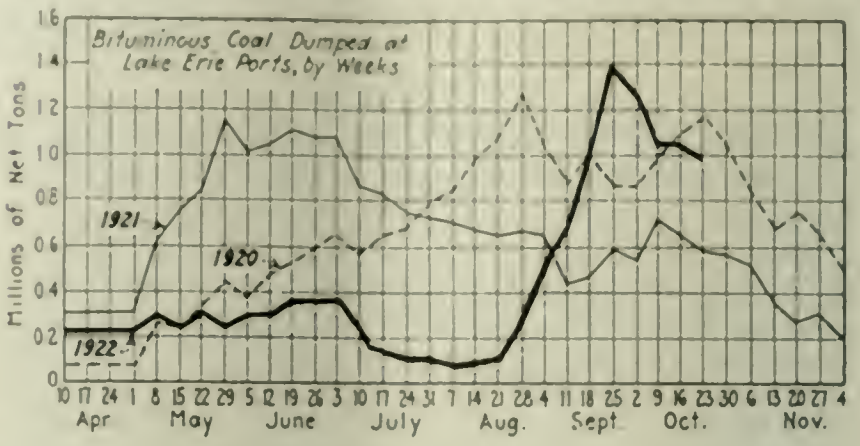
ILLINOIS

"Complete returns on coal production in the third week of October show an increase to about 10,200,000 tons of mine coal," says the Geological Survey. "The number of cars loaded on Monday, Oct. 16, as reported by the railroads was 41,284 cars, establishing a new record for this year. On Tuesday loadings declined to 41,200 cars, and on Wednesday to 33,806. These were, however, the highest loadings reported on any second and third working days of a week since the close of the strike. On Thursday there was a further decline to 28,784 cars."

Dumpings of Lake coal were 905,130 net tons during the week ended Oct. 23, as compared with 1,090,599 tons in the preceding week. This movement has been gradually declining since it reached the peak, during the third week in September. Total movement for the season to date stands at 13,451,130 tons; during the corresponding period of 1920 it was 20,870,397 tons.

The recent heavy receipts of soft-coal cargoes has reassured the Northwest, and while domestic business is strong the steam demand has fallen off. When navigation closes, the other sources of supply will be drawn on to help out the shortage on the docks. North Dakota lignite and Montana coals in increased production can keep the Dakotas going; southern Minnesota and southern Wisconsin can use Illinois coal, and northern parts of Minnesota and Wisconsin only need be dependent on dock supplies. The utilization of the Western coals may have a lasting competitive effect on the future dock trade.

New England all-rail receipts of soft coal were 3,636 cars during the second week of October, as compared with 3,272 cars in the preceding week. A low price of $3 was offered last week to railroads in this territory, but no takers are recorded. British cargoes and coastwise fuels leave little



Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Sept. 25 1922	Oct. 9 1922	Oct. 16 1922	Oct. 23 1922†
[illegible]	Columbus	$6 65	$6 75	$6 75	$6 75 @ $7 5
[illegible]	Columbus	6 00	5 75	6 00	6 00 @ 6 50
[illegible]	Columbus	5 75	5 60	5 50	5 75 @ 6 2
[illegible]	Chicago	6 50	6 25	6 00	5 75 @ 7 0
[illegible]	Chicago	5 85	5 60	5 60	5 50 @ 6 50
[illegible]	Cincinnati	6 50	6 50	6 60	1 50 @ 7 50
[illegible]	Cincinnati	5 75	5 95	5 95	5 90 @ 6 25
[illegible]	Cincinnati	5 50	5 80	5 80	5 60 @ 6 00
[illegible]	Boston	6 00	7 25	7 20	7 00 @ 7 25
[illegible]	Boston	4 50	4 25	4 25	3 50 @ 4 00
[illegible]	Boston	5 00	4 50	4 50	3 75 @ 4 75
[illegible]	Boston	4 75	4 50	4 30	3 90 @ 4 40
Pool 1 (Navy Standard)	New York	5 75	5 25	5 25	4 75 @ 5 25
Pool 1 (Navy Standard)	Baltimore	5 00	5 50	5 40	4 75 @ 5 25
9 (Super Low Vol.)	New York	5 00	4 65	4 65	4 00 @ 4 50
9 (Super Low Vol.)	Philadelphia	4 75	4 35	4 35	4 00 @ 4 75
9 (Super Low Vol.)	Baltimore	5 50	4 85	4 60	4 25 @ 4 50
10 (H Gr. Low Vol.)	New York	4 65	4 10	4 10	3 75 @ 4 00
10 (H Gr. Low Vol.)	Philadelphia	5 10	3 85	3 60	3 50 @ 3 75
10 (H Gr. Low Vol.)	Baltimore	4 85	4 25	4 35	3 90 @ 4 00
11 (Low Vol.)	New York	4 10	3 60	3 50	3 00 @ 3 50
11 (Low Vol.)	Philadelphia	4 60	3 35	3 25	3 00 @ 3 50
11 (Low Vol.)	Baltimore	4 35	4 05	4 10	3 50 @ 3 65
High-Volatile, Eastern					
[illegible]	New York	4 70	4 05	3 85	3 50 @ 3 75
[illegible]	Philadelphia	4 60	4 00	3 75	3 50 @ 4 00
[illegible]	Baltimore	4 75	4 05	4 05	3 50 @ 3 75
[illegible]	Pittsburgh		5 40	5 25	4 50 @ 5 40
Pittsburgh mine run, St.	Pittsburgh	4 10	3 60	3 60	3 00 @ 3 50
[illegible]	Pittsburgh		4 00	3 85	3 50 @ 3 75
[illegible]	Columbus	6 40	6 50	6 25	6 00 @ 6 50
Kanawha mine run	Columbus	5 75	4 60	4 50	4 25 @ 4 75
Kanawha screenings	Columbus	5 65	4 50	3 60	3 50 @ 4 00
W. Va. lump	Cincinnati	6 50	6 50	6 25	6 00 @ 6 25
W. Va. Gas mine run	Cincinnati			4 60	4 00 @ 4 75
W. Va. Steam mine run	Cincinnati			3 75	3 50 @ 3 50
W. Va. screenings	Cincinnati			4 00	3 75 @ 4 25
Hocking lump	Columbus	5 10	4 10	4 00	3 75 @ 4 25
Hocking mine run	Columbus	6 25	5 25	5 45	5 00 @ 5 50
Hocking screenings	Columbus	4 75	3 50	3 50	3 25 @ 3 75
Pocahontas lump	Cincinnati	4 25	3 50	3 25	3 00 @ 3 50
Pocahontas mine run	Cincinnati	4 00	4 85	3 81	3 81

	Market Quoted	Sept. 25 1922	Oct. 9 1922	Oct. 16 1922	Oct. 23 1922†
Pitts. No. 8 mine run	Cleveland	$4.60	$4.40	$3 56	$3.56
Pitts. No. 8 screenings	Cleveland	4 35	4 05	3.31	3.20@ 3 31
Midwest					
Franklin, Ill. lump	Chicago	5 40	5 40	5.35	5 25@ 5.50
Franklin, Ill. mine run	Chicago	4.75	4 50	4.50	4.25@ 4.75
Franklin, Ill. screenings	Chicago	4.10	3.25	3.25	3.00@ 3.50
Central, Ill. lump	Chicago	5.10	5.10	5.10	5.00 @ 5.25
Central, Ill. mine run	Chicago	4.55	3.60	3.60	3.25 @ 4 00
Central, Ill. screenings	Chicago	3.35	2 80	2 35	1 75@ 2 25
Ind. 4th Vein lump	Chicago	5 25	5.10	5.10	5 00@ 5 25
Ind. 4th Vein mine run	Chicago	3.85	4.60	4.60	4 25@ 4 50
Ind. 4th Vein screenings	Chicago	3 85	3.80	3.25	2 50@ 3 00
Ind. 5th Vein lump	Chicago	5.10	5.10	5 10	4 50@ 5 00
Ind. 5th Vein mine run	Chicago	4.65	4.35	3 75	3 50@ 4 00
Ind. 5th Vein screenings	Chicago	3.85	3 35	2 85	2 50@ 3 00
Standard lump	St. Louis	4.90	4 25	4 25	**3 75@ 5 00**
Standard mine run	St. Louis	3.90	3.35	3 35	2 50@ 3 00
Standard screenings	St. Louis	2.50	2.10	2 10	2 00@ 2 25
West Ky. lump	Louisville	4 90	5.25	5 05	4 75@ 5 25
West Ky. mine run	Louisville	4 25	3 60	3.00	2.25@ 2 65
West Ky. screenings	Louisville	4 00	3.25	2 85	2 00@ 2 25
West Ky. lump	Chicago	4 25	4 50	4 10	4 00@ 4.25
West Ky. mine run	Chicago	4 25	4.10	3 50	3 00@ 3 50
South and Southwest					
Big Seam lump	Birmingham	3.75	3 45	3 25	**3 45@ 4 45**
Big Seam mine run	Birmingham	2 80	2 60	2 75	2 50@ 2 75
Big Seam (washed)	Birmingham	3.45	3.10	3 25	2 50@ 3.00
S. E. Ky. lump	Chicago	6 00	6 25	6 25	5 00@ 6.00
S. E. Ky. mine run	Chicago	4.75	4 75	4 75	4 00@ 4.50
S. E. Ky. lump	Louisville	6.90	7.00	6.75	6.25@ 6.75
S. E. Ky. mine run	Louisville	5 65	4 75	4 35	3.25@ 4.60
S. E. Ky. screenings	Louisville	5.50	4 10	4 10	4.00@ 4.25
S. E. Ky. lump	Cincinnati	6.85	6 50	6 75	6.00@ 7.50
S. E. Ky. mine run	Cincinnati	5.35	4 75	4 10	3.25@ 4.50
S. E. Ky. screenings	Cincinnati	5 25	4 00	4 00	3 00@ 4.25
Kansas lump	Kansas City	6 25	5.50	5 75	5 50@ 6.00
Kansas mine run	Kansas City	5.00	4 25	4 25	3.50@ 4 00
Kansas screenings	Kansas City	2.60	2.60	2.50	2.50

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Latest Independent	Pre-Strike Company	Oct. 16, 1922 Independent	Oct. 16, 1922 Company	Oct. 23, 1922† Independent	Oct. 23, 1922† Company
[illegible]	New York	$2 34		$7.60@$7.75		$7.75@$8.15		$7.75@$8.15
[illegible]	Philadelphia	2 39	$7 00@$7 50	7 75@ 7.85		7.90@ 8.10		7.90@ 8.10
[illegible]	New York	2 34	7 60@ 7 75	7.60@ 7.75	$9 25@12 00	7.75@ 8.35	$9 25@11 00	7.75@ 8 35
[illegible]	Philadelphia	2 39	7 25@ 7 75	7 75	9 25@ 9.75	8.10@ 8.35	9 25@ 9 75	8.10@ 8.35
[illegible]	Chicago	5 67	7 50*	6 90@ 7 40*	10 00@12.00		10 00@12 00	7.75@ 9.25
[illegible]	New York	2 34	7 90@ 8 20	7 90@ 8.10	9 25@12.00	8.00@ 8.35	9 25@11 00	8.00@ 8.35
[illegible]	Philadelphia	2 39	7 85@ 8 10	8.05@ 8.25	9 25@ 9 75	8.15@ 8.35	9 25@ 9 75	8.15@ 8 35
[illegible]	Chicago	5 67	7 75*	7 20@ 7 60*	10 00@12 00		10 00@12 00	8.00@ 9.25
[illegible]	New York	2 34	7 90@ 8 20	7 90@ 8.10	9 25@12 00	8.00@ 8.35	9 25@11 00	8.00@ 8 35
[illegible]	Philadelphia	2 39	7 85@ 8 10	8.05@ 8.25	9 25@ 9.75	8.15@ 8.35	9 25@ 9 75	8.15@ 8.35
[illegible]	Chicago	5 67	7 75*	7 20@ 7 60*	10.00@12.00		10 00@12 00	8.00@ 9.25
[illegible]	New York	2 34				8 15		
[illegible]	New York	2 22	5 00@ 5 75	5.75@ 6.45	6 55@ 8 00	6.15@ 6.20	6 55@ 8 00	6.15@ 6.20
[illegible]	Philadelphia	2 14	5 50@ 6 00	6.15@ 6.25	7 00@ 7 25	6.15@ 6.20	7 00@ 7 25	6.15@ 6.20
[illegible]	Chicago	5 36	5 00*	5 60@ 6 10*	8 50@ 9 50		8 50@ 9 50	6.15@ 7.00
Individual No. 1	New York	2 22	2 75@ 3 50	3 50	3 00@ 4 00	4.00@ 4 25	3 00@ 4 00	4.00@ 4.25
Individual No. 1	Philadelphia	2 14	2 75@ 3 25	3 50	3 50@ 4 00	4 00	3 25@ 4 00	4.00
[illegible]	New York	2 22	2 00@ 2 50	2 50	2 00@ 3 00	2 75@ 3.00	1 85@ 2 50	2.75@ 3.00
[illegible]	Philadelphia	2 14	2 00@ 2 50	2.50	2 50@ 3 00	2.75@ 3.00	2 25@ 2 75	2.75@ 3 00
[illegible]	New York	2 22	1 50@ 1 85	1 50	1 00@ 2 00	2 00	1 00@ 1.75	2.00
[illegible]	Philadelphia	2 14	1 50@ 1 75	1.50	1 25@ 2 00	2 00	1 00@ 2 00	2 00
Buckwheat	New York	2 22		2.00@ 2 50		2.25		2.25

*Gross tons, f.o.b. vessel. †Advances over previous week shown in **heavy type**, declines in *italics*.

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 Inclusive	Sept. 5 to Oct. 7, 1922 Inclusive	Week Ended Oct. 7
U. S. Total	45.6	55 7	——	——
Alabama	63.5	64 6	86.3	86.2
Somerset County	55.5	74 9	36 1	35 3
Panhandle, W. Va.	55.3	51.3	61 2	52 6
Westmoreland	54.9	58 8	74.7	51 6
Virginia	54.8	59 9	56 9	62 4
Harlan	53.3	54 8	20 6	26 5
Hazard	51.7	58 4	13 6	13.1
Pocahontas	49.8	60 0	35 6	38.7
Tug River	48.1	63.7	32 5	24 6
Logan	47.6	61 1	24 5	21 9
Cumberland-Piedmont	46.6	50.6	31 4	28 9
Winding Gulf	45.7	64 3	30.7	29 2
Kenova-Thacker	38.2	54.3	41 2	30 8
N. E. Kentucky	32.9	47 7	25 7	26 1
New River	24.3	37.9	30 7	31 5
Oklahoma	63.9	59.6	60.9	61 5
Iowa	57.4	78.4	79 9	62 9
Ohio, Eastern	52.6	46.6	47 5	42 2
Missouri	50.7	66.8	65 5	68 0
Illinois	44.8	54 5	48 1	43.8
Kansas	42.0	54.9	64 0	54 5
Indiana	41.4	53.8	No Report	
Pittsburgh†	41.2	39.8	52.4	46 6
Central Pennsylvania	39.1	50.2	63.5	50 3
Fairmont	35.3	44.0	45 6	39 9
Western Kentucky	32.5	37 7	No Report	
Pittsburgh*	30.4	31.9	64 2	57.9
Kanawha	26.0	13.0	13.5	18 5
Ohio, southern	22.9	24.3	41.2	38 4

* Rail and river mines combined.
† Rail mines.

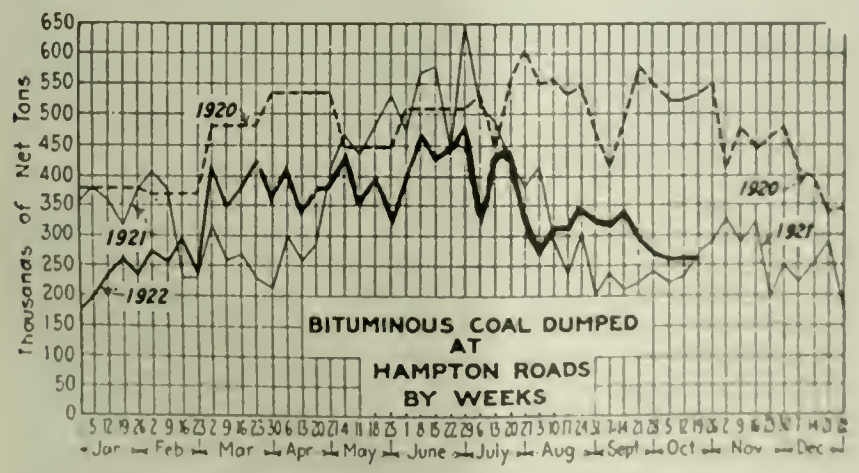
Car Loadings, Surplusages and Shortages

	Cars Loaded All Cars	Cars Loaded Coal Cars
Week ended Oct. 7, 1922	968,169	189,312
Previous week	988,381	189,349
Same week in 1921	899,681	182,595

	Surplus Cars All Cars	Surplus Cars Coal Cars	Car Shortage	
Oct. 8, 1922	5,500	3,024	141,252	40,499
Sept. 30, 1922	5,843	3,486	130,325	38,954
Same date a year ago	142,970	82,535		

room for all-rail coal in this apathetic market, and when the present high freight rate from the mines is considered it is realized that Hampton Roads is in excellent competitive position for what little business is offering.

Hampton Roads dumpings have held around 260,000 net tons for the last three weeks. During last week 260,358 tons were dumped as compared with 262,997 tons in the preceding week. Coastwise trade has dwindled of late but



coal on hand at the piers is not gaining, as car shortage and transportation troubles have affected receipts. The stage appears set for a considerable resumption of coastwise shipments, both on spot and contract, as soon as the congestion of boats is cleared up at New England ports.

ANTHRACITE

Production of anthracite has passed the 2,000,000-ton mark. The output during the week ended Oct. 14 was 2,075,000 net tons, and early reports for last week indicate that production in that period will again be in the neighborhood of 2,000,000 tons.

All-rail shipments to New England were 3,226 cars during the second week of October, as compared with 2,759 cars in the previous week. The East has fared the best since mining was resumed, and the domestic situation, while still troublesome, shows marked improvement. Western points are taking a little coal, much of it at high independent



Coal Age Index 352, Week of Oct. 23, 1922. Average spot price for same period, $4.26. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of slack prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

figures. Lake dumpings during the week ended Oct. 23 were 153,553 net tons.

COKE

Beehive coke production continues its slow but steady upward trend. The output for the week ended Oct. 14 was 183,000 net tons, as compared with 173,000 tons in the preceding week. The present rate is nearly double that of a year ago, when the business depression was acute.

Connellsville prices continue to break and only an occasional purchaser is coming into the market. Softening bituminous coal prices cause coke buyers to feel that they are due for lower quotations. Pig iron is so quiet that furnaces are conservative in making arrangements for reopening.

MONTHLY OUTPUT OF BYPRODUCT AND BEEHIVE COKE IN THE UNITED STATES (a)

(Net tons)

	Byproduct Coke	Beehive Coke	Total
1917 Monthly average	1,978,000	2,194,000	4,172,000
1918 Monthly average	2,144,000	2,442,000	4,586,000
1919 Monthly average	2,001,000	1,450,000	3,451,000
1920 Monthly average	2,183,000	1,749,000	3,932,000
1921 Monthly average	1,000,000	601,000	1,601,000
June, 1922	2,000,000	400,000	2,400,000
July, 1922	2,000,000	400,000	2,400,000
Aug., 1922	1,700,000	350,000	2,050,000
Sept., 1922	2,000,000	400,000	2,400,000

(a) Excludes beehive coke made at mines not connected with byproduct plants.

Foreign Market And Export News

Continental Buyers Appear As American Orders Abate

Setback to British Producers Only Temporary—Falling Prices a Magnet—Export Situation Improves—French Markets Stronger—Wages of German Miners Raised to Boost Production

British producers received only a temporary setback when the flood of American orders abated. The drop in prices which followed immediately attracted Continental buyers, and the export situation is steadily improving, with production being maintained and prices strengthening.

French markets also are stronger. Domestic sales lead the demand. The owners have averted a mine strike by temporarily withdrawing their recent demands for an adjustment of working time. Wage increases have been granted German workers in an endeavor to speed up production.

British Prices Rise as Export Demands Increase

Great Britain is finding an active market for the Admiralty coals and prices are firm. Lower grades are in oversupply, with weakened quotations. The output during the week ended Oct. 7 was 5,200,000 gross tons, according to a cable to Coal Age. This exceeds the previous high mark established for the week ended Sept. 2 when production reached 5,201,000 tons and is 33,000 tons above the preceding week.

Operators in the north of England are optimistic. October production was sold up early in the month and sellers are only entertaining inquiries for November at full market values, and in some cases at fair advances on the present ruling prices. The demand is still mainly from Germany, though Italy and France are well in the market. Durham especially is doing good business and there have been considerable sales of coking coal for monthly deliveries over next year at 20s. per ton f.o.b., quantities ranging from 15,000 to 30,000 tons. Much of these sales are for deliveries during January and March.

Now that the peak of the United States call has passed conditions in the Welch coal trade are more unsettled, though some brightening is evident during the past two weeks owing to a revival of the European demand, as a result of which the entire British coal trade has improved. The drop in prices following the filling of American contracts has had the effect of attracting Continental buyers, especially Germany, France and Italy.

The Scottish trade is marked by a general upward trend of prices, and round sorts have advanced by as much as 2s.@2s. 6d. per ton. The chief customer is Italy, though some cargoes are still being booked to the U. S. and Canada.

The miners have threatened to strike on Nov. 5 in Wales with the object of forcing the non-unionists into the ranks of the Miners' Federation. Extensive propaganda work is to be undertaken by the Miners' Federation with the object of bringing the non-unionists into line.

Business Slumps at Hampton Roads

Business continues to lag at Hampton Roads, with coastwise trade dwindling and bunker business scarcely holding its own, in the face of continued decline in prices. Export business is practically at a standstill.

While the supply of coal on hand is large, it is distributed through the trade in such small amounts that few dealers have any considerable cargoes on hand.

The general tone of the market is dull, and little prospect of immediate revival is in sight. Dealers are hopeful, however, of better business later in the fall when shipments by rail to the West begin to lessen.

World Production of Coal in First Half of 1922

In spite of the great strike in the United States the world's production of coal in the first half of 1922 was greater than in the corresponding period of 1921. The total output in the six months, January to June, 1922, according to reports collected by the United States Geological Survey, was approximately 568,600,000 metric tons.

Continued for twelve months, this rate of output would yield a total of 1,137,000,000 tons. Settlement of the strike in this country insures that world output in the second half of the year will be greater than the first, but even so, it seems unlikely that the total for 1922 will much exceed 1,180,000,000 tons. This is an increase over 1921, but a decrease of nearly 140,000,000 tons from 1920.

PRODUCTION OF COAL IN PRINCIPAL COUNTRIES OF THE WORLD, JANUARY-JUNE, 1922

Country	Metric Tons	Per Cent of Total
North America		
Canada: all coal	5,532,583	.97
United States: all coal	189,660,000	33 40
Other countries	(a)	(a)
South America	(a)	(a)
Europe:		
Austria, Coal	86,164	02
Lignite	1,587,756	28
Belgium	10,707,480	1 88
Czechoslovak Republic Coal	5,082,468	89
Lignite	9,854,397	1 73
France: Coal	15,180,615	2 67
Lignite	380,169	07
Germany: Coal	74,792,683	13.10
Lignite	65,953,605	11 60
Hungary	3,500,000	.62
Poland	6,187,561	1.09
United Kingdom	121,664,875	21 40
Other countries	(a)	(a)
Asia:		
Japan	12,000,000	2 11
Other countries	(a)	(a)
Africa:		
Rhodesia	218,624	.04
Union of South Africa	4,144,521	73
Other countries	(a)	(a)
Oceania	(a)	(a)
Total	568,600,000	100 00

a Estimate included in total. b Includes Saar and for months January-May the entire output of Upper Silesia. c Includes 1,775,000 metric tons (estimated) produced during June in Polish Upper Silesia.

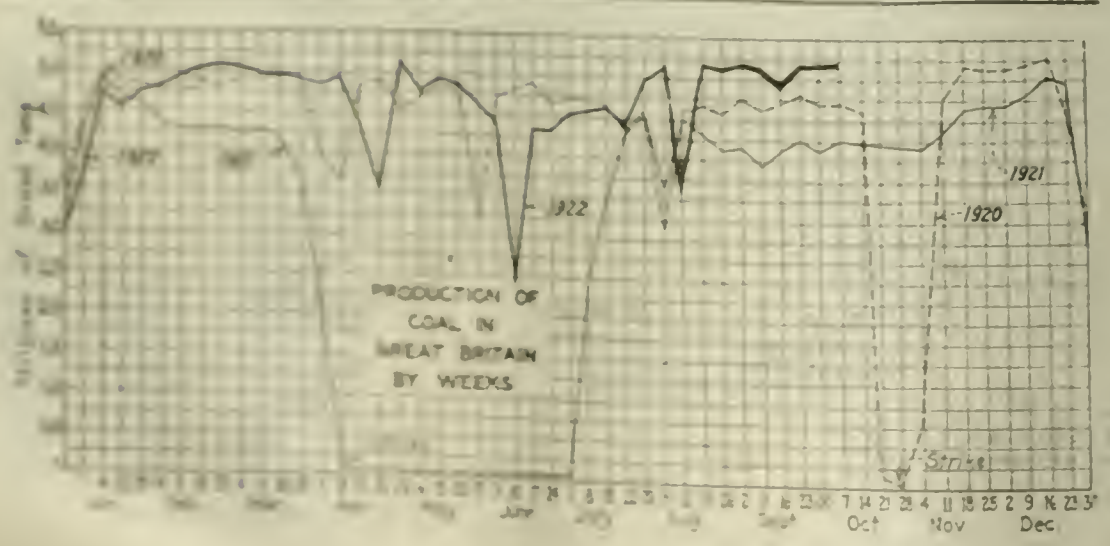
German Miners Get Wage Increase

The award conceding an increase of 150 m. per man per shift to the Ruhr miners for October has been made binding by the government, despite the owners' refusal to accept this award.

The Ministry has also decided that the wages of miners under the Rhenish Brown Coal Syndicate shall be increased to the same extent as those of the Ruhr miners, and that the increases for the other brown coal districts shall be in the following proportions of that amount: Duren district, 91 per cent; Mid-German Brown Coal Cyndicate, 92 per cent in the central district, and 90 per cent in the marginal districts; Bavaria, 94 per cent for the large pits and 90 per cent for the small concerns.

It is stated that to the end of September the Westphalian pits had not derived any advantage from the introduction of overtime at the beginning of that month, but only additional financial burdens, as only 52 per cent of the underground men have worked the additional hours. The average daily production is estimated to have increased by only 7,000 tons, or from 308,000 to 315,000 tons, whereas a daily advance of at least 30,000 tons was expected from the overtime system.

Production throughout Germany in August was 10,200,000 metric tons, as compared with 11,730,000 tons in the same month in 1921, which included 1,950,000 tons in East (now Polish) Upper Silesia. For the eight months ended with August the output amounted to 89,280,000 tons, as compared with



88,990,000 tons, including 13,890,000 tons in East Upper Silesia. Production of lignite in the eight months was 89,480,000 ton (80,550,000 tons in the corresponding period in 1921); coke 19,500,000 tons (18,490,000 tons); and lignite briquets, 19,510,000 tons (18,760,000 tons).

Production in the Ruhr region including the pits on the left bank of the Rhine, during the 26 working days of September is estimated at 8,200,000 tons as compared with 8,300,000 tons during the 27 working days of August and 7,900,000 during September, 1921.

Production of coal in the Ruhr region during the week ended Sept. 30 was 1,898,000 metric tons and in the week ended Oct. 7 it was 1,855,000 tons, according to a cable to *Coal Age*

Strike of French Miners Is Averted

There continues to be a very active demand in the Nord and Pas-de-Calais fields, both for industrial and domestic coals. The demand for the latter exceeds the supply. In the Loire field there is also a strong inquiry for house coals, but industrials are rather quiet. Lorraine and the Sarre are now in a favorable position.

The strike fears have been dispelled by a letter written on Oct. 7 by the owners of the Nord and Pas-de-Calais to the Minister of Public Works, in which the owners withdrew their previous decision to reduce the wages as from Oct. 15, if in the meantime they had not obtained sufficient relief on their cost prices. The owners state that they will continue to assume the sacrifices in favor of their men, hoping that Parliament will so amend the Act of June 24, 1919, on working time in mines, as to permit the French collieries to adequately meet the competition of foreign coals.

FRENCH CONSUMPTION STATISTICS

	August	1st 8 Mos of 1922
	—Metric Tons—	
Coal		
Production	2,665,137	20,750,635
Plus imports	1,766,670	14,733,120
	4,431,807	35,483,755
Less exports	172,263	1,138,501
Coal consumption	4,259,544	34,345,254
Coke		
Production	87,589	637,277
Plus imports	423,816	3,300,380
	511,405	3,937,657
Less exports	52,029	290,297
Coke consumption	459,376	3,647,360
Briquets		
Production	233,945	1,755,674
Plus imports	69,272	931,709
	303,217	2,687,383
Less exports	7,387	60,925
Briquet consumption	295,830	2,626,458

FRENCH COAL OUTPUT IN AUGUST

Nord and Pas-de-Calais	Devastated mines	679,395
	Non-devastated mines	614,626
Saint-Etienne		302,615
Lyons (Blanzy, etc.)		222,164
Clermont-Ferrand (minor fields of the Center of France)		105,269
Southern fields	Alais	153,952
	Toulouse	142,535
	Marseilles	58,204
Minor fields, West of France		10,596
Ronchamp mine (Nancy)		8,087
Lorraine		367,694
Total		2,665,137

FRENCH RECEIPTS OF REPARATION COAL

	July	August
Coal	363,673	255,850
Coke	403,256	344,360
Lignite (briquets)	21,983	40,861
Total	788,712	641,071

The decrease in coke shipments, which caused so much inconvenience to French blast furnaces was due to the unjustified reduction of Ruhr coke deliveries between Aug. 19 and 29. According to French Customs' returns, France received from Great Britain in August 854,089 tons of coal, as against 915,824 tons in July and an average monthly quantity of 983,181 tons during the first seven months of 1922.

FRENCH IMPORTS IN METRIC TONS

	August	1st 8 Mos., 1922
Coal from:		
Sarre	301,479	2,292,795
Great Britain	854,089	7,736,353
Belgium	170,817	1,598,635
U. S.		23,255
Germany	411,562	2,624,140
Netherlands	28,717	454,244
Other countries	6	3,698
Total	1,766,670	14,733,120
Coke from:		
Great Britain	1,149	38,345
Belgium	27,404	332,898
Germany	370,516	2,797,797
Other countries	24,747	131,340
Total	423,816	3,300,380
Briquets from:		
Great Britain	13,836	103,235
Belgium	37,155	528,990
Germany	17,649	296,456
Other countries	632	3,028
Total	69,272	931,709

FRENCH EXPORTS IN METRIC TONS

Coal	172,263	1,138,501
Coke	52,029	290,297
Briquets	7,387	60,925

Coal Paragraphs from Foreign Lands

ITALY—The price of Cardiff steam first is quoted at 39s. 6d., according to a cable to *Coal Age*.

BELGIUM—On the coal market orders for all domestic description are numerous. Industrial sorts are also in demand and it is said that the orders received cover several months.

Production during August was 1,694,940 tons, against 1,669,290 tons in July. Stocks on Aug. 31 stood at 1,041,880 tons, as compared with 1,244,700 tons at the beginning of the month. During August, 245,040 tons of coke were produced against 227,590 tons in July, while production of briquets amounted to 216,610 tons, compared with 208,240 tons in July.

AUSTRALIA — Widespread cessation of work in the New South Wales collieries has already commenced, but the shipping community remains unperturbed. It is pointed out that there are hundreds of thousands of tons of small coal at the pit mouth, some of which has been accumulating for years

INDIA — The Bombay bunker coal market is dull. The fuel oil market shows no change.

British Owners Bear Heavy Losses

The manner in which the Wage Agreement in the coal industry operates to the advantage of the men is seen in the certificate of the joint accountants setting forth the financial results of the South Wales collieries for last July, upon which wage rates for September were determined.

It is shown that the costs of production, i. e., the miners' minimum wage, stores and timber, and other costs, swallow not merely the whole of the sum allocated to the owners as their standard profits, but an additional amount of nearly £47,000.

The result of the ascertainment for July showed an available surplus in the case of South Wales of £6,566, which, under Clause 4 of the Terms of Agreement, has to be applied to the reduction of the deficiency of £56,840, representing the cumulative deficiency of previous months. Thus, there is left a deficit of £49,914, to be carried forward as a first charge on any surplus which may accrue in subsequent periods. What the South Wales owners have actually gained is this slight reduction in the sums recoverable by them. The payment of the minimum wage provided for in Clause 8 of the Agreement has, however, mulcted them in a heavy out-of-pocket loss. The proceeds in July are such that the owners have had to forego the whole of their standard profits and pay an additional £46,989.

The total sum sacrificed by the owners since last November in South Wales now amounts to not less than £2,334,000, the whole of which has to be borne permanently by them, since under the Terms of the Agreement it is not recoverable.

Hampton Roads Per Situation

	Week Ended Oct. 12	Week Ended Oct. 19
N. & W. Piers, Lamberts Point		
Cars on hand	1,46[illegible]	1,5[illegible]
Tons on hand	38,631	3[illegible]
Tons dumped	91,821	104,[illegible]
Tonnage waiting	12,65[illegible]	3,65[illegible]
Virginian Ry. Piers, Sewalls Point		
Cars on hand	954	1,[illegible]
Tons on hand	57,45[illegible]	68,4[illegible]
Tons dumped	101,786	73,7[illegible]
Tonnage waiting	9,5[illegible]	13,8[illegible]
C. & O. Piers, Newport News		
Cars on hand	772	8[illegible]
Tons on hand	38,6[illegible]	38,8[illegible]
Tons dumped	41,242	32,7[illegible]
Tonnage waiting	1,6[illegible]	4,[illegible]

Pier and Bunker Prices, Gross Tons

PIERS

	Oct. 14	Oct. 21
Pool 9, New York	$8 [illegible] $8 15	$8 00 $8 25
Pool 10, New York	7 [illegible] 7 75	7 [illegible]
Pool 11, New York	7 [illegible] 7 25	7 [illegible] 7 [illegible]
Pool 10, Philadelphia	7 [illegible] 7 75	7 [illegible] 7 [illegible]
Pool 11, Philadelphia	7 [illegible] 7 50	7 [illegible] 7 [illegible]
Pool 1, Hamp. Roads	7 [illegible] 7 40	7 [illegible]
Pools 5-6-7 Hamp. Rds.	7 [illegible] 7 40	7 [illegible]
Pool 2, Hamp. Rds.	7 [illegible] 7 40	7 [illegible]

BUNKERS

Pool 9, New York	$8 [illegible] $8 50	$8 35 $8 60
Pool 10, New York	7 [illegible] 8 10	7 [illegible]
Pool 11, New York	7 [illegible] 7 35	7 [illegible] 7 55
Pool 10, Philadelphia	7 [illegible] 8 25	7 [illegible] 8 [illegible]
Pool 11, Philadelphia	7 [illegible] 8 00	7 [illegible] 8 [illegible]
Pool 1, Hamp. Rds.	7 [illegible] 7 50	7 [illegible]
Pool 2, Hamp. Rds.	7 [illegible] 7 50	7 [illegible]
Welsh, Gibraltar	40s [illegible]	40s [illegible]
Welsh, Rio de Janeiro	37s 6d [illegible]	37s 6d [illegible]
Welsh, Lisbon	35s [illegible]	35s [illegible]
Welsh, La Plata	35s [illegible]	35s [illegible]
Welsh, Genoa	42s [illegible]	42s [illegible]
Welsh, Algiers	40s 6d [illegible]	40s 6d [illegible]
Welsh, Pernambuco	45s [illegible]	45s [illegible]
Welsh, Bahia	45s [illegible]	45s [illegible]
Welsh, Madeira	40s 6d [illegible]	40s 6d [illegible]
Welsh, Teneriffe	40s 6d [illegible]	40s 6d [illegible]
Welsh, Malta	42s 6d [illegible]	42s 6d [illegible]
Welsh, Las Palmas	40s 6d [illegible]	40s 6d [illegible]
Welsh, Naples	42s [illegible]	42s [illegible]
Welsh, Rosario	37s 6d [illegible]	37s 6d [illegible]
Welsh, Singapore	52s 6d [illegible]	52s 6d [illegible]
Welsh, Constantinople	50s [illegible]	50s [illegible]
Welsh, St. Michaels	50s [illegible]	50s [illegible]
Welsh, Alexandria	40s [illegible]	40s [illegible]
Welsh, Port Said	50s 6d [illegible]	50s 6d [illegible]
Welsh, Oran	40s [illegible]	40s [illegible]
Welsh, Fayal	50s [illegible]	50s [illegible]
Welsh, Dakar	40s 6d [illegible]	40s 6d [illegible]
Welsh, St. Vincent	40s [illegible]	40s [illegible]
Welsh, Montevideo	50s [illegible]	50s [illegible]

Current Quotations British Coal f.o.b Port, Gross Tons

Foreign Quotations by Cable to Coal Age

	Oct. 14	Oct. 21
Cardiff		
Admiralty, large	37s 6d [illegible] 38s	38s 6d [illegible]
Steam, small	35s 6d [illegible] 36s 6d	36s 6d [illegible]
Newcastle		
Best steams	35s 6d [illegible] 36s	37s
Best gas	35s 6d [illegible] 36s	36s 6d [illegible]
Best bunkers	35s 6d [illegible] 36s 6d	37s 6d

† Advance [illegible] Lower [illegible]

North Atlantic

Large Consumers Active; Others Buy Hand to Mouth

Despite Low Stocks and Car Scarcity, Bargain-Hunting Tactics Are Common—All but Best Coals Sell Off Under Pressure—British and Southern Fuels in Less Demand.

Buying activity is still confined to the railroads and large consumers. Others are still on a hand-to-mouth policy and many have no stocks worth mentioning. Cars are short, but these consumers refuse to worry about the situation and are employing bargain-hunting tactics to procure their current needs. Only the best coals are readily salable—the others are selling off under the pressure.

Late receipts of British coals are still offered at low figures, but with heavier home production these sellers are having a hard time to dispose of their free cargoes. Southern coals also are less in demand. Rail deliveries are slow but enough coal is moving to more than fill all current demands.

BALTIMORE

While the car supply is at present running as low as 15 and 20 per cent., and winter approaches rapidly, the coal trade here is faced by the rather unusual condition of decreasing demand. In normal times a condition of car supply such as has existed for the past two or three weeks would have jumped the price. Instead, there has been a decline of $1@$1.50.

The root of the trouble probably lies in the fact that, while these prices were nowhere near as high as they have been on several occasions since the war, they were still high enough to make some purchasers hesitate in stocking against fall and winter needs. Then came a slide in prices and instead of the lower quotations bringing an increased buying call, the buyers seemed to hold off for still lower quotations, and the very favorable prices of this time have apparently failed to satisfy them.

The light movement on the railroads is shown by the fact that fuel loaded on private cars and placed on sidings for shipment to Baltimore has in some cases been held up for three or four days because the railroads did not have sufficient coal cars loaded to make up a full train for movement to a particular terminal.

PHILADELPHIA

The claim is being freely made that the car supply in the soft coal region is at the lowest ebb it has reached since mining was resumed a little over a month ago. At this time there is an influx of assigned car orders for the loading of railroad fuel. It is believed the railroad companies have urged the issuance of these orders, as they realize better than any one else the conditions which are confronting the trade. There is no question that the roads realize that the purchase of fuel at the ruling prices is really a good buy, and they are now sharing in the production with the utility plants and other large consumers.

Prices are still easy, with just the slightest tendency toward a firmer condition. One house which has endeavored to make a survey of the field has reached the conclusion there is at this time not more than a five weeks' supply of coal on the ground in this district. This is including the stocks of the big consumers and striking an average for all. They claim to have learned of more than an occasional instance of smaller users having less than two weeks' supply on hand, and a few actually waiting for a car en route.

As yet there is no diminution in that class of consumer who prefers to wait for lower prices before trying to accumulate a surplus. It may be useless for such concerns to even try to get stock ahead quickly, as they would only succeed in running up the market.

CENTRAL PENNSYLVANIA

Prices are lower now than they have been for a long time. With the exception of the higher grades, they are below the fair prices fixed by the state fuel commission following the termination of the strike. Pools 11 and 18 are selling $3.25@$3.50. Pool 10, $3.50@$4; Pool 9, $4@$4.50, and Pools 1 and 71, $4.50@$5.

Production reached the high-water mark in the week ended Oct. 15, when loadings were 19,900 cars. The operator's associations in the district have asked the I. C. C. to place a service agent in the field to investigate the placing of cars by the Pennsylvania. It is claimed that certain sections have not received their share and the operators are insisting that the matter be straightened out at once.

NEW YORK

Lower temperatures did not result in any improvement here. Buyers held off and no reasonable offer could induce them to increase supplies. Quotations as a result of the easiness of coal, indicated a downward tendency.

In this harbor on Oct. 20 there were 1,619 cars, which was a slight decrease from the number on hand earlier in the week. In addition there was considerable British coal which was being freely offered at around $7, although it was reported that some had been offered at lower figures.

Exporters of foreign fuel who brought cargoes here without orders for it are finding it difficult to dispose of their holdings. During the week ended Oct. 20 there were reported as arriving in New York harbor six vessels carrying 37,757 tons of coal and one vessel carrying 3,305 tons of coke.

Just now consumers are getting all the coal they need and are not carrying as large stocks as usual. They evidently feel they will have no trouble in getting whatever coal they will need readily and are not worrying about the future.

Southern coal receipts here are smaller. Quotations run about $7 f.o.b. Hampton Roads or $8 this harbor.

B. R. & P. mine run coals are quoted $3.25@$3.50, and slack around $3.50. Other quotations include low sulphur gas coals, $5@$5.50; and high-volatile slack, $3@$3.50.

UPPER POTOMAC

From a labor standpoint, conditions are now almost normal in the Upper Potomac and are gradually improving in the Georges Creek field. During the third week of October, the demand was on a somewhat larger scale than had been the case during the preceding week and that had the effect of hardening prices somewhat.

FAIRMONT

Signs were not lacking at the outset of the third week of October to indicate that the demand was a little stronger, with railroads seeking larger tonnages. The mines in the northern part of the state as a whole, are still seriously handicapped by a car shortage. Western coal was still being moved by way of Charleston.

South

BIRMINGHAM

There has been no change in general trade conditions. Demand for steam coal is only moderately good, such activity as exists being due to some extent to the restricted supply. Although production is being maintained around 345,000 tons per week, shippers are so far behind on contract deliveries, due to the long existing car shortage, that the supply available for spot requirements is not large. The call for domestic is urgent and cannot be supplied under present operating and transportation conditions.

Quotations have shown no material change, minimum prices ranging 25c.@50c. under the maximum schedule on steam grades, with lump bringing the peak figure allowed. For some weeks past domestic grades of the better quality sold to interstate trade have been bringing from $5 to as high as $7. However, Alabama operators have agreed with the federal fuel distributor that they will hereafter adhere to the state schedule of prices for all shipments, which range $3.45@$6.

Car supply for the past week has been about 50 per cent. Slight improvement is expected account of repaired equipment which is gradually being restored to service, but the situation will not be relieved to any great extent without the addition of new cars and a return of the equipment now in use on foreign lines.

VIRGINIA

The field has been unable to maintain its production, largely because of losses sustained on the N. & W. and the N. & N. On other roads mines have increased their output somewhat. There is a little stronger demand in Eastern markets.

Anthracite

Congestion of Steam Loads Now a Disturbing Factor

Production of Larger Sizes Threatened —Brisker Domestic Demand with Colder Weather, Retailers Hard Put to Maintain Yard Stocks—Independents Forced to Distant Markets to Secure High Prices.

Inability to dispose of steam sizes is a disturbing factor which threatens to affect the production of the larger coals. Some companies are running these to storage and various railroad embargoes have been placed against their movement.

The colder weather has brought about a more urgent demand for domestic coal and retailers are barely able to maintain their yard stocks. Independent coals must seek Western and other more distant markets to obtain figures much above the so-called maximum price, as the East will not absorb much tonnage at exorbitant figures.

NEW YORK

The question of how to keep down the accumulation of steam sizes continues to hold the attention of the trade. The terminals are filled and there is estimated to be nearly 100 loaded boats lying in the harbor. Some of the companies are dumping the small coals at the regular storage yards. Embargoes have also been placed on shipments to some of the local piers.

Retail dealers have been getting sufficient tonnage to keep them busy and nearly all consumers have had at least part of their supply delivered. So far as New York goes, it is believed that there will be no extreme shortage and that everybody will be able to get coal.

Independents are not finding it so easy to unload their product on local retail dealers as they did a few weeks back. Along the line and in the West the problem may not be so difficult.

Pea coal is easier and some dealers who have been willing to take fair-sized tonnages in order to get the larger coals have accumulated quite a supply. Stocks of buckwheat are not as large as rice and barley. There were some offerings of washery steam sizes here during the week on a mine basis of $2.25 for buckwheat, $1.90 for rice and 90c. for barley.

PHILADELPHIA

The pinch of fuel shortage is being much felt at this time, following the arrival of actual fall weather. The yards have less coal than at any time since the first shipments came in after the strike. Some of the larger shippers are no doubt spreading their production around, with territory at a distance now getting their turn. If coal had been kept moving here at the same rate it started there would have been sufficient at least to meet present weather conditions.

Mine prices seem now to be fairly well fixed, the companies continuing at their former figures, and with most of the large independents at $9.25. There are, however, reports that quotations on family sizes up to $12 are yet being made, but the general attitude of the retailer is to go without coal rather than pay extreme prices.

There is also some annoyance in the car supply, and while it is not believed that any time has been lost the number of box cars delivered for loading is growing.

Steam sizes have not improved, but it is hoped with better weather conditions that the surplus will soon be absorbed. There is still buckwheat offering at $3.50, but the bulk of the excess tonnage is now selling nearer to $3.75. Barley continues troublesome. Should the shortage of family sizes continue much longer it is quite likely that a fair quantity of buckwheat will be taken in by the retailers, who up to this time have looked with anything but favor on this size.

BALTIMORE

Appeals for consumers to take bituminous as a substitute are falling on deaf ears for the main part. Some of the imported English coal has gone into cellars of homes, but there seems to be a general refusal to take much of the American product. The Maryland Fuel Distribution Committee is pointing out to householders that they should use soft coal when they cannot get anthracite.

The hard coal dealers are up to their necks in work. While some coal is being received it is nothing like enough for urgent demands. Receipts are quickly absorbed and still dealers are harried on every side by insistent customers.

BOSTON

Low temperatures have caused increasing anxiety over the supply of prepared sizes. In view of the relatively short time since mining was resumed the shippers as a whole have done amazingly well. Conditions have been favorable, both water and rail, for heavy movement and thus far New England has fared well.

Dealers are confining themselves to small deliveries in the effort to make their slender stocks go as far as possible. In most cities prices have not been advanced over spring figures.

BUFFALO

All distributors and retailers are complaining of no coal and the weather is all that seems to be in the interest of the consumer. The fixing of a price for independent anthracite seems to have antagonized that interest entirely. All shippers claim to be living up to the price, but there is report of more or less claiming to be out of coal when orders are given. Then the shipper will say he can get coal for three or four dollars more.

The movement by water has increased considerably, but is not up to normal yet. Shipments last week were 117,600 net tons, of which 53,300 tons cleared for Duluth and Superior, 40,800 tons for Chicago and 23,700 tons for Milwaukee. Freight rates remain at 40c. to Duluth, 50c. to Milwaukee and 50 @55c. to Chicago.

ANTHRACITE FIELDS

Things are still peaceful in the anthracite region. Production seems to be on the increase. There is, however, much difficulty in marketing the steam sizes and some of the companies are storing these grades.

The car shortage is not affecting the region as much as it has been in the past and it seems as if this difficulty will soon be done away with.

West

KANSAS CITY

It is difficult to understand the coal situation. Demand is strong for all grades and there is recession in prices for some domestic nut coal. The price for nut has held firm at $6 until recently when it was reduced to $5.50 and mine run from $5 to $3.50@$4. This occurred right at the beginning of winter demand. Deliveries are slow on account of transportation and some of the retail yards are bare of any kind of coal with tonnage in transit that has been out of the mines for over 30 days.

A great many steam plants that put in oil burning equipment are changing back to coal and a great many residences who have burned nothing but coal heretofore are changing over to oil burning because prices for domestic grades are high and the steam grades are low.

Prices are as follows: Kansas lump, $6; Kansas nut, $5.50; Kansas mine run, $3.50@$4; Kansas slack, $2.50

DENVER

A price war in Weld County between two small coal companies has reduced lignite coal in northern Colorado 90c @$1.50 per ton. Some operators declare that coal is selling at $2.25@$3.

Mild weather has broken the cold spell which struck Denver and the state for three or four days. The car shortage is still a serious problem, even though the city and surrounding communities have not been suffering on account of a lack of coal, being on the main lines of transportation and using system cars which are never routed out of the state.

SALT LAKE CITY

The coal business is quiet. Operators have nearly caught up on their orders and will soon be looking for business unless the weather turns cold. The Grand Jury, called to investigate coal prices, is still in session and there is no indication yet as to whether they will bring in any indictments. No one in the business thinks they will. The public is indifferent.

The steel companies are getting ready for business and many believe Utah is in for a big industrial era. Crops have been good this year with fair prices and transportation facilities, on the whole

Chicago and Midwest

Steam Market Continues To Soften Perceptibly

Domestic Demand Swells Day by Day and Car Supply Is No Better So Screenings Remain a Drug—Railroads at St. Louis Confuse Service

Desperate efforts to inject some semblance of life into the steam coal trade are futile. With the slight stiffening of an already firm domestic market, the buyers of steam sizes were more obdurate than ever last week in their belief that screenings must drop lower before anybody will buy them cheerfully—so they obliged in some quarters and dropped. Carterville screenings in the St. Louis market got down to $2.50 and Standard to as low as $1.25. In Chicago a $3-bottom under southern Illinois screenings was decidedly shaky while Standard slid under $2 and central Illinois approached that figure. There remains as strong a feeling that domestic prices are due for a fall in spite of all the coal man's logic that restricted allotments worry nobody. Small deals suit everybody.

Railroad service is not noticeably better. In Indiana and southern Illinois two days' working time a week continues the order of the day with certain localities sometimes attaining the dizzy height of half-time. Thus operating costs per ton are kept high. Rail service for loads is fairly good in most parts of this region—even up into the Northwest which is getting a fair volume of Illinois and Indiana coal—but at St. Louis there is something verging upon a breakdown by the Missouri Pacific and Frisco lines in their terminal handling of coal equipment.

CHICAGO

Snappy weather made the domestic business a little more earnest early in the week and even awakened some other trade sufficiently to bring in a better inquiry for steam but the succeeding warmth took all the crispness out of the whole situation. Retailers are taking all the large sizes they can readily get and are placing their supplies in small lots—which is enough to satisfy everybody since there is still a general belief that coal will be down by the first of the year—and steam buyers look on indifferently, placing no more of the screenings than are offered, but doing it with such nonchalance that the market level from several fields continues to soften.

Standard district coal, always at the bottom, is selling down to $1.75 or even a little lower on occasion, central Illinois stands around $2 and the prime coal of the southern counties has a hard time maintaining its $3 minimum. Some of it gets into distress almost every day and is unloaded at a shade under that in small lots. Naturally lump holds up well but there is no rushing up of the price.

Car supply is little if any better so it is argued that a spell of real cold is going to take so much coal for heating plants that big steam users will have to bid up to get any screenings at all. The buyers, however, calmly await such a period, holding that heavier shipments of domestic will force production of more screenings at a price certainly no higher.

Practically no smokeless is reaching this market now. A thin stream of anthracite is coming in, but no vast stores of such coals are expected. The hard coal retail price is mounting.

WESTERN KENTUCKY

Prices are lower on steam coals, due to slow buying and lack of stocking orders from industries, along with the fact that national production is increasing, and competition for business is beginning to be felt. Freight rates prevent movement at the present time to districts which were large buyers during the period of shortage. Mine run has worked off steadily until it is now quoted $2.25@$2.65, and some for less. Nut and slack is $2@$2.25, and lump, $4.75@$5.25, but with any large demand it would probably advance.

Better river stages are permitting larger movement of coal by water to the lower river markets. Most of the business of the western Kentucky field is now south of the Ohio River, moving to Louisville, Nashville, Memphis and the rural districts. Car supply continues short and is the principal factor in maintaining prices.

SOUTHERN ILLINOIS

As the demand for lump and egg increases there seems to be a falling off in the movement of steam sizes. This has become so pronounced that several mines in the Carterville field have had trouble moving steam coal and have cut the price from $5.50 to $4.25 to steam plants in isolated cases, while screenings are down to $2.50 in some instances. Working time averages two days a week, with some mines getting a trifle better.

Somewhat similar conditions prevail in the Duquoin field, except that egg is a little more plentiful. In the Mt. Olive territory the mines are getting about three days a week, but most of the equipment furnished is the hopper-bottom variety that many retailers cannot unload and this has forced the steam market, especially from egg size down, so that at all mines there is a surplus. This has caused some idleness because the railroads will not furnish empties while there are no-bills on track.

In the Standard district from egg size down there is a surplus, and a scarcity of lump. Mines in this district get from two to three days a week, but are handicapped on account of hopper bottom equipment.

Railroad tonnages from all three fields have been fairly good, but the railroads are not storing any reserve coal. Many mines in this territory have been forced into suspension on account of no-bill screenings and the condition of the steam market is still poor.

LOUISVILLE

Eastern Kentucky, with a car supply steadily at below 20 per cent, is not having much trouble in disposing of production, with the result that prices are fairly firm. The Lake movement along with demand for gas coal, and movement to utility and byproduct plants, is accounting for the bulk of production. Screenings are maintaining values at around mine run prices, due to comparatively small production on account of general lack of lump orders.

It is admitted that with the Lake season nearing a close it will not be long before a larger tonnage will have to be disposed of through other channels, which will have a tendency to break down prices, and force operators to make more lump coal and offer it at lower prices.

Prices are somewhat weaker than they were, especially in western Kentucky. That section is quoting lump, $4.75@$5.25, nut, $4.25@$4.50, screenings, $2@$2.25 and mine run, $2.25@$2.65. Eastern Kentucky is quoting prepared at $6.25@$6.75, mine run, gas, $4@$4.50, non-gas, $3.50@$4.25 and screenings, $4@$4.25.

ST. LOUIS

A little seasonable weather has caused a fairly good domestic demand, principally for Mt. Olive. Very little Carterville is coming in, but Standard movement is better on account of the scarcity of Mt. Olive and Springfield district contributes some. Very little anthracite, no smokeless and no Arkansas has been received and there is a minimum tonnage of coke available. Domestic orders are for small quantities, indicating a continuous call for coal throughout the winter season. Domestic country shows some improvement, but it is scattered and is not in the volume that was anticipated some time ago. Country newspapers are expecting a decrease in the price of coal, which is delaying buying generally.

Locally steam is not good. Steam users are not storing much and the market has practically gone to pieces. Country steam is in somewhat the same condition. Steam buyers figure that with colder weather and an increased production of domestic sizes that steam must necessarily come down to rock bottom and they are waiting until that time. Railroads are reported as having only a day-to-day tonnage available.

The Terminal conditions are unusually bad. At one time in the past week the Frisco had 750 cars it could not receive from connecting lines. The I.C.C. ordered more than half of the Missouri Pacific local switch engines to the repair shops and that road had to borrow motive power from the Terminal. The Frisco is now in the same position and in a general way the local roads are in bad shape. Doubtful embargoes are in effect even on coal.

Eastern Inland

Industrial Demand Gaining; Output Matching Demand

Market Still Weak—Prices Steady Save on Domestic, Which Feels Cold Weather Stimulus—Fixing of Retailer's Margin in Ohio Complicates Situation.

Industrial demand is increasing slightly. The market is still weak, but production is becoming more evenly balanced with current demands. Prices are not quotably higher except on domestic sizes, which are feeling the effects of cold-weather demand.

Price fixing by Ohio on coal mined in that state is causing considerable tonnage to be shipped to outside markets. The retail situation also is confused by the state ruling which regulates the dealer's margin.

Lakes and railroads are taking much of the current production and little free coal is available. This is gradually strengthening the market as the shortage is apparent with the slightest upturn in demand.

PITTSBURGH

There is no material change in the rate of production. Supplies appear sufficient to meet regular requirements of the line trade together with the Lake trade. Car shortages are practically universal, circumstances as a whole indicating that there would be a surplus of coal if the railroads were able to supply all the cars ordered.

Consumers are showing no disposition to stock coal and evidently expect lower prices. The great bulk of current requirements are being met by a regular movement between mines and regular customers, subject in many cases to weekly or monthly price adjustment according to the state of the market, rather than by outright sales and purchases. This condition leaves little demand for the open market.

The market is not closely quotable, on account of there being quite a price range, according to quality. Ordinary steam coal is generally at $3@$3.25, with occasional transactions at $3.50. A fair grade of byproduct can be picked up usually at $3.50, while good gas runs up to $4 for mine run, with 50c. extra for screened. Domestic 1¼-in. lump is $4.75@$5.25, according to grade.

CLEVELAND

The market has begun to stiffen. Prices are higher than 10 days ago. Cooler weather and increasing car congestion have combined to bring about a firmer market. Some of the large coal carriers, which were furnishing a supply ranging from 70 to 100 per cent have dropped to a level of 35 to 50 per cent in the last few days. In view of these things a fuel shortage seems almost inevitable in this district. This is the view of Frank H. Baer, traffic commissioner of the Cleveland Chamber of Commerce, who is serving in the state fuel administrator's office.

In addition to firmer prices, evidence of the turn in the market is found in the fact that many large dealers and operators report they have more orders on their books than they can deliver in three weeks. Because of the low price of $3.56 a ton, fixed by the state fuel commission, for No. 8 mine run, much of this fuel is moving out of the state.

There has been a distinct quickening in household demand. The colder weather has caused this. Pocahontas is still scarce and hard coal is coming into the city in driblets. Under the new state regulations retail coal prices will fluctuate daily. In the past dealers have averaged their costs so they could quote prices for future delivery. They must now base their prices upon the cost at the mine on the day of shipment from which the particular order is filled.

COLUMBUS

With colder weather at hand domestic demand is increasing. Producers and jobbers have many inquiries but since Ohio prices are regulated dealers have to be content with buying West Virginia and Kentucky grades as well as Ohio-produced mine run. Practically no Hocking or Pomeroy lump is going to Ohio dealers, producers preferring to sell outside of the state at higher prices. Retail prices as fixed by the administrator allow a margin of $2.20 over the cost at the mines and freight.

There is a slightly improved demand for steam grades with buying only for immediate needs. None of the larger consumers is showing a tendency to stock up under present conditions, although a few manufacturers are coming into the market. Lake trade is still active although car shortage and congestion is reducing the tonnage.

The car supply is growing less and this is reducing the output in all Ohio fields. The supply of cars in the Hocking Valley last week was about 40 per cent and in Crooksville and Cambridge somewhat less.

EASTERN OHIO

While the field is showing some improvement in output yet because of the continued inadequacy of transportation facilities some apprehension has been expressed by members of the Ohio fuel administration that a famine is in prospect. During the week ended Oct. 14 this district produced 313,000 tons or 50.5 per cent of potential capacity.

With approximately 30 per cent of current output being drawn for railroad fuel and some 60 per cent of the remainder going to the lower ports for trans-shipment to the Northwest, it may readily be seen that at the restricted rate of operations the volume of "free" coal finding its way into the open market cannot be of any considerable magnitude. Steam users are daily becoming more concerned and domestic consumers are beginning to feel more apprehensive. Thus a more insistent demand has developed. Difficulty is being experienced in satisfying the demand. With the exception of slack, which is soft and in abundance because of heavy shipping of ¾-in. to the Lake, other grades are scarce in the open market. Other spot prices conform to maximum figures set by the state authorities. Coal from West Virginia Panhandle is quoted in the open market at approximately the same f.o.b. mine prices. Very little West Virginia or eastern Kentucky coal is arriving as yet because of the transportation situation. It is reported that slack and nut and slack from these mines range $5@$5.50, mine run, $5.50@$6, lump sizes, $6 and up.

Receipts of bituminous coal at Cleveland during the week ended Oct. 14 were 1,471 cars, 360 cars under the preceding week. Of this total 1,210 cars were for industries and 261 for retail yards.

DETROIT

Bituminous coal is coming into Detroit in fair amount, though the average daily receipts fall short of the quantity which dealers estimate as necessary to meet the requirements. Industrial plants seem to be releasing orders only when compelled to replenish their supply for current needs.

Retail dealers, also, are inclined to proceed cautiously in the matter of building up yard stocks. The waiting attitude of their customers impresses jobbers and wholesalers as an indication of the expectation that coal will be obtained at lower prices after a while.

Hocking lump and egg is quoted at $5.50@$6, mine run, $3.75@$4, nut, pea and slack, $3.25@$3.50. Fairmont 2-in. is $5, mine run, $4.50@$4.75, slack, $4.50. Pittsburgh No. 8 2-in. is $5, mine run, $4.25@$4.50, slack, $3@$3.75. West Virginia and Kentucky lump and egg is $6.25@$6.50, mine run and slack, $4.50@$4.75. Smokeless lump and egg is held at about $8.50, mine run $6.50@$6.75.

BUFFALO

Some shippers report the market stronger, but it is hard to find any advanced prices. The consumers are buying as they please. No sort of warning of coming storms or still scarcer car supply can scare them.

The price was seldom as varied as it is now. Mine owners complain as much as ever of car shortage, but in fact that is all that is saving them from a total collapse of the market.

The weather has done what it could to check the market. The jobbers know this and confess that it has so far done much toward spoiling their arguments. Quotations are: $5 for Youghiogheny gas; $4.50@$4.75 for Pittsburgh and No. 8 2-in. steam; $4@$4.25 for Allegheny Valley and other mine run; $3.25 for slack.

NORTHERN PANHANDLE

Mines are much handicapped by their inability to ship as large a tonnage to Western markets as the market would permit, owing to congestion on roads. It has been found particularly difficult to get coal through to the Lakes. There is a more pronounced demand for mine run and prices are advancing a trifle.

Northwest

First Cold Worries Few Folks Around the Lakes

Considerable Flow of Cargo Coal Both Hard and Soft Allays Worst Fears but Fuel Is Doled Out Carefully—Steam Prices Soften.

The Northwest finds little cause for worry in spite of the inevitable domestic rush that was started by the first cold snap. Prices on domestic are not hiking even though the supply does not equal the demand. Heavy Lake shipments continue and it is probable they will until Dec. 1. Rail coal from Indiana and Illinois is coming in in fair volume. The general result is nobody is contracting and steam prices are headed downward.

Hard-coal cargoes already in have been doled out in small quantities but even that does not cause much concern over the future. It certainly has not set up a demand keen enough to take out of dealers' yards some low-grade soft coal bought at fairly high prices last summer. Both dealers and dock men have had so much experience buying high-priced coal for protection only to have it left on their hands at the end of the season that they are not stocking heavily now.

MINNEAPOLIS

A flurry of "square winter" with snow started a rush of retail business in the coal offices, but, with the passing of the storm, came an end to the rush. The hard coal situation has not changed particularly in some weeks. The fuel commissioners have pledged that a certain tonnage will be supplied the Northwest. Minneapolis is to get 122,931 tons against 203,581 tons last year. St. Paul is to have 85,476 tons against 142,450 tons last year. This may be decreased by transportation difficulties although it is hoped to move it by Lake and rail or all-rail. It now appears unlikely the Northwest will get over 70 per cent of the normal anthracite tonnage.

The soft coal situation is settling to some extent. There is now enough for any present and early future need, and buyers are not at all worried. The winter's requirements for the docks is being scrutinized carefully by dock men. They say that there is a good tonnage of all-rail coal coming into these cities despite the car shortage, and are going cautiously in building up their stocks. Already they are having difficulty in getting the price they must ask, and they anticipate the possibility of a larger tonnage having a still further depressing effect.

So October is showing a decline in tonnage moving to the docks, as compared with September. Some of this is due to transportation difficulties and some of it to dock operators holding off from buying. There is likely to be an increased all-rail tonnage later on so that the dock store of perhaps 4,000,000 tons, plus what comes from the all-rail fields, should serve to carry the Northwest through the winter.

MILWAUKEE

Frosts and some snow have increased the anxiety throughout Wisconsin regarding the winter supply. Dealers report an increasing domestic demand. Steam is slow, however. The State Fuel Commission announces that West Virginia smokeless producers have set a maximum of $6 at the mine for prepared sizes, and Pennsylvania anthracite has been fixed at $8.50. With these figures as a basis, the commission expects to be able to check profiteering. Prices on both hard and soft coal have undergone no change since Oct. 1. No coal at premium prices has appeared in this market yet.

Hard coal must move more freely than at present, however, if this schedule is to be realized. Thus far in October, eleven cargoes of anthracite, aggregating 86,952 tons, and fifty-three cargoes of soft coal, aggregating 473,416 tons have been unloaded at the various yards. The season's receipts by cargo to date now total 87,652 tons of anthracite, and 1,764,371 tons of soft coal. Last year during the same period 815,622 tons of anthracite, and 2,149,410 tons of soft coal were received.

DULUTH

The first snow has fallen and cold weather seems to have definitely set in. Householders are straining every effort to get coal into their bins, and dealers find it impossible to make local deliveries.

During the week forty-two cargoes arrived at the port. Four were of anthracite. Twenty-four are on the way of which four more are hard coal. This, it is considered, will relieve the situation considerably, as the volume reported coming from lower ports indicates that the movement will keep up.

Shipments throughout the territory are excellent. Duluth is in a good way for cars, as grain shipments to the harbor leave many empties to take coal back. Despite this there has been an accumulation since Oct. 1 of about 600,000 tons more on the docks.

A heavy call for Pocahontas has about wiped out the supply. Prices on hard coal remain the same as quoted last week. The market in bituminous coal is weakening at the usual point—screenings. These are quoted at $7 for Youghiogheny and splint against $7.50 last week and Hocking screenings are 50c. below this. Prices for lump and run of pile remain the same but are expected to drop. Railroads are not buying much.

New England

Big Consumers Await Events; Some Smaller Ones Buying

Business Is Light, Close Canvassing Being Necessary to Place Tonnage—Hampton Roads Coals Sluggish—All-Rail Fuels Quoted Lower to Maintain Output.

Only here and there is the current market at all responsive to selling efforts. The larger buyers have accumulated some reserves and have settled down to await developments in November and December. The various trade factors are enjoying only light business in consequence, and what tonnages are placed are the result of close canvassing.

A few relatively small users have concluded that present prices are about as low as they could reasonably expect, and these are now beginning to take on the coal they have been talking about buying since early in July. Hampton Roads coals are sluggish and all-rail fuels are quotably lower in an effort to maintain production.

The $3 level at the mines has been touched. Locomotive coal of fair grade has been offered at that figure per net ton, but no sales have as yet been reported. The present all-rail tariff to New England points is still so high that coal within reach of Tidewater still costs less by the water route. Coastwise freights are now on what is considered practically a minimum basis on present costs, and when the delays in rehandling at Boston, Portland, and Providence are cleared up it is likely that receipts of Hampton Roads coals will measurably increase.

Cargoes of British coal continue to arrive, but in much smaller number. A few of the larger corporations profess to be well satisfied with their purchases, and are quoting quality and reasonable prices of these grades as an argument to force down the price of home coals. Some of the high volatiles that originate on the other side have given fair satisfaction as railroad fuel, and renewed shipments have been offered recently at a range of $6.50@$7 delivered alongside.

Buyers in general seem little disturbed over the threatened car shortage. Strenuous efforts to sell coal the past three months have convinced most consumers that orders will be even more scarce than cars, provided cars are to be short as predicted.

In railroad circles there is more or less discussion of "assigned cars." There are operators who see in this a deliberate attempt to force prices to still lower levels, and without doubt any such more would be resisted under anything like present conditions.

Cincinnati Gateway

Unsettlement Continues, Due to Diverse Causes

Some Steam Coal Sacrificed to Escape Demurrage—Clog in Movement Reported—Outside Competition a Pressing Factor—Price Fixing Boosts Retail Quotations.

Outside competition, shortage of cars and a soft market have been causing a continuation of the unsettled conditions at the Cincinnati gateway. Rejections have grown to the point where some steam coal is being sacrificed where it had begun to pick up demurrage. These cars in distress have sold down to $3, but that is not nearly as ominous as the reports coming in from Russell, Ky., and Portsmouth, Ohio, to the effect that the quick movement is beginning to clog there.

The outside competition, perhaps, has the greatest effect upon this market and reports that byproduct and gas coals from the Pittsburgh belt were being offered 50c.@75c. cheaper than the Kentucky and West Virginia products caused anxiety. On the other hand, reports from companies handling high-grade coals show that the slump has not amounted to more than 25c. a ton on the week.

LOW VOLATILE FIELDS

New River and The Gulf

New River producers were unable to take advantage of the better Western market for prepared owing to an embargo on the C. & O., which for a few days diverted more coal to Eastern markets and to Tidewater, where the demand has been none too strong.

Gulf producers also had to ship all their product to Eastern markets, where there was a little better demand, although a surplus was reported at Tidewater. Little tonnage was available for spot sales, due to the large number of contract orders to be filled in the face of the car shortage. Prepared grades were still high, with no prospect of an increase in the supply.

Pocahontas and Tug River

Pocahontas production is still being seriously curtailed by the inability to secure an adequate supply of cars, losses amounting to nearly 400,000 tons per week. The output is not much more than sufficient to take care of regular customers. Little smokeless has been reaching markets in the West but notwithstanding the scarcity of smokeless, prices as a rule have been about on a Hoover level.

Tug River mines are slowly recovering from a slump in production brought about by numerous embargoes and a general shortage of cars. Even making allowance for an improvement in transportation conditions, the supply is still short of the demand, so much so in fact, that producers have not been quoting prices.

CINCINNATI

The smokeless situation continues much as it has been. The Pocahontas producers, however, have finally been able to get smaller equipment to their mines, which will result in a heavier tonnage being shipped to the West. Some producers say that they have about caught up with their contract orders.

The situation of the steam coals is the weakest on the list. Customers who were taking anything that looked like coal are now discriminating and demanding quality. Lake buying has been a little better with the end of the season in sight and the automobile and steel people seem to have no limit to their capacity for good coal.

The retail situation has been muddled by a ruling from the Ohio authorities fixing the price of Pocahontas at $11.34. Dealers were selling this lump at $10.50@$11 and mine run at $9.50. Splint lump is ordered sold at $10.39@$10.49, whereas the dealers had been selling it at $8.75@$9.60, and the slack, $7.25@$8.50.

HIGH-VOLATILE FIELDS

Kanawha

Claims of C. & O. officials that they were able to furnish open-tops to the extent of 60 per cent of normal were not being borne out by loadings during the third week of October. Mines were not securing more than a 30 per cent supply. The Western market was closed to shippers for several days by an embargo on all coal destined for points west of Handley and there was nothing to do but let coal accumulate. The embargo may have had the effect of hardening Western prices. At any rate, mine run increased 50c. a ton and stopped the downward tendency.

Northeastern Kentucky

Claims of railroad officials that the car supply is about normal and the expression of public officials that prices are too high are disputed and resented by mine owners. Under present conditions it is impossible to produce anything like the tonnage for which there is a market, and hence production costs are high.

Logan and Thacker

Scarcity of equipment continued to handicap Logan mines. The Western market has shown signs of greater activity. With the Western movement stopped for a few days, the Lake movement ceased also. There was more general inquiry for steam coal, however, than there has been, indicating that supplies are running short in some quarters.

Thacker production was only 90,000 tons as against car shortage losses of 150,000 tons, so that Western shipments were materially curtailed. Producers are hardly able to take care of the requirements of their regular customers, much less sell coal on the spot market.

Coke

CONNELLSVILLE

The break in coke prices which began nearly a fortnight ago brings lower prices almost daily, and finds only an occasional purchaser. The market has been under the double pressure of increasing production and of consumers holding off. There is room for at least $2 further decline in coke without the price going below the market price of the coal involved plus the cost of coking, while sometimes coke has sold at less than the price indicated by the usual formula. Coal, furthermore, may decline, and thus furnacemen have good reason for deferring purchases as much as possible.

To a large extent car supply has been the limiting factor in production. At the same time many of the strikers have been quite reluctant to go back to work. At certain plants officials of locals have instructed strikers to return to work while at other plants attempting to resume no such instructions have been given, indicating that the U.M.W. has not formally called off the strike and would be content to see the men stay out as long as they will.

The market is quoted at $8 for furnace coke, this being an asked rather than a bid price, and $10.50@$12.50 for foundry.

The *Courier* reports production during the week ended Oct. 14 at 98,700 tons by the furnace ovens and 42,010 tons by the merchant ovens, a total of 140,710 tons, in increase of 14,360 tons.

UNIONTOWN

Furnace coke this week struck a downward stride, joining coal in the low price movement. A number of factors contributed to the lowering of the coke prices, principal of which is a substantially increased production, which temporarily at least is more than the market can readily absorb. Coupled with that feature is the delivery of British coke upon a basis of approximately $8, Connellsville. It is reported that some consumers who placed orders for foreign coke while the Connellsville market was at the $13 level are now seeking cancellation in order to substitute domestic fuel.

Coal for some time has been described as soft, due to a great extent to resumption of operations at union mines, but the coke market since production was resumed to the extent of establishing one has been strong with an increasingly active demand. That sufficient surplus is now being produced to bear down the market is taken as proof that the union has lost its effectiveness in curtailing production.

BUFFALO

The trade is dull, with some report of price reduction. Jobbers quote 72-hr foundry at $13@$13.50, 48-hr. furnace at $11.50@$12 and domestic at $11, with $3.25 added for freight.

News Items From Field and Trade

ALABAMA

The following statement relative to the [illegible] of prices on domestic coals produced in Alabama and adopted to govern [illegible] has been issued by the [illegible] Administrator, following a conference of coal operators held in Birmingham. "The prices fixed by the code on domestic coal are as follows: Big seam group, $3.45; Four-foot group, [illegible]; Cahaba block coal group, [illegible]; Montevallo lump group, [illegible]. These prices are maximum [illegible] below which no coal originally within the code has been shipped on coal moved across the state line. The operators representing approximately 65 per cent of the entire production, signified their willingness to sign [illegible] contracts at [illegible] effective at once, the above schedule of prices on interstate domestic [illegible]."

COLORADO

The following interesting figures from the [illegible] annual report of the **State Inspector of Coal Mines** of Colorado cover operations in 1921: Number of mines operated, 249. [illegible] and old mines opened, 11 mines closed, 4 abandoned; [illegible] of 249 mines [illegible] to [illegible] production.

TONNAGE PRODUCTION IN 1921

	Net Tons
[illegible]	1,454,264
[illegible]	791,345
[illegible]	4,844,472
Anthracite	63,764
Total	8,141,845
[illegible]	4,845,446
[illegible]	4,247,581

COKE OUTPUT COLORADO 1921

Coke produced	651,179
Coke sold	589,267

COLORADO PRODUCTION STATISTICS

Miners employed, [illegible]	4,769
Machine	3,346
Total	8,129
[illegible]	[illegible]
Tonnage	14,164
Average number of [illegible] worked	164.4
Daily production per man	6.8
Annual production per man	1,124.3
Commercial product [illegible]	248,117
Coke [illegible]	1,246,911
Operating coal [illegible]	12,229
Horses and mules	7,888
Gasoline locomotives	9
Steam locomotives	22

ILLINOIS

The mine of the **J. R. McCoy Coal Co.**, [illegible], has been sold to two men of Herrin, **J. C. Lewis** and **R. W. Hawkins**. The new owners will operate the mine under the name of **Lewis & Hawkins**.

The **Cahvin Coal Co.**, with headquarters in Marion, has negotiated with the **Southern Illinois Coal Co.** for the purchase of the mine known locally as the Burkhardt at Herrin, some of the mule barn [illegible]. The company is incorporated for $40,000 and is planning to add [illegible] to the mine preparatory to its reopening.

A. S. Austin, of Milwaukee, of the **Kanawha Fuel Co.**, who for the [illegible] has been in charge of the **Old Ben Mining Co.**, which is controlled by the Kanawha company, has resigned. The mine was idle for over two years.

Fred Harbin has passed the coal mining [illegible] to the farm of Rudolph Wiehl, three miles west of Belle and [illegible] Illinois and [illegible] for immediate operation.

With the [illegible] of a new coal [illegible] on the property of **M. Wolf**, [illegible] east of Wamac, [illegible] will be a short [illegible] and will be [illegible] that the coal and [illegible] will be run to the [illegible]. Two veins [illegible] have been [illegible]. Which one of the two [illegible] the farm where a 6-ft. vein of coal was found [illegible] on the Wolf farm [illegible].

[illegible] in the [illegible] of Orient Tower by the **Central Illinois Public Service Co.** The plant will require about one year for construction and will furnish power to over thirty southern Illinois towns and many towns in Missouri and Kentucky, as well as supply the needs of a large number of coal mines in Illinois. The plant when completed, will be as large or any similar plant in the world.

Reports from all Southern Illinois coal fields show an **alarming water shortage. At** many mines arrangements have been made with railroads to supply water in tank cars. At Pana the city has decided to shut off the supply to the mines as a safety move in case of fire.

Milo Smith Ketchum has been appointed as dean of the College of Engineering and director of the Engineering Experiment Station, University of Illinois. He is a member of the American Society of Civil Engineers, the American Railway Engineering Association, the American Society for Testing Materials, the Colorado Scientific Society, the Society for the Promotion of Engineering Education, American Association of University Professors and a fellow of the American Association for the Advancement of Science. He has carried on a consulting practice for 20 years, making a specialty in steel and reinforced concrete bridges, mill and mine structures, and has had considerable experience in valuation work and in giving expert testimony.

INDIANA

The Indianapolis Fuel Committee, appointed by Mayor Shank to co-operate with the federal and state authorities in attempting to regulate the distribution and price of coal, has been revised in its membership with the appointment of John A. George, president of the Indianapolis Coal Co., and Michael Shea, a former councilman, as members of the committee. Both men accepted the appointment. The mayor said he intended naming a legal adviser to work with the committee and has asked that the committee meet soon.

The Spencer Coal and Mining Co. has been organized at Bedford, for the purpose of doing a general mining business. The company has a capital stock of $10,000, which will be increased later. The directors are Simon H. Crabtree, Edna Crabtree, Henry Spencer and Emma B. Spencer.

Many operators in the "pocket" counties of Indiana along the Southern are preparing to file suits against the railroad in case the investigation, now being conducted, reveals that the railroad company is favoring some mines and allowing others to remain practically idle, according to J. Woolley, of the **Woolley Coal Co.** Statistics now are being compiled by the Southern Indiana Coal Bureau, which will indicate the conditions of the neighborhood mines, according to Mr. Woolley.

The Imperial Coal Co. recently was organized at Terre Haute, with a capital stock of $150,000. The organizers are W. S. McCord, M. R. McCloud and Louis Clements.

IOWA

Pocahontas County farmers will burn their corn for fuel, it was decided at a large [illegible] meeting held at Laurena recently. The action was taken as elevators in this part of the state cannot handle grain because of the car shortage. Also, it was pointed out the action would save two freight hauls. Eighty per cent of the farmers in this county cannot pay their taxes, [illegible] and interest on farm mortgages in many cases is overdue. The only relief the farmers see is to unite in a state-wide movement to burn corn unless a reasonable profit over cost of production can be obtained.

KENTUCKY

A [illegible] is in preparation for the meeting of the **Kentucky Mining Institute** at Louisville, Nov. 3 and 4. J. M. Dewberry, of the L. & N., is scheduled for a talk on traffic conditions which should prove of especial interest.

The Southern Railroad, which recently settled its strike of shopmen, is improving service in the mines in southeastern Kentucky which it serves. These mines for weeks were completely tied up.

The Miners' Syndicate of America, Pikeville, Pike County, with a capital of $15,000, has been chartered by W. D. Sanders, F. M. Woods and M. M. Martin, all of Pike County.

The Detroit Edison Co. has sued the Monty Eastern Coal Co. of Pineville, in the United States District Court in Cincinnati for $18,000 upon the grounds that they had failed to live up to a contract made through Eaton Rhodes & Co. as agents for the Kentucky company. It was charged that the Monty Bottom company was to ship its entire production to the Detroit concern.

On recommendation of Lawson Blankenship, chief mine inspector, of Kentucky, Gov. E. P. Morrow has appointed **M. S. Blythe**, of Whitley, to succeed **W. H. Hunt**, as assistant state mine inspector for the second district, stationed at Central City.

The Kentucky Gas Coal Co., jobbers, recently incorporated, has located at 321 Starks Bldg., Louisville, and will handle gas, steam and domestic coals, including Kentucky, Indiana, West Virginia or Tennessee fuels. L. P. Young, formerly with the Harlan Coal Co. is president, and L. D. Young, formerly with the Wallins Creek Coal Co., is secretary-treasurer.

MASSACHUSETTS

The Fairmount-Worcester Coal Co., of Worcester, has recently been incorporated under the laws of the state to carry on a coal supply business, etc. The firm has been organized with a capital stock of $50,000, and the officers chosen are: Raymond Tracy, of Millbury, president and treasurer, and Irving W. Mullett, Worcester, vice-president.

The Progressive Coal Co., Inc., Cambridge, has incorporated the business under the laws of the state. The capital stock is $50,000, and the officers chosen are: Morris Rudnick, president; Joseph F. Rudnick, vice-president, and Benjamin Rudnick, treasurer.

The Rome Wire Co. recently opened a Boston sales office in the Little Bldg.

MINNESOTA

The federal fuel officer has ordered that coal cars which have been left on track for an unreasonable time are to be seized and unloaded without delay. Cases of cars having remained without unloading for five to twenty days are reported.

The new 10-ton bridge of the **Superior Coal & Dock Co.** has been placed in use. The company's dock is at Duluth-Superior harbor and the new bridge places it on a par with the best as far as handling is concerned.

The Minnesota State Fuel Administration has declined an offer of 160 acres of coal lands at Bowman, N. D. It is assumed that the land which has a vein of lignite said to be 60 ft. thick, contains 12,000,000 tons of fuel which would make the price of the coal in the ground around 1c. a ton.

MISSOURI

The Lincoln Coal & Mining Co. has been organized at Kansas City with a capital stock of $10,000. The company will prospect for coal, oil and other minerals. The shareholders are Howard N. Hanson, John J. Caldwell, A. Scott Myers and Tom C. Hanson.

The property belonging to the **Hanke Coal Co.**, at Huntsville, has been sold at sheriff's sale at the court house in that city to **Norman Johnston** of Huntsville, for $4,000. His was the only bid. It is claimed that the owners spent in the mine and its property the sum of $35,000.

The Tebo Coal Co. has leased a large body of land in the vicinity of Chloe several miles from Lowry City, and will begin operations as soon as a steam shovel can be transported from Pittsburgh, Kan.

The Callaway County Coal Co., which has been operating a steam shovel coal stripping proposition near Carrington, Mo., for the past nine years, is to be dissolved.

One of the chief reasons for the better movement of cars in the St. Louis and Missouri territory is **C. D. Thomas**, in charge of the office at St. Louis recently established by the service department of the I. C. C. Embargoes that tied up loads and empties were investigated and other "kinks" straightened out. The results in the first few weeks were so gratifying that several telegrams were sent to Washington requesting the continuance of the work.

NEW YORK

Maximum prices in New York City for hard coal sold in small quantities to the poor are being put into effect, according to an announcement by **A. S. Learoyd**, district fuel administrator for Greater New York and Long Island. The prices are said to be 10c. per 100 pounds lower than the prevailing prices last year.

Charles S. Allen, in association with Karl Knox Gartner, of the firm of Baker & Baker, has been engaged by the receivers of the **Tidewater Coal Exchange, Inc.**, to present to the Interstate Commerce Commission the matter of refund and remission of demurrage charges amounting to about $990,000 which have been apportioned against members of the Exchange. Mr. Allen will also take up with the debtor and creditor members the matter of settling the outstanding debits and credits.

The Astel Coal Co. has been established in Buffalo, managed by William C. Strassburg, formerly in the coal trade at North Tonawanda, and William E. Schmidt, a former city coal salesman.

NORTH DAKOTA

The Haynes Coal Mining Co., of Haynes, has secured a temporary injunction against the local of the U. M. W., restraining it from interfering with the operation of the mine. The company accepted the Cleveland peace plan, but the local wants $1.50 increase, and continues to picket and guard all approaches to the mine, meet trains and watch all roads. The union is allowed one representative at each established mine entrance to advise would-be employees of the strike and to use peaceful methods to induce them not to work.

North Dakota lignite mines are being opened up wherever the coal seams are readily accessible to railroads and of no great depth. Coal lands are also being bought up for future developments. Production for 1922 will be several times that of a year ago.

OHIO

The Erie Coal & Coke Co., Cleveland, has been incorporated with an authorized capital of $25,000 to mine and sell coal and to do a general jobbing business in coke. Incorporators are H. C. McCoy, H. C. Roberts, J. W. Johnson, E. B. Renenzer and Henry Stern.

Ohio jobbers held a session in Columbus recently in an effort to bring before Fuel Administrator Neal their position in the scheme to regulate prices. Practically all Columbus jobbers attended and those present from out of town were E. W. Astel, Astel Coal Co.; H. S. Fahey, A. & L. Coal Co.; R. S. Bain, Central Coal Mining Co.; P. E. Barrie, Montout & Northwestern Coal Co., and J. L. Deegan, Goff-Kirby Coal Co., all of Cleveland; J. W. Morgan, J. W. Morgan Coal Co., and C. A. Sloane, Jackson Hill Coal Co., Jackson; J. B. Patterman, Blue Ash Coal Co.; Charles R. Moriarity, Cabin Creek Consolidated Coal Co., and J. G. Metcalf, Reliance Coal & Coke Co., all of Cincinnati; Clyde H. Hoyt, C. H. Hoyt Coal Co.; Clint Cole, Cole-Basinger Coal Co., and H. J. Heywood, W. A. Gosline Coal Co., all of Toledo. After a discussion of the position of wholesalers, a committee was named to call on the administrator. Their report was very encouraging as Mr. Neal reported that he was giving the jobbers serious consideration and probably provisions would be made soon for a fair commission on the business they handled. It was believed that the jobbers' position was due more to the lack of cars than to the rulings of the fuel administration.

Coal operators in Ohio are requested by the federal fuel representative to **confine their shipments to short hauls and normal markets.** "There is a tendency, especially on the part of some operators, to ship coal to any point where the highest prices may be obtained," the statement reads. "Shipments to distant destinations delay return of empty cars and impede the car supply. Short hauls, or at least those to normal markets, are of great assistance to the railroads in returning empties.

Representatives of the **New Pocock Coal Co.** and the **Fox & Howells Mining Co.**, both of Massillon, presented facts in regard to their protest against the maximum fair price for coal at the Ohio mines, in a meeting before Fuel Administrator Neal. Each maintained their average cost of production has been $4.93 per ton. On this basis they claim the cost for Stark County of $4.86 is below cost of production and therefore unfair to them.

OKLAHOMA

Nine men are dead as the result of a gas explosion which wrecked mine No. 11 of the **Progressive Coal Co.**, near McCurtain. Rescue squads reached the entombed men shortly after the blast, as the mine is shallow. The wrecked mine was a slope, built through an abandoned strip pit in which coal was found about 500 ft. from the opening. Steps are under way by federal and state officials for a thorough investigation of the cause of the blast.

R. K. Schutt and associates have sunk a shaft on coal leases in Section 2, 18, 27, to a 30-in. vein of coal near Wagoner and are building a sidetrack half a mile to the Iron Mountain Ry., preparatory to mining on a large scale. Besides the shaft mine the company will open a strip pit.

PENNSYLVANIA

At a conference of the directors of the Central Coal Association and the Association of Bituminous Coal Operators of Central Pennsylvania held in Altoona, **Charles O'Neill** of Altoona and **B. M. Clark** of Indiana, president of the latter association, were chosen to represent central Pennsylvania at the joint conference of miners and operators to be held in Chicago on Nov. 14. A special committee composed of **B. M. Clark, R. H. Sommerville, J. Webb Shillingford, S. T. Brown, Rembrandt Peale, C. B. Maxwell,** and **Charles O'Neill** was appointed to consider the manner or method of representing Central Pennsylvania before the fact finding commission recently appointed by President Harding.

The Dauphin County Court last week heard additional coal tax cases and questions of the right of the commonwealth to tax coal companies for their own fuel used in boilers at the mines and for refuse and culm coal used in the preparation of coal briquets were raised. The appeals were those of the **Scranton Coal Co.**, and the **American Briquet Co.'s** Lykens plant. No decisions will be rendered until settlement of the Heisler appeal before the United States Supreme Court. The briquet company's main contention was that it is not a coal producer but a manufacturer.

As a result of the recent **Bethlehem-Lackawanna Steel Company merger**, the Bethlehem Mines Corporation, which is the mining subsidiary of the Bethlehem Steel Co., took over the Lackawanna coal interests. These consist of the Ellsworth Collieries Co., operating in Washington County, and the Lackawanna Coal & Coke Co., operating at Wehrum. T. R. Johns, manager of coal mines, has established his main office at Hellwood, Indiana County, and made the following appointments: George Lindsay, division superintendent, Hellwood division, Hellwood; H. C. Ford and C. E. Kirker, superintendents, Hellwood division, Hellwood; R. E. Abrams, superintendent, Hellwood division, Wehrum; J. F. Fleming, chief engineer, Hellwood division, Hellwood; S. Steinbach has been retained division superintendent, Preston division, Reedsville, W. Va.; M. B. Mitchell, division superintendent, Marion division, Barrackville, W. Va.; C. F. Welty, superintendent, No. 11 Mine, Marion division, Barrackville, W. Va.; H. R. Nuzum, superintendent, No. 42 Mine, Marion division, Dakota, W. Va.; J. P. McCune transferred from division superintendent of Marion division, Barrackville, to division superintendent, Ellsworth division, Ellsworth.

TENNESSEE

It is reported at Chattanooga that settlement is near in the bankruptcy litigation involving the **Dayton Coal & Iron Co.**, of Dayton, which has been in the courts for nine years. The proposed settlement it is reported calls for full payment of all creditors' claims in Tennessee and 85 per cent to outside creditors. Whether outside creditors would stand for such a division when submitted by the federal referee is a question. At present H. S. Matthews is operating the mines for New York interests.

UTAH

The permit granted the **Salina Canyon Coal Co.** to sell bonds has been revoked by the Securities Commission. The license was suspended some time ago and it is reported by the secretary of the commission that "certain information" desired by him was not given. The permit gave permission to sell $500,000 worth of bonds.

A Salt Lake City newspaper comments on the fact that while the average wage paid to school teachers is about $4 or $5 a day, foreigners, who cannot even speak our language and have no regard for our laws, can get $15 a day for digging coal in Carbon County. Since the strike settlement many of the men who went out are pleading for their jobs again. In some cases they say they were "crazy" in others that they were "deceived." There is a surplus of labor everywhere in Utah.

WASHINGTON

About 60 per cent of the coal production of the state was represented at the recent conference in Cleveland. **D. F. Buckingham** of Seattle, general manager of the Roslyn Fuel Co., and **John H. Wallace**, also of Seattle, were the delegates of the operators association, and the union was represented by **W. C. Thompson**, of the U. M. W. The Washington delegates represented virtually none but eastern Washington mines, since nearly all the western Washington mines are now operating on the open-shop plan.

WEST VIRGINIA

The Nuttallburg Mine, in the New River field, owned by Henry Ford, has been closed down and dismantled. Ford has owned the mine for several years, having operated it under a lease since the purchase.

The Fayette & Kanawha Coal Co. has secured a judgment of $50,[illegible] in the circuit court of Kanawha County against the **Lake & Export Coal Corporation** for breach of contract. It was contended by the plaintiff that the defendant company entered into a contract to take over the output of two mines owned by the plaintiff company from June 26 1920, to June 26 1921, that the defendant company handled the output until Dec. 10, 1920, and at that time refused taking the output when the price began to drop. The court allowed the plaintiff damages at the rate of $2 per ton on the estimated output of the two mines from the time the contract was broken until the expiration of the contract.

Judgment was given the **New England Fuel & Transportation Co.** in five out of eleven cases which it had instituted against striking miners for rent, light and rent. One of the judgments was for $4[illegible]. Those against whom judgment was obtained are now working in other fields.

Boyd M. Smith of [illegible] has been named as manager of the newly established Fairmont office of Whitney & Kennedy, a coal brokerage concern of New York and Philadelphia. A year or so ago Mr. Smith was in charge of the Fairmont office of Whitney & Kennedy. Associated with Mr. Smith at Fairmont is Ed H. Pritt.

With a view to engaging in the coal business on a small scale citizens of Mt. Hope have organized the **Greenview Coal Co.**, the headquarters of which will be at Mt. Hope. The company has a capital stock of $[illegible].

The Balwood Coal Co. has been organized with a view to operating on a small scale in the New River field. The company is capitalized at $[illegible]. The principal office will be at Glen Jean. Identified with the concern are William R. Ballard of Glen Jean; Clyde G. Wood, Laura B. Wood of Kilsyth; Blanch Bolton and [illegible], Roberts of Mt. Hope.

WYOMING

The Mark Shields Coal Co. is opening what is claimed to be the third largest coal deposit in the world, five miles east of Gillette, on the C. B. & Q. The seam, according to reports, extends to a depth of [illegible] ft. and covers an area of [illegible] acres.

The organization meeting of the **Albany County Coal Co.** was held at Laramie recently to complete the incorporation of the company and the election of officers. The company will have a capital stock of $[illegible], and will maintain its principal offices at Cheyenne. The officers chosen were as follows: President, J. Alfred Nelson; vice-president, C. P. Scott; secretary-treasurer, V. L. Walker. Directors: J. F. Brigham, C. P. Scott, V. L. Walker, J. Alfred Nelson, W. P. Scott, Otis Osborne and C. L. Craig.

CANADA

With the object of making available for supplying Canada's coal necessity from the mines owned and to be opened by the Canadian Pacific Railway, and with special reference to the situation in Quebec and Ontario, the Canadian Pacific Railway Co. has organized a committee of coal and mining experts under the chairmanship of Dr. Charles Camsell, Deputy Minister of

WASHINGTON, D. C.

J. B. Eby has completed work for the U. S. Geological Survey in the Wasatch Plateau coal field in south central Utah.

W. C. Mendenhall, of the U. S. Geological Survey, has returned to Washington after an extended Western trip.

Traffic News

President W. J. Harahan of the Chesapeake & Ohio, has made the pioneering announcement that the old feud between that railroad and the Baltimore & Ohio is at an end. We have not yet had time to get in touch with reference to securing business [illegible] and are already beginning to make some headway. We have ordered [illegible] Gondola cars, delivery of which will be started next month. We have also bought [illegible] cars and four [illegible] Mikado locomotives. Several [illegible] we had [illegible] We will [illegible] quality, but it will require [illegible] We are quite alive to the situation and hope to be able to [illegible]

The application of the **Kanawha & Michigan Ry.** to extend its connecting track to the Chesapeake division of the B. & O., between Gordon, W. Va. and Elkins, which was to have been heard on Oct. 19, has been postponed for thirty days.

That coal mines in certain districts in the coal region of West Virginia is hampered for cars on each week day that the railroad embargoes it, Charles and other members of the Monongahela Valley at a meeting held at Morgantown. The opinion was expressed during the meeting that although West Virginia was trying to get a [illegible] established on intrastate freight, the [illegible] charged with responsibility in the matter by the last session [illegible] of the **Rockland Coal Mining Co.**, on July 11, will have to stand trial on the charge, whose [illegible] crime is alleged to have been committed.

Rumors have been in circulation for several weeks to the effect that **Henry Ford** has been carrying on negotiations for the purchase of the **Wabash and the Virginian railroads**. For several years there has been more or less discussion as to the extension of the Virginian down the Guyandotte River to Huntington. If Ford should acquire the Virginian, it would be possible to connect that road with the N. & W. by making the necessary connection between Deepwater and Huntington.

One factor concerned with the water coal problem, as it affects transportation, is the [illegible] and a number of railroads have [illegible] the I. C. C. in order to [illegible] the L. & N. to put in [illegible] rate schedules from eastern Kentucky, Tennessee and southwestern Virginia points to [illegible] points in Minnesota, South Dakota and Wisconsin. Railroads which would benefit from the proposed rearrangement of the [illegible] have not yet put forth [illegible] The [illegible] already took [illegible] to Oct. 15.

A shortage in cars for coal mines on the L. & N. at present is [illegible] officials of that road have announced. This statement was accompanied by information showing the large [illegible] of that company. Between 20 and 25 new coal cars are being delivered daily to the L. & N. by the Cambria Steel Co., Carnegie, Pa. Fifty others are on order and by the end of this month most of an order of 2,000 will have been received.

A connection at Spartan of the abandoned part of the coal railroad division of the Chicago & Eastern Illinois will begin about Nov. 1. George M. Barnard, general counsel for the **Chicago, Attica & Southern R. R. Co.**, the recently formed corporation which took over the abandoned part, made the announcement.

Reduced freight tariffs on Canadian coal through all points of entry to North Dakota have been received from the **Great Northern Ry.**, as a result of negotiations opened by the state industrial commission. Canadian mines have promised to furnish North Dakota from 500 to 1,500 tons weekly.

The I. C. C. will reopen the **Utah Terminal and the Utah Railway case**, which involves permission to operate in interstate commerce as well as serve the coal properties in Spring Canyon. The Utah Terminal was denied permission to operate as an interstate carrier some time ago. The Utah Railway has taken over the line, but the commission still withholds its permission. The case is to be heard again at an early date. The I. C. C. has denied the petition of the **Ballard & Thompson R.R.**, Southern Utah, to operate as an interstate carrier. The road was constructed in 1911 and has operated chiefly as a subsidiary of the American Fuel Co.

Federal Fuel Control Notes

Amendment No. 1 to Service Order No. 25—The I. C. C. on Oct. 17 ordered that this be amended and supplemented in the following respects: (1) By adding to paragraph 4 thereof an additional proviso as follows: "Provided further, that from and after Oct. 23, 1922, the supply and distribution of open-top cars suitable for the loading and transportation of coal to wagon mines shall be subject to the following rule: Upon any day when any such common carrier by railroad is unable to supply mines upon its line with the required number of open-top cars, such cars shall not be furnished or supplied by it to any mine which customarily does not load or is unable to load such cars with coal within 24 hours from and after the time of placement until all mines upon the line of any such carriers have been fully supplied with such cars." (2) That the proviso in paragraph 5 of said order which deals with the return of cars under load other than coal, in the direction of the mine be amended to read: "Provided, that such open-top cars, after the discharge of the coal lading thereof, may be used for the transportation of road and building construction materials, etc., and materials for car and locomotive construction or repair, when the destination of such materials is in the direction of but not beyond the mine or mines to which such open-top cars are destined for coal loading, and when such use will not materially delay or otherwise the production and transportation of coal."

General problems affecting the coal-price situation are assigned to **F. R. Wadleigh**, in co-operation with the fuel distributor. Mr. Wadleigh also will give consideration to the matter of anthracite prices and distribution, to export and bunker coal; to Tidewater and New England coal supplies and to individual complaints as to prices charged. Technical questions relating to the use of coal will receive Mr. Wadleigh's attention.

Obituary

William T. Steger, sales manager for the Wells Coal & Mining Co., with headquarters in St. Louis, died recently at his home in that city. He had served for 23 years with this concern.

Phil Gloeckner, 40, for several years engaged in the coal business in Ft. Wayne, Ind., died recently at the home of his brother-in-law at Richmond, Ind., where he was visiting. He is survived by the widow and one daughter.

L. H. Curtis, prominently identified with coal mining in Utah, died in Los Angeles late in September, at the age of 75. Mr. Curtis was vice-president of the Standard Coal Co. and of the Salt Lake & Utah R.R. Co.

Association Activities

Northern West Virginia Coal Operators' Association

Action taken by the representatives of the association at the Cleveland conference, upon which a full report was submitted, was approved at a meeting of the association held at Fairmont on Oct. 13. C. H. Jenkins, vice-president of the Hutchinson Coal Co., who attended the Cleveland conference, was named as the official representative of the association at the Chicago conference which is to be held on Nov. 14.

There was much discussion, during the meeting, of the action of the B. & O. in delaying the regular car loading bulletin until October, regardless of the car shortage now existing. Operators have difficulty in ascertaining just what the car distribution is between regions and each field feels that other fields are being given preference. Under a resolution adopted at the meeting the association will act as a clearing house for the collection of complaints as to car service.

Full compliance with the request of the federal fuel distributor for daily reports was recommended by the adoption of a resolution in which it was pointed out that such reports could be made to show how serious the car shortage was, especially through the use of memorandum notations.

Publications Received

Permissible Explosives, Mining Equipment and Apparatus, Approved Prior to March 15, 1922. By S. P. Howell, L. C. Ilsley, D. J. Parker and A. C. Fieldner. Bureau of Mines, Washington, D. C. Technical paper 307. Pp. 21; 6 x 9 in.; tables.

Trade Standards in the Pump Industry. This is the second edition of this pamphlet gotten out by the Hydraulic Society, and contains some additional tables and explanatory data. Pp. 21; 6 x 9 in.

Tests of Gas Masks and Respirators for Protection from Locomotive Smoke in Railroad Tunnels with Analyses of Tunnel Atmospheres, by A. C. Fieldner, S. H. Katz and S. P. Kinney. Bureau of Mines, Washington, D. C. Technical Paper 292. Pp. 27; 6 x 9 in., illustrated.

Coming Meetings

Kentucky Mining Institute will hold its annual meeting Nov. 3 and 4 at Seelbach Hotel, Louisville, Ky. Secretary, Elizabeth C. Rogers, Lexington, Ky.

The National Industrial Traffic League will hold its annual meeting Nov. 15 and 16 at the Hotel Commodore, New York City. Secretary, J. H. Beek, Chicago, Ill.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

Canadian Institute of Mining and Metallurgy, annual Western meeting Nov. 15-17, at Vancouver, B. C. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Can.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

Volume 22 NEW YORK, THURSDAY, NOVEMBER 2, 1922 Number 18

Co-operating with Hammond Commission

PERHAPS nothing has contributed so much to the excellent start made by the U. S. Coal Commission as the very frank admission by its members that they know nothing about the problem they have had thrust upon them and their invitation to both the miners and the operators to jump in and help educate them. Meetings were held last week in order with representatives of the United Mine Workers, the soft-coal operators and the anthracite producers. Each was urged freely to give advice as to how the duties and functions of the commission as laid down by the law should be carried out.

A committee of the bituminous-coal operators seeking to represent not the National Association alone but the industry generally has offered full co-operation. The National Association has levied a special assessment on its members, to which others are to be asked to contribute, to raise a substantial fund to supplement that given the commission by law. That is to say, the bituminous-coal operators propose to contribute the money to finance important research work for the commission, the money to be spent by the operators at the direction of or in accordance with the suggestions of the commission. This, of course, is perfectly proper, for it simply amounts to carrying a step further than the mine office the collection of data requested by the government. The decision to devote its time and money to the assistance of the Coal Commission rather than fight it, to accept it as something that will be of ultimate benefit to the coal industry rather than looking on its activities as detrimental, is the most forward-looking step the National Coal Association has taken.

The United Mine Workers have taken the request of the commission in good faith and have already supplied a 7-page brief expressing their ideas as to the direction that certain parts of the investigation should take. They have suggested, for instance, that careful investigation should be made of absentee ownership, the spread between mine price and delivered price, the possible connection between coal companies and machinery manufacturers, discrimination by railroads in the placement of railroad cars at the mines, thus producing irregular employment, middleman's profits and of coal storage.

On the whole, this first document for the record (which we are pleased to note was broadcast to the press) is a series of suggestive questions and implications such as might easily have been compiled by any newspaperman or any citizen who had followed the subject in recent months. This communication and the others that doubtless will follow from the same source will serve to keep the public and the commission posted on what questions should be answered. Its apparent guilelessness detracts none from its interest and value.

The commission has a long, hard task ahead of it, and the very evident willingness of all parties at interest to help without restraint will make its work more certain of success. The friendly spirit that seems to prevail augurs for a happy ending.

Effect of American Demand On the British Coal Trade

UNDER the caption "The End of the American Coal Spurt" the editor of *The Compendium*, London, summarizes the effect on the British coal trade of the recent demand on this side for English coal. It is pointed out that buyers on this side did not leave the British long in doubt of their intention of taking only the coal that was urgently needed, and that by the middle of September inquiry was practically at an end and negotiations in progress were stopped.

As has been currently recorded in our market columns, the American demand caused a spurt in British coal production, forcing the weekly output well above 5,000,000 tons from around 4,500,000 tons. Exports climbed from 4,793,000 gross tons in June to 6,146,000 tons in August. Later figures are not as yet available. From practically none in June, the portion of these totals sent to this country rose to 930,913 tons in August. Our own figures show that 606,000 tons reached here during that month.

Prices were affected by the sudden onslaught of American buyers. Increases in quotations ranged from 2s. to 6s. 9d. per ton, according to quality. The peak in prices was reached in August, a marked slump being recorded in September. Ocean freights reached their peak in July. When the buying from this side began it soon developed that ships and not coal would be the limiting factor. The charter market responded with jumps of a shilling or more, only to subside when vessels from all over the Atlantic were offered for this trade.

On the whole the British coal industry has much for which to be thankful in the threatened coal shortage on this side inasmuch as it provided a sudden and unexpected market for several million tons of coal. The British coal industry had been in the doldrums for many months, wages had sunk to the legal minimum, prices were dropping and as they dropped the usual buyers were holding off waiting for the bottom. Mines had been closed and the men were suffering—even at the minimum wage the operators could not produce and find a market for their product. But when utilities, railroads and free-lance traders on this side drained off the surplus supplies and called for more, the coal industry in Great Britain took on new life. Continental buyers woke up to demand their share and the trade became brisk.

The impetus has not been lost. The strike on this side not only made a market on this side but rescued the miner on the other side from a winter of dullness

Excessive Taxation of Coal Lands

ANTHRACITE dealers and consumers, to say nothing of mine operators, would do well to study the evolution of a movement for the excessive taxation of coal lands, reported elsewhere in this issue. There is no desire to alarm, but there are things worse than being an alarmist—for example, being so optimist as cocksure that the most patent signs of the times are ignored or explained away.

The plain facts are that the anthracite industry in the lower field, where nearly all the reserves lie, is being subjected to the raids of taxation harbor whose program, if carried out, and whose underlying philosophy, if generally adopted, will speedily put the hard-coal business on the rocks. The present assault is, in many ways, the most serious of all those directed at the anthracite interests in the unremitting warfare of the last twenty years.

To raise a property for taxation at ten or twelve times what was paid for it or for what it will bring in the open market is nothing short of a levy on capital. It might be heard without surprise as a report from Russia, but as a report from supposedly conservative Pennsylvania it comes as a shock which should serve as a warning. A precedent which is made in the case of anthracite lands can be applied to other real estate, if not indeed to all other property.

Consumers of anthracite in markets like New York and New England justly aroused by the Pennsylvania State tax on anthracite tonnage, should by no means ignore the implications in the Schuylkill County situation. There a community of perhaps 250,000 which has now collected 65c. from coal-land owners on every dollar raised for general county purposes this year calmly proposes to increase the revenue 50 per cent and to collect 85c. from coal lands and only 11c. from the general community. The Schuylkill County proposals involve a much greater amount per ton than does the Williams tonnage tax of 1921, against which public officers in anthracite-consuming states entered a protest.

Consider the cumulative effects of Pennsylvania public policy with respect to the anthracite industry, the only American industry peculiar to that state. As long ago as 1916 Governor Brumbaugh's commission reported that new legislation and continuous investigation were among the causes for increasing coal prices. Yet the Pennsylvania Legislature has not only put a tonnage tax on anthracite—the only Pennsylvania product so treated—but it has burdened hard coal with hampering legislation like the Kohler act and the Fowler act, purporting to prevent mine caves, and raising millions, by another tonnage tax, to make good cave damage. Frankly discriminatory legislation of this character has heartened all those like the commissioners of Schuylkill and Northumberland counties to put all the traffic will bear on the backs of the coal companies in the shape of taxes.

One producing company in the upper region gives a rough estimate that its total tax bill—federal, state and local—amounts to about 80c. per ton of production. One producing company in Northumberland County last year paid, as county and municipal taxes alone, an amount equivalent to at least 25c. per ton. The new idea in taxation, if carried out, would double that figure this year.

These things are bad enough, but there is an even more dangerous idea buried in this systematic bleeding of anthracite owners. It is the implied, and even expressed, determination to tax in the present, potential wealth which should be, and is being, conserved for the future. If adopted, it means farewell to the sound policy of conserving natural resources, adopted by the federal government less than twenty years ago.

Anthracite is a stabilized industry. In normal times a year's production, working at approximately full time, merely meets the year's demand. There is normally no shortage in supply and no carry-over to speak of. If the hope of the shortsighted, with respect to excessive taxation, is carried out, and lands now held as reserves are forced into premature operation, the result will be too many mines, too many men employed, broken time, wildly fluctuating prices and alternate dearth and plethora of supply. In short, the tendency in this taxation scheme, whether deliberately intended or not, will be to bring about in the hard-coal industry the exact condition of overdevelopment which is considered one of the main faults of the bituminous industry.

When the President's investigating commission gets around to anthracite it might with profit delve into this matter of taxation as exemplified in Schuylkill and other hard-coal counties.

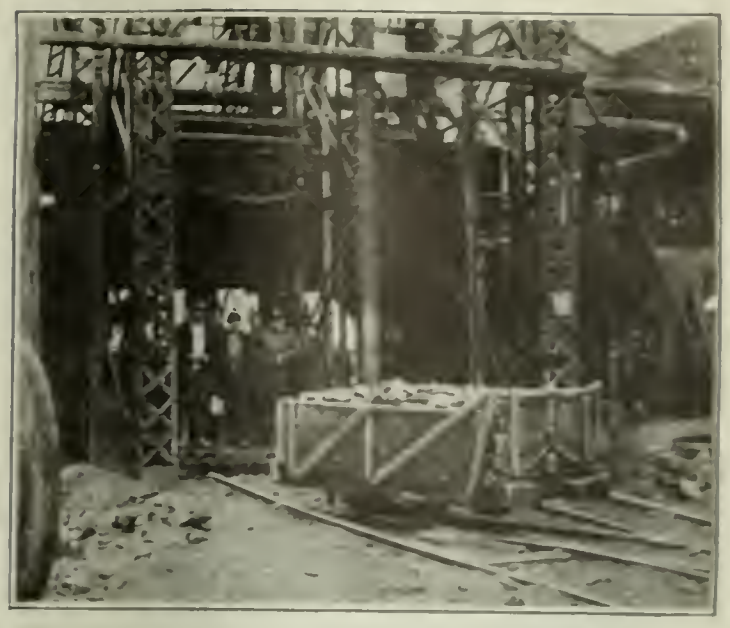
No Assigned-Car Decision

NO IMPORTANT significance is attached to the action of the Supreme Court in the Corona coal case. Acting on the precedent of the Lambert Run case, the court affirmed the decision of the District Court of northern Alabama in dismissing the suit of the Corona Coal Co. against the Southern Railway. No action was taken by the Supreme Court which in any way passes on the merits of the question involved in the practice of assigning cars. The court's action involved only the matter of jurisdiction. An effort had been made to bring the Corona case to the Supreme Court in such form that the country's highest tribunal could deal with the merits of the question, but the case reached the Supreme Court with exactly the same points involved, and the court in its ruling simply applied its action taken in the Lambert Run case.

The case arose during the car shortage of 1920 following the Interstate Commerce Commission's order modifying Rule 8 to define private cars and cars for railroad coal as assigned cars and all others as unassigned cars. The Corona company filed suit in the State Circuit Court at Birmingham, alleging discrimination against it in not being given a pro rata of assigned cars under the rating system after the company had offered to sell coal to railroads at a competitive figure. A temporary injunction was issued by the state court. The railroad company obtained a transfer to the United States District Court. This court dissolved the injunction and dismissed the suit on the ground that relief should have been sought from the Interstate Commerce Commission; that the attack was against the assigned-car rule and not against its application, it not having been alleged that the railroad delivered assigned cars contrary to the rule or that the order was unequally applied. The District Court held in effect that the railroad had not discriminated because it had delivered assigned cars according to instructions and had distributed unassigned cars among the mines in proportion to their ratings, although the supply was insufficient to meet fully the ratings.

How Rearrangement of Track Raised the Tonnage Of an Anthracite Colliery

By Dever C. Ashmead*
Kingston, Pa.



After Track Revision and Other Provisions Legitts Creek Coal Co. Dispenses with Five Men and One Mule and Quadruples Tonnage—Savings in a Year's Running Pays for All Reconstruction

DOES your track hold down your tonnage? Are you wasting effort in trying to hold up your output under unfavorable circumstances where a slight revision of the trackage as to line, grade and position of switches would not only make it unnecessary in handling trips to have close supervision and a nice co-operation between the men by whom the cars were being handled but would afford an increase in tonnage in a manner almost automatic? Wherever delays are occurring the subject is one worthy of consideration. An ounce of planning of a new track layout may save a full pound of effort in handling a badly adjusted track and give better service into the bargain.

The neck of a bottle determines the quantity of liquid that can be poured from it, or rather it determines the rate of discharge. The shaft or drift mouth, whichever it may be, together with the track arrangement at the bottom or the top of the shaft, constitutes the real neck of almost any mine.

Obstructions or ill-conceived track arrangements may limit the output of a colliery beyond hope of betterment, for no more coal can be prepared and shipped than can be delivered to the outside or to the breaker. A mine may be able to produce and load into mine cars 2,000 tons a day, but if the track arrangements are such that only 500 tons a day can be sent to the surface then the capacity of the mine is limited to that quantity.

About three years ago the Legitts Creek Coal Co. purchased the mine at Scranton, Pa., that it is now operating. At the time of purchase the output was about 200 mine cars of coal and forty of rock. The mine was awaiting the happy thought as to surface tracks that would bring its tonnage to a profitable figure, for a small tonnage means a heavy cost. Previous foremen had labored in vain against the insuperable difficulties of a faulty layout.

The coal was brought up through three openings—two shafts and one slope. One of the shafts is right at the foot of the dragline conveyor which leads to the breaker. The other is about 200 ft. distant. The slope mouth was about 400 ft. from the second shaft and its top was about 50 ft. lower than the elevation of the top of the shaft. The coal from this slope was taken on the surface to a short tunnel and through this tunnel to the shaft, where it was hoisted 50 ft. to the surface.

From the shaft to the foot of the dragline conveyor that feeds the breaker is about 200 ft., as has already been stated. About 100 ft. from the shaft the rock track left the main roadway. The grade on this track was insufficient to cause the rock cars to clear the coal cars, and the rock cars collected on the track between the junction point and the top of the shaft. The map shows at this point only the new tracks and the old rock switch consequently is not visible, but it was located at the point marked *A* on the plan. This layout naturally caused congestion and reduced the quantity of coal that could be hoisted, as no more coal could be handled on the surface than could be passed over the track to the dump. At No. 2 shaft no rock at all could be hoisted, as there was no connection between this shaft and the rock dump. Therefore all this rock had either to be hauled underground to No. 3 shaft or unloaded by hand underground, which latter was a slow, expensive operation and one that caused congestion of the mine tracks.

At No. 2 shaft the distance from the shaft to the

*Anthracite Field Editor, *Coal Age*.



ARRANGEMENT OF ROCK TRACKS FROM SHAFTS

A, loaded rock track from No. 2 shaft; *B*, empty rock-car track to No. 3 shaft; *C*, track to ash pocket; *D*, empty rock-car track to No. 2 shaft; *E*, loaded rock-car track from No. 3 shaft



PLAN OF TRACKS AT LAFOLLETTE COAL MINE

dump is about 15 ft. and the cars were run off the cage, dumped and immediately hauled back by a small hoist.

The ashes from the boiler plant are run out on the rock dump and dumped at that point. These cars also tended to cause congestion at the foot of the plane on the rock dump and therefore delayed the handling of the rock cars.

With conditions such as these the output of the colliery could not be greatly increased by any degree of supervision, co-operation or dexterity. Some track changes were absolutely necessary. One of the great difficulties was the lack of space around the tops of the shafts. The locations of these shafts, and those of the bottom of the plane to the rock dump and the coal dump were alike fixed almost beyond revision. This meant that the rails of the tracks could not be moved whatever other changes might be made.

The handling of the rock was the most serious trouble encountered, but this difficulty was corrected with comparative ease. The rock track which connected with the loaded coal-car track at *A* was changed to connect at *B*, and this gave about 100 ft. more rock track. The grade was increased so that the rock cars would run away from the shaft by gravity. This greatly relieved the congestion at this point.

At No. 1 shaft a switchback was provided so that rock cars could be hoisted at this shaft (with the end gate facing the breaker as usual), run through the switchback and then to the foot of the rock plane with the end gate now facing the rock dump and away from the breaker. The rock cars from this shaft are removed from the cage in the opposite direction from the coal cars and now handle themselves by gravity. A new track was laid from the rock bank to No. 2 shaft for the return of the empty mine cars, and the way it connects with the cage track likewise is shown in the accompanying plan.

Another cause of congestion was the handling of ashes from the boiler house. In order to meet the difficulty a dragline conveyor was built to remove the ashes from the ash pit and convey them to an ash pocket which will hold as much as will accumulate in two days. These ashes can now be handled when there is not much rock, and their handling does not interfere in any way with the production of coal. This ash arrangement has another advantage in that it is not necessary now to handle ashes during Sundays and nights, for the ashes can be stored in the ash pocket, and thus it is not necessary to pay men to haul ashes on those occasions.

Another important change was in the empty track from the coal dump to No. 3 shaft. Here the car haul was raised 3 ft., and the gradient from the top of the car haul to the shaft thus increased, so that the cars move more freely. The curves were taken out, and the services of a driver and mule were eliminated.

The method of handling the cars from the slope to the surface also was changed. Instead of bringing them all the way to the surface through the slope they came only to the Four-Foot bed. They are then taken underground to No. 3 shaft and then hauled to the surface by that shaft. This has saved a surface haul such as interferes with operation in the winter. It also saves a mule and a driver on the surface.

The method of handling supplies to the mine also was changed. Instead of sending them into the tunnel that has been mentioned a new track was laid to connect with the empty car track to No. 2 shaft, the supplies being hauled to the shaft level by a small hoist.

The changes that have been outlined were, on the whole, inexpensive, but they saved five men and one mule. Therefore the saving in labor alone in a year's time would about pay for the cost of the changes, but not only is money being saved but the obstruction to the neck of the bottle was removed, and the output of the mine could be increased.

After three years of operation the output of the mine has risen from 200 cars of coal and forty cars of rock to 800 cars of coal and 100 cars of rock.

Improved Mine Car Decreases Costs

By L. C. Crewe*

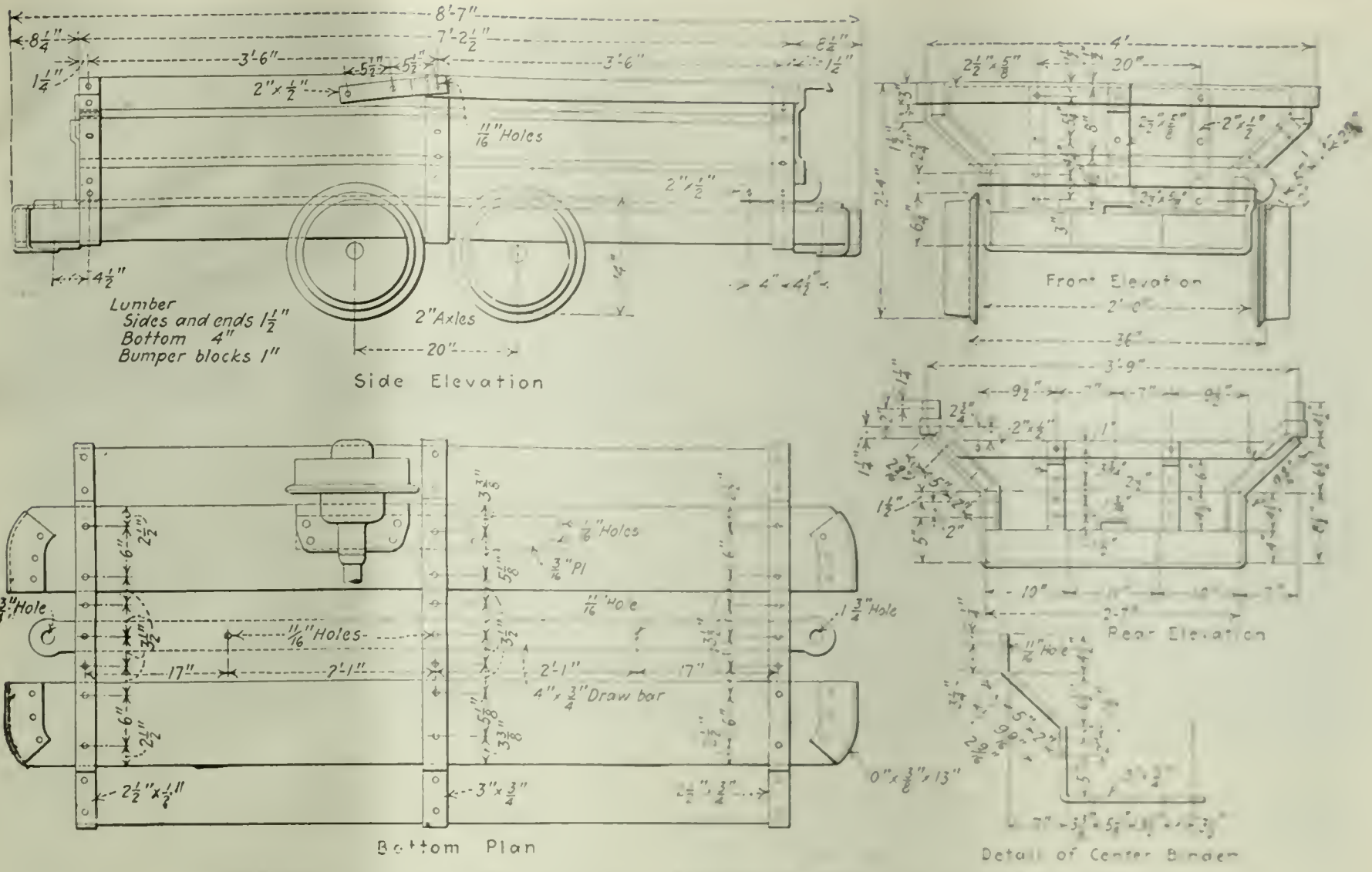
EVER since mining began mine cars have been mine cars, yet each succeeding year witnesses improvement in this type of mine equipment. The interest manifested in underground transportation clearly denotes the importance of this phase of coal production.

In the accompanying illustrations Fig. 1 shows the car used until recently by the La Follette Coal & Iron Co. The Rex coal bed worked by this firm averages 42 in. in thickness and, as may be seen, this car was 28 in. high above the rail and held an average of 1,840 lb. Its weight was 1,640 lb.

Fig. 2 shows the new car designed by this company's engineers and now used in place of that shown in Fig. 1. In gage, wheelbase and length over bumpers the new car is identical with the old; its over-all height, however, is 3 in. less and its width 8 in. greater. The new car weighs 1,820 lb. and its capacity is 2,540 lb.

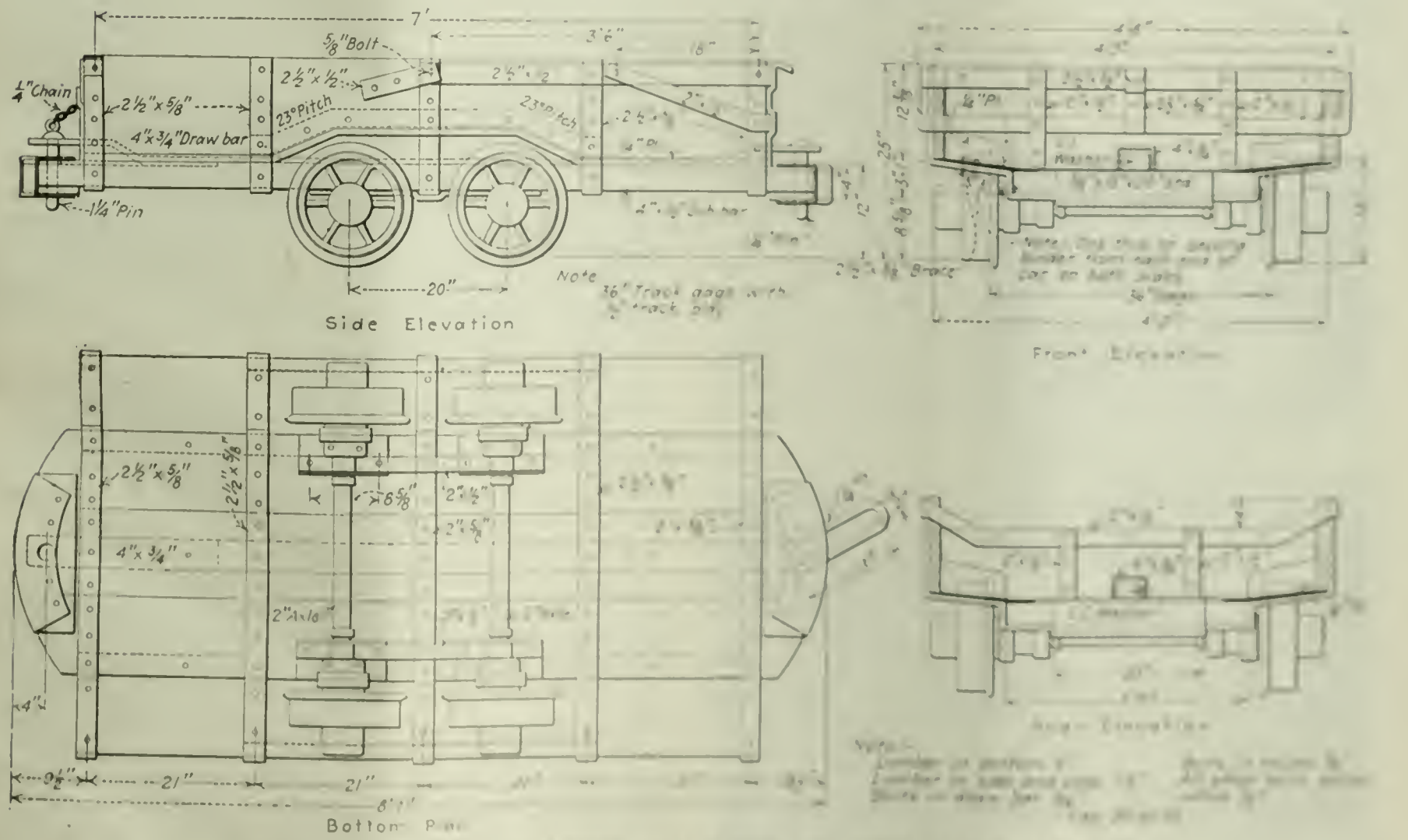
Notwithstanding the increased size and weight of the

*Consulting Engineer, La Follette Coal & Iron Co.



FORMER CAR OF LA FOLLETTE COAL & IRON CO. FOR USE IN A 12-IN. [illegible]

The car is only 28 in. high and it has the flare which for many years satisfied those who departed from the square box type of car which preceded it. The inside width on top is only about 3 ft. 5 in. and at the bottom only 2 ft. 3 in. These facts account for its meager capacity.



PRESENT CAR OF LA FOLLETTE COAL & IRON CO. WITH LARGE CAPACITY

In this car the wheels are placed so that [illegible] over the wheels so as to admit of this arrangement. [illegible] and about the same as the former, permitting the [illegible] wheel protector is carried [illegible]

new car the miners report that when loaded it can be pushed over wooden rails with greater ease than could the older one on steel rails. Of course any improvement that gleans the miner leads toward cost reduction. Furthermore a locomotive can haul as many of the new cars as it could of the old, about thirty constituting a trip. The only additional expense is the slightly increased actual power consumption. It is estimated that haulage costs have been reduced about 25 per cent by simply changing the design of car. The first cost of the new car is practically the same as that of the old design, so that no greater investment is required.

Coal from Behring and Chickaloon Fields, Alaska, Will Be Used on Battleship

RECENTLY the naval collier Jason started en route from Alaska with 5,000 tons of washed coal from the Chickaloon mine and 600 tons from the mines of the Behring River Coal Co. This coal is to be given a test on a battleship. John Hazard, one of the fuel engineers attached to the U. S. Bureau of Mines, will assist in the tabulation of the results.

An application of gold-mine practice has been resorted to in washing the Behring River coal. Gold sluices have been put in for this purpose and are giving splendid results. They are built in parallel, so that while one is being cleaned the other is in service. The plan is so effective that even the fine coal, which settles in the bins, shows no more than 4 per cent ash. Much of the coal thus far mined has run only 2 per cent in ash. The coal is sacked at the foot of the sluice and then transferred by truck to a canoe landing 4½ miles away.

The truck runs over a type of plank road that has been used so successfully that the plan is being adopted elsewhere in Alaska and may play no inconspicuous part in the expansion of motor haulage in the territory. The road is laid directly on the tundra. Heavy slabs are laid down for crossties. In lieu of rails a 3-in. plank 12 in. wide is spiked to the crossties on each side to form the track for the trucks. Guide rails have been found unnecessary and even in wet, slippery weather no difficulty has been experienced in keeping the trucks on this type of roadway. This particular road has been in service for three seasons and it has been found that the cost of maintenance is insignificant. The original cost was $6,000 per mile. A plank road in the Katalla oil fields nearby was built twenty years ago and still is in service.





TRUCKING BEHRING COAL TO CANOE LANDING

Slabs are laid on the tundra and a runway is made of 3 x 12-in. planks laid on their flats and spiked to the slabs. On these planks, unprotected by a guard rail, the truck runs 1½ miles.

Some Hoisting!

SEVERAL months ago *Coal Age* requested information concerning hoisting and production records. Many replies were received and published and much interest was manifested in the results. One great difficulty in considering such data is that it is seldom that the lengths of cage travel in any two cases are the same or even closely similar. This renders a basis of equitable comparison difficult.

Charles F. Sherman, general superintendent of the Groveland Coal Mining Co., Peoria, Ill., writes that on Oct. 16 at Groveland No. 2 mine 274 hoists were made in 60 minutes. The total length of hoist or cage travel at this operation is 202 ft. and the cars hold a net weight of 3,000 lb. of coal.

With cars holding only 1½ tons of coal each, Groveland No. 2 can hardly expect to compete in output with some other operations regardless of the excellence of its hoist or the skill of the engineers that drive it. So far as *Coal Age* is aware, however, the above figure stands as a record so far as actual number of hoists performed in one hour is concerned. If any mine can beat or has already bettered this number, we would be glad indeed to hear about it.

Inspector Exonerates Lake Creek Miners

IN A RECENT letter W. L. Morgan, State Mine Inspector of the twelfth inspection district of Illinois, writes saying that the unofficial report on the explosion at the Lake Creek mine of the Consolidated Coal Co., near Johnston City on Friday, Sept. 29, in which five were killed and two injured was wrongly ascribed to two miners who were alleged to have been smoking pipes. Mr. Morgan has reported to the Director of the Department of Mines and Minerals that the explosion was due to the surveyors igniting a body of gas in entries that had not been working for two or three years. These entries were in about 300 ft. from the main entries. Owing to a chain of circumstances the ventilation had been short-circuited in these headings. The explosion that ensued ignited a cartridge of powder and then a keg of powder, part full. The explosion occurred just as one miner was loading his car and the other sitting on a pile of coal. The miners were not in any way to blame.



The Mine Blacksmith's Tools and How He Uses Them

Mounting the Anvil—Three Cutting Tools—Flatters and Set Hammers—Fullers and Swages—Punches and Tongs—What They Are Made Of—How They Are Tempered and How Kept in Condition

By Gustav A. Radebaugh*
Urbana, Ill.

EVERY official around the mines should know something about blacksmithing, for much of the successful operation of a mine depends on the prompt and efficient performance of this department.

In Fig. 1 is shown the various parts of the common anvil. The best anvils are made with a wrought-iron or soft-steel body and a face of tool steel about ¾ in.

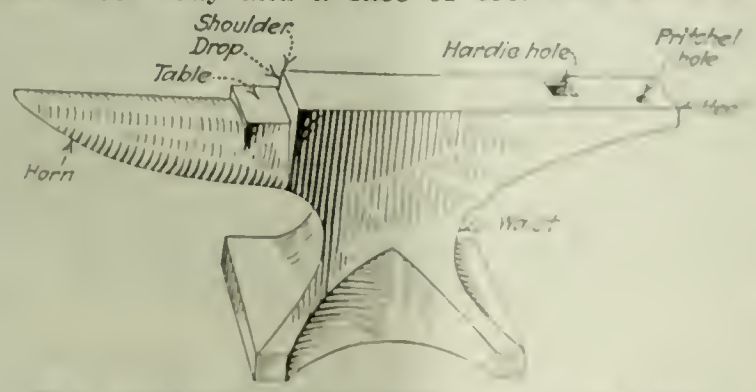


FIG. 1—PARTS COMPRISING A COMMON ANVIL

The pritchel, or prickle, hole is used when making holes in iron or steel. The stock is held on the flat of the anvil and the punch driven till it is about two-thirds through. Then the stock is reversed and held over the pritchel hole and the punch driven through from the face thus made uppermost.

thick. The horn and table are not so faced, however, and they are said consequently to be "dead." They do not wear nearly as well as they would if they were faced with tool steel. The size of the anvil is not rated by its dimensions, as being so many inches long or wide, but by its weight, and this weight is marked on the face of the anvil in three numbers. The first records the weight in even hundredweights, the second the excess in weight in quarter hundredweights over the nearest lower even figure and last the excessive weight in pounds over the nearest lower even figure for quarter hundredweights. The usual weight of an anvil for shop use is between 100 and 150 lb. The pritchel and hardie holes are used to hold tools in place and also serve for the making of bends.

The anvil is mounted on a solid wooden block, preferably of oak, hedge* or ash. It should be cut square

*Osage orange.

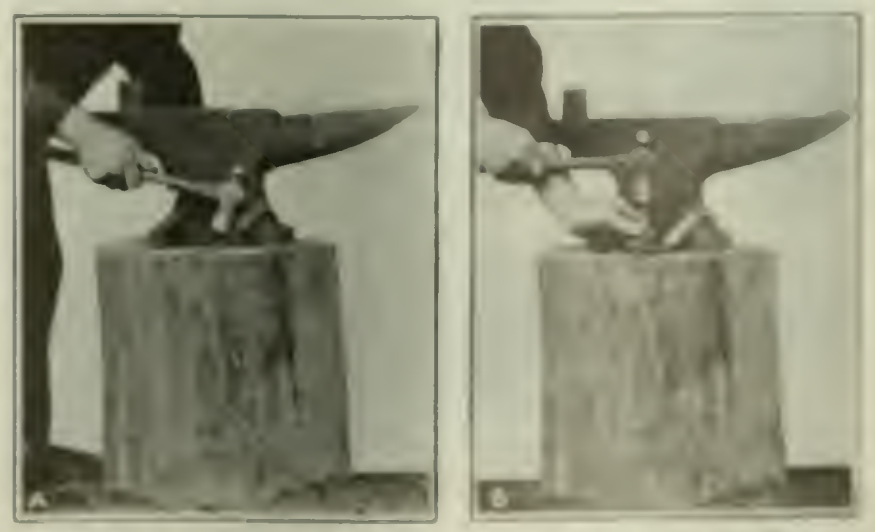


FIG. 2—ATTACHING THE ANVIL TO THE WOOD BLOCK

Effective as is the wood block, nothing better has been found. The spring that the wood gives is a desirable quality, as it imparts a certain liveliness to the anvil.

*Mechanical engineering department, University of Illinois.

NOTE—The headpiece shows a blacksmith shop at the Delaware Colliery of the Hudson Coal Co.—a regular power hammer and a makeshift, two forges, a grindstone and a water backet. Published by courtesy of Ingersoll-Rand Co.



FIG. 3—HOT CHISE



FIG. 4—COLD CHISEL

The hot chisel should not be used on cold work for it does not retain its temper and the edge will bend over. The cold chisel is shorter and thicker than the hot chisel on its cutting end. As a rule it is tempered harder also.



FIG. 6—FLATTER

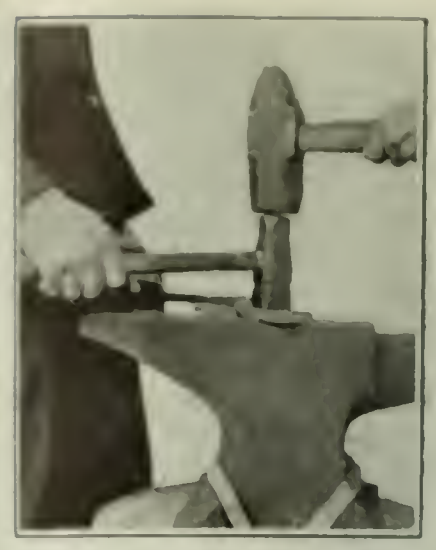


FIG. 7—SET HAMMER

The flatter and set hammer permit the making of bends without leaving hammer marks on the stock thus forged. The material should be worked at a dull red heat and the tool dipped in water before use.

on each end and should be about 20 in. long. The anvil should be at such a height that a man standing erect and doubling the knuckles of his hand could just touch the face. It should be set 5 ft. from the center of the forge and directly in front of the fire and the floor should be well leveled before the block is placed in position. A piece of ¾ x 1½-in. soft steel is secured and bent around the waist of the anvil as shown in the illustration. After this steel has been shaped to the outline of the anvil a ½-in. hole is drilled in each end to receive the holding-down spike.

The anvil should be placed in the center of the block, and the strap should be spiked to the block. Though one of the simplest methods for securing the anvil it is one of the best. A wooden block is the best mounting for an anvil, as it gives the necessary cushion for the solid mass of steel. It helps to liven up the tool and makes it much easier to work on. The anvil should be placed so that the horn is to the left of the operator.

Three cutting tools are commonly used about the forge and anvil. The "hot chisel" is used for cutting hot metal. As shown in the view, the tool is held by the smith and the helper strikes the tool with the sledge. When cutting hot metal the chisel should be dipped in water after receiving several blows from the sledge. This is done to prevent the cutting edge of the tool from becoming heated to such a degree that all the temper will be drawn from it and the chisel become so soft that the edge will bend over. Under ordinary treatment the hot chisel does not hold its temper and this is why it should never be used on cold work.

For Heavy Cutting Dip Cold Chisel in Oil

The cold chisel shown in Fig. 4 is used in the same manner as the hot chisel, but the cutting edge is of a thicker cross-section. It is designed so that heavy blows from the sledge can be delivered without injury to the cutting edge. Compare the two chisels as shown in Figs. 4 and 5. It will be noted how much shorter and thicker the cold chisel is on the cutting end. In using this tool in cutting heavy sections the edge should be dipped in oil, which will assist in keeping the edges keen.

The hardie, Fig. 5 *A* and *B*, is set in the anvil by inserting its stem in the square hardie hole. It should fit the hole loosely enough so that it will not stick or wedge tight. It is used for light cutting and for trimming hot or cold work. The hardie for hot work is drawn out to a thin edge, but that which is used for cold work is much thicker. The edges are designed somewhat like those of hot and cold chisels, respectively.

In illustration *A* is shown how a piece of stock is placed on the hardie to be struck by the hammer. When cutting stock a deep cut should be made around the material. The stock is then placed on the edge of the anvil as shown in illustration *B*. A few blows with the hammer will then break the stock. It will be understood that the material in this operation is worked cold.





FIG. 5—HARDIE SET IN ANVIL CUTS LIGHT IRON

The view at the bottom of cuts must not vary. The marginal lines show that a hammer and a sledge is used. Cuts are made all around the stock, which is finally broken off in the manner shown at *B*.

The hardie, it will be noted, is a one-man tool, but though it has this advantage over a hot or cold chisel it has the disadvantage that it cannot be used for large work. All three cutting tools are forged from 0.7 to 0.8 per cent carbon steel. The temper should be drawn to a light straw color. When the cutting edges become worn or blunted they can be ground or redressed and tempered. The spoke of an old buggy wheel makes excellent material for the handles of all forging tools that are to be made of wood.

In forging work many tools are needed if a job is to be properly finished. The flatter and set hammer (see Figs. 6 and 7) are used for practically the same purposes—smoothing and flattening work. By using these tools when the material to be forged is at a dull red heat and dipping the tool in water before it is applied to the work, all the rough scale can be removed from the surface, thus leaving a smooth, finished appearance. When making a stock-gate hinge a right-angled bend is made, as shown in Fig. 6. It is good practice in this instance to use the flatter instead of a hand hammer. A more even bend can be made and the surface of the stock will not be made uneven by hammer marks. Flatters for general work have a face from 2 to 3 in. square. The edges of the face are slightly rounded, and because of that provision the tool will leave no marks on the work.

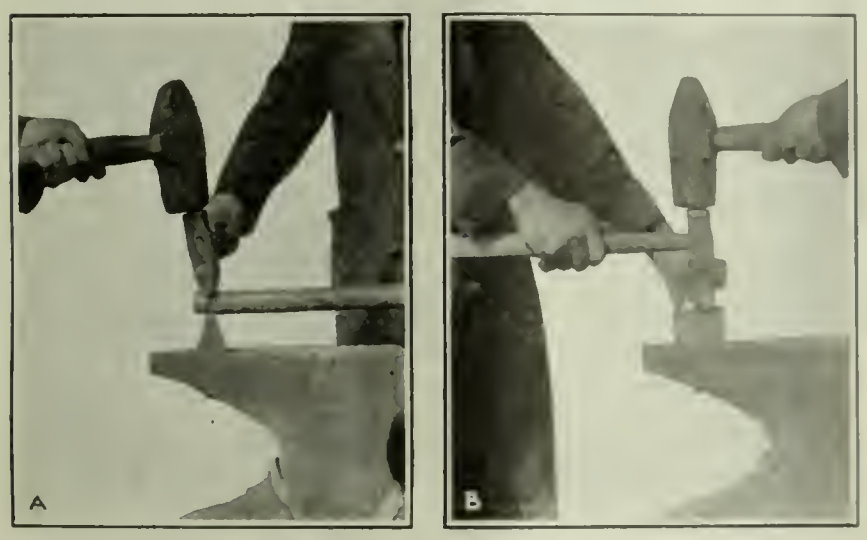


FIG. 8—TOOLS USED FOR MAKING ROUNDED GROOVES

A shows the top and bottom fuller, the latter fitting into the hardie hole. *B* shows another view of these tools. The top fuller is sometimes used alone for making scarfs for welds, for forming grooves, smoothing fillets and forming shoulders on only one side of the forging.

The set hammer is shown in Fig. 7 making an offset on a strap iron. When an offset of the thickness of the stock is desired a piece of the latter is placed on the anvil, and the strap iron is laid over this piece as shown. The work thus offset is then forged into shape by the aid of the set hammer and sledge. The set hammer is useful also when squaring up right-angled bends. These hammers are made with faces from 2 to 2½ in. square.

The top and bottom fullers and top and bottom swages (Figs. 8 and 9) are made in pairs. The bottom parts of these tools are designed to fit in the hardie hole and the tops are provided with handles. As shown in the view, the forging blow is delivered by a sledge, the tools being held in a stationary position. Fullers and swages are both sized by the curved edges. A fuller with a curved edge of ½-in. radius would be termed a 1-in. fuller, as the curved edge would be the same shape as one-half of a 1-in. bar.

The fuller is made in several sizes. The top and bottom fullers are used for forming depressions or shoulders on opposite sides of materials, as shown in Fig. 8. They will also be found useful when drawing out metal between shoulders or projections. The top fuller is sometimes used singly in making scarfs for welds, forming grooves, smoothing fillets or forming shoulders on only one side of the forging.



FIG. 9—SWAGE



FIG. 10—PUNCH

The swage rounds up work or forges round shapes to a smaller size of correct semicircular cross-section. After a rod is welded the swages are used to smooth the weld. Punches are made of octagonal or round steel, tapered toward the working end but slightly flared or relieved at the point.

The swage (see Fig. 9) is used for rounding up work or forging round shapes to a smaller size. When forging stock to a circular section the swages are conveniently used for smoothing up after the stock has been drawn to about the correct size. After welding a rod the swages are used to smooth up the weld.

When Tool Mushrooms It Should Be Redressed

If an extra-smooth job is desired the top swage can be dipped in water occasionally. The operation is known as "swaging." These tools are not tempered and the best grades of them are made from drop forgings out of 0.8 to 0.9 per cent carbon steel. After these tools have been in severe service the head of the tool mushrooms, and chips of steel may fly when the tool receives a blow from the sledge. This can be avoided by redressing the head of the tool. To redress these tools, remove the handles and work the steel at a cherry-red heat. After the operation is complete, permit the head of the tool to cool slowly by placing it in ashes.

The small repair shop uses two methods of punching holes in hot metals—the hand punch and one of a heavier type, as shown in. Fig. 10. This latter punch is provided with a handle and driven by a sledge. The hand punch is made from octagonal or round tool steel and is about 8 in. long. The end is forged to a taper



FIG. 11—HOLLOW-BIT TONGS ARE SHAPED TO STOCK

This tool is heated before use and not cooled. When bright red the jaws are closed upon the piece to be held and are forged so that they will hold it tight. In the illustration the workman is not forging the stock but the tongs by which the material to be forged is being held



FIG. 11—HOLDING SQUARE STOCK IN TONGS

Stock should be held end of a few points but throughout the entire length of the jaws of the tongs. Note how carefully the tongs must be shaped for this. A link slipped over the handles will keep a grip on the stock, and all the blacksmith will have to do will be to press the check to work the tongues.

and is made of the same shape but a little smaller than the hole to be punched.

When punching, as shown in Fig. 10, the hole is started by laying the work flat on the anvil and driving the punch about two-thirds through it. The work is then turned over and the punching is continued from the other side. The hole can be located easily by the bulge in the metal caused by the punching already accomplished. When the punch is driven through, the work is held directly over the round hole, as illustrated in Fig. 10. If the hole is punched in this manner it is left clean and to size.

When punching thick stock, after the punch is started the tool is removed and the hole filled with powdered



FIG. 12—PREPARING BOLT FOR WELDING TO NUT

The tongs are heated and hammered to fit snugly on the stock for the full length of the jaws. After the bolt is heated the end is upset on the anvil face to thicken it and the nut and rod are welded on.

coal. This prevents the punch from welding. Tools of this kind are tempered and they should never be left in the heated work any length of time, as the end will become soft and will enlarge in the hole, which makes it nearly impossible to withdraw it. This enlargement is called "upsetting." The size of these tools is determined by the size of the hole which the punch will make.

When an irregular shape, such as is shown in Fig. 11, is to be forged, it is necessary to take a pair of hollow-bit tongs and heat the jaws to a bright red. The jaws of the tongs are then forged to fit the piece of stock which is to be held. Sometimes the rivet in the tongs tightens up in this operation. This may be relieved by first cooling the tongs and then delivering several blows with the head of the hammer on the head of the rivet, which is held over the hardie hole on the anvil.

The best method of holding square stock is shown in Fig. 12. The tongs have been heated and hammered to fit the stock. In holding stock it is important that the tong jaw fit throughout its entire length. This type of tong is used to hold round stock as well as square. In holding the larger sizes of stock a link can be slipped over the handles. This will relieve the workman from the work of gripping the tongs tightly and allow him more freedom in handling the material.

When welding a head on the end of a rod to make a bolt, the stock is held in the hollow-bit tong, as in Fig. 13. The tong jaws should fit down on the stock snugly so as to insure easy handling of the piece while it is being forged. To make a special bolt, first cut the stock to length, then heat and round up the end of



FIG. 14—SPECIAL TONGS MUST BE USED FOR LINKS

These tongs are carefully fitted to the link that is to be welded. They are not used to hold the link in the fire because they would get too hot. When the broken link is at the right heat it is seized by the tongs and rapidly hammered into a continuous ring.

the stock, fit on the blank nut and then weld the nut and rod together. After this operation is complete, cut the thread and the bolt is complete. Using the proper tongs for a welding job of this kind makes the operation much easier and insures a better weld.

The link tong, shown in Fig. 14, is an essential when welding chain links. It is made in such manner that its jaws can be heated and fitted to the link that is to be welded, for only a well fitting tong will hold the link securely. When heating the link to a welding heat, hold it in the fire with a small rod until that heat is reached. The link tongs should be used only to remove the piece from the fire when the weld is to be made and



FIG. 15—FORGING THE HANDLES FOR READY HOLDING

Sometimes when the tong jaws are not properly offset the handles are so far apart near the ends that no human hand could grasp them. In that event the handles must be bent so as to correct that failing. The illustration shows this being done.

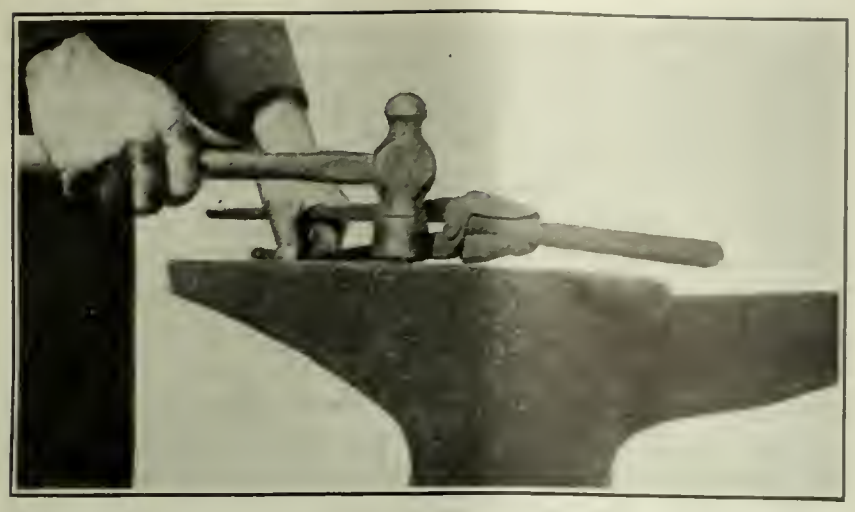


FIG. 16. BOX TONGS FOR FLAT OR ROUND MATERIAL
The tongs have a wide mouth which makes it possible for them to grasp a large piece of metal without causing the handles to diverge too widely.

during the making of the weld, for if they are used during the entire heating operation they will be heated to such a degree that they will not hold the link. This, however, applies only to smaller sizes of tongs.

In bending a short piece of steel to make a wagon-bed brace the stock is held while being heated and forged with the flat-jawed tongs (see Fig. 15). These tongs are made in various sizes to hold different thicknesses of stock. In using tongs the handles should be far enough apart only to permit the smith to grip the handles without unnecessary reach. When the tong jaws are not sufficiently offsetted and so are too close together for the stock to be securely held the handles are so far apart that it is impossible to hold them with one hand. This can be adjusted by placing the tong handles on the horn of the anvil as close to the rivet as is permissible and bending the handles to the center until the proper distance is obtained.

When forging a short piece of stock it should be securely held if the best results are to be obtained. The box tongs shown in Fig. 16 are found useful in many repair jobs, as they are designed to hold square or round stock so that it will not slip when being forged. It is important always that tongs should have and maintain a firm hold on the material forged.

Suggests Standard Shatter Test for Coke

COMPARISON between the strengths of cokes and the determination of the strength a coke must have to serve for certain purposes make it necessary to standardize the shatter test. To this the Committee D-5, on Coal and Coke, of the American Society for Testing Materials, of which W. A. Selvig, of the U. S. Bureau of Mines, is secretary, has addressed itself.

The committee suggests that the box for holding the coke in this test shall be 18 in. wide, 28 in. long, approximately 15 in. deep and shall hold about 50 lb. of coke. It shall be supported above a rigidly mounted cast-iron or steel plate not less than ½ in. in thickness, 38 in. wide and 48 in. long. The inside of the bottom of the box shall be 6 ft. above the plate.

The bottom of the box shall consist of two doors hinged lengthwise and latched so that they will swing open freely and not impede the fall of the coke. Boards about 8 in. in height should be placed around the plate so that no coke will be lost. To prevent breaking the material when filling the box, the latter shall be constructed so that it can be lowered to a convenient level, which is best done by means of a pulley and counterweight. For determining breakage of coke, square-mesh screens with the following openings shall be used: 2 in., 1½ in., 1 in. and ½ in. Circular screens 2 ft. in diameter are satisfactory for this purpose.

For byproduct coke when determining its freedom from breakage in handling, about 75 lb. of representative pieces of coke, none of which would pass in any position through a 2-in. square-mesh screen, is to be selected from the coke wharf for each test. This is best accomplished by dividing the coke on the wharf into approximately equal areas and selecting an equal number of pieces from each area. Each piece selected shall be approximately equal in length to one-half the width of the coke ovens and should show a "cauliflower" end produced at the walls of the ovens, and an "inner" end produced at the center of the ovens.

For beehive coke, when determining freedom from breakage in handling, about 75 lb. of representative pieces of coke shall be selected for each test as the coke is drawn from the ovens. This is best done by selecting full-length pieces, or their equivalent, as the coke is being drawn from previously determined points in the oven, so that they include pieces from the front, sides, center and back. If the individual pieces as taken from the ovens are too large and bulky, the 75-lb. sample shall be collected by removing three small pieces from each large piece—one from the top, the middle, and the bottom. The sample finally collected should be composed of an equal number of pieces showing top, middle and bottom. None of the pieces comprising the sample shall in any position pass through the 2-in. square-mesh screen.

For byproduct and beehive coke, when determining their fitness for furnace or cupola use, the sample is best collected as the coke is delivered from the railroad cars into the bins. This may be accomplished by inserting a scoop of 10 to 15-lb. capacity in the coke stream at regular intervals during the period of unloading. The sample collected shall be large enough to give about 75 lb. of coke pieces, none of which would pass in any position through a 2-in. square-mesh screen.

As it is difficult to collect a representative sample from coke exposed in bins and cars, care should be taken to take pieces representing the entire exposed area, if sampling must be done in this manner. This is best accomplished by dividing the exposed surface to be sampled into approximately equal areas and selecting an equal number of pieces from each area. Approximately 75 lb. of representative pieces, none of which would in any position pass through a 2-in. square-mesh screen, shall be collected.

About 50 lb. of the sample shall be placed in the shatter-test box, the coke leveled, the box raised, and the coke dropped four times on the plate, the small material produced being returned each time to the box with the large coke. After the fourth drop the material shall be successively run through the screens described.

In screening, care should be taken to prevent breakage of the coke pieces. The screen shall be shaken gently until all of the pieces are in direct contact with the meshes. The coke remaining on each screen, and that which passes through, shall be weighed separately. If the sum of these weights shows a loss of more than 1 per cent the test shall be rejected and another made.

As the average probable error of a single shatter test is approximately 2 per cent it is advisable to make several tests and report the average result.

Gear Economics Effected by Use of New Tooth Shapes*

By R. E. Sawtelle†
Cincinnati, Ohio

For many years stress was laid almost exclusively on improvements in the quality of the steel used in locomotive gears, but in recent years more emphasis has been laid on tooth shape and on the possibility of constructing better gearing through appropriate design. Any teeth of correct profile will give satisfactory service when new, but we must concern ourselves mainly with the service that the teeth will afford when, in course of time, they have become partly worn.

Until recently practically all locomotive gears had the Brown & Sharpe 14½-deg. standard tooth, which operated smoothly, was of a full depth and therefore had more wearing surface than the stub teeth. Being comparatively straight sided, it showed less tendency to push gear and pinion apart. This 14½-deg. tooth is a general standard, easily interchangeable and almost universally used for industrial machinery. The chief objection to it is the fact that when pinions thus formed have a small number of teeth the teeth are undercut in the flank, making them thin and likely to break near their roots. Furthermore this fault, objectionable as it is in new teeth, tends to accentuate as such pinions wear.

The first improvement used in the railway field was the 20-deg. stub, a tooth which is not so deep and which, therefore, gives the teeth on the opposing gear less leverage on the base of the teeth it drives or by which it is driven. It has accordingly less tendency to break, its sides, moreover, are more slanting and it is provided with a broader base. A 20-deg. stub tooth, therefore, has great strength and, because of its lesser depth, the pinion is strengthened somewhat against bursting, particularly where the bore is large and the pinion small.

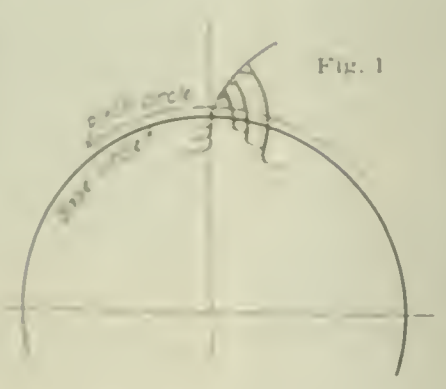
The next development was the long- and short-addendum tooth, a type of gearing that for years has been used extensively for railroad service in European countries, particularly Germany and Switzerland, and has been adopted in America for many years in bevel and automotive gear. Its application to the electric-locomotive field was delayed primarily because it lacked interchangeability with teeth cut to the old standards.

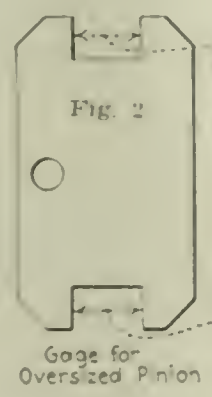
This type of tooth usually is made with a 20-deg. angle, which broadens the base and increases the strength. Furthermore, by shifting the addendum, the pinion tooth, usually the weaker member of the train, is considerably strengthened, and this is done without weakening the gear. By making the diameter of the pinion contain the quantity of metal between the root of the tooth and the bore is increased and thus it is strengthened at a point where it is often weak and likely to break. This type of tooth when cut full depth is rather thin at the top and as a result for this the tooth is sometimes stubbed. The stubbing process removes metal that would otherwise be worn away in service, hence it has a tendency to decrease the life of the pinion, but it makes a more pleasing appearance.

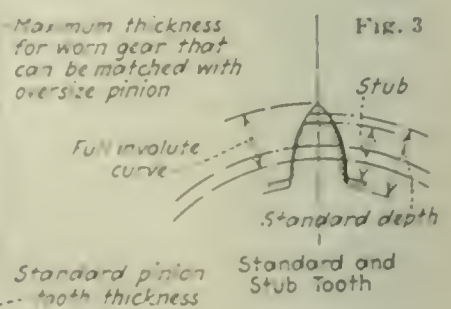
To understand the significance of the long- and short-addendum tooth, we will need to go slightly into theory. The involute curve is the base of practically all our modern gearing, as it represents the ideal curve of contact when two gears are in mesh. Fig. 1 shows three left-hand involutes generated from the same base. The section between the right- and the left-hand involute is a gear tooth, needing only to have the top trimmed off and the bottom shaped up to continue into adjacent teeth.

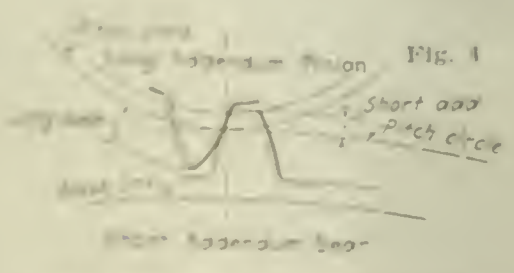
The farther apart the involutes, the coarser the pitch and the less teeth in a gear of any fixed diameter. The full involute, however, is too long for practical use, so a section is taken out of it for the individual gear tooth. If this section is close to the base circle, as at *A*, Fig. 6, we have practically the straight-sided tooth of very low pressure angle, which is used where there must be no thrust between gear and pinion. Coming up higher on the curve, as at *B*, we have the 14½-deg. pressure angle, heretofore standard. Higher up, as at *C*, we have the 20-deg. tooth, and to illustrate by an extreme case, as at *D*, we could build a gear with about a 30-deg. tooth and yet one which would work smoothly but with a heavy thrust and which would be of no value at all when considerably worn or used with bad bearings. High pressure angles therefore mean forming a tooth on the upper part of the involute curve, farther removed from the base circle. In a gear with many teeth slight changes in pressure angle are hardly measurable, but in a pinion with few teeth they are quite noticeable.

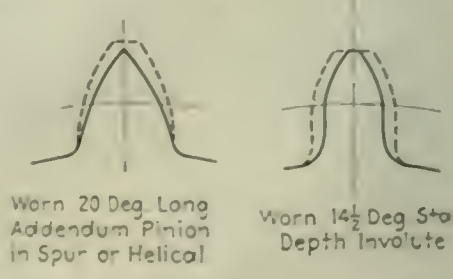
The dimension chosen as the standard depth of tooth is purely arbitrary. In Fig. 3 we have the full involute, which runs to a point at the top. We first decide the pressure angle we prefer to use, and this choice determines how high up we shall locate our pitch line on the involute curve. If we take a comparatively long section above and below this line, we have the full-depth standard tooth. If we take a lesser section above and below, we have the stub tooth. If we take a greater section above the pitch line than we take below the pitch line we have a long-addendum pinion, and when we build the











LOCATION OF PITCH CIRCLE RELATIVE TO STRENGTH AND WEAR

Fig. 1—Development of heavy and low pitches on same base circle. Fig. 2—Gage for oversized pinion. Fig. 3—Stub and standard teeth. Fig. 4—Long- and short-addendum teeth. Fig. 5—Long-addendum tooth when worn is still strong at the base

*Abstract of paper presented before Cincinnati Electric Railway Association.

†Assistant general manager, The Standard Gear & Tooth Co.

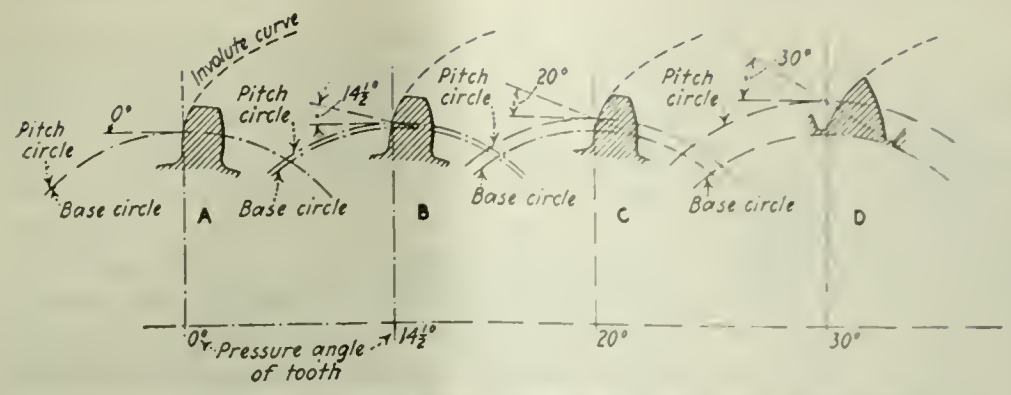


FIG. 6—FOUR TEETH WITH SAME PITCH AND VARIANT PRESSURE ANGLE

Shows plainly how the shape of the teeth will vary when the pressure angle is changed. An extreme case is shown in the right-hand tooth, where the pressure angle is 30 deg. The normal tooth is the second in the row. It has a pressure angle of 14½ deg.

gear to match it we must make it with a correspondingly short addendum.

In standard gearing the relative size of the tooth and slot is the same on each member. In long-addendum gearing (Fig. 4) the teeth are made much longer on the pinion and project further beyond the pitch diameter. On the gear the slot is deepened proportionately. Likewise on the gear which mates with this pinion the tooth projection is shortened and the slot in the pinion is correspondingly shallow.

The amount of diversion in extra length and depth is optional with the manufacturer, and he can build around any formula he desires. The longer the addendum on the pinion the more pointed it will be at the top of the tooth. In Fig. 4 the addendum of the pinion is made of extreme length so as to make the contrast between long addendum and standard gearing the more noticeable. The long-addendum pinion is preferable to the standard for the reason that it is a stronger pinion at the base and a thicker or "fatter" pinion at the pitch line. In actual service twice as much steel may be worn off the side of the tooth with safety before rejection with the long addendum than is permissible with the standard 14½-deg. shape. This is illustrated in Fig. 5. When worn out it is still a strong tooth at the base, whereas with the old shape the root tends to weaken more rapidly as the result of wear.

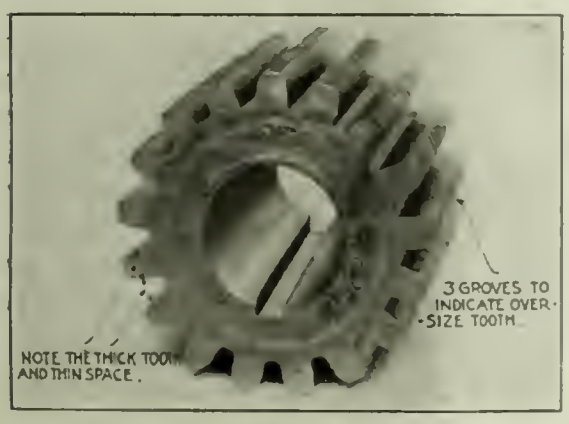


FIG. 7—OVERSIZE PINION

Will mate only with a worn gear. Space is made thin and tooth thick.

This means that if a long-addendum pinion and a standard pinion of equal quality are operating under identical service, the long-addendum pinion, because of its tooth shape, will have approximately twice as much life. The gears running with these pinions will have about equal durability; in fact, only by accurate measurement can you distinguish between the forms of the short-addendum and the standard gear tooth. There is no question whatever as to the desirability of the long-addendum pinion for any service where gears and pinions are to be completely worn out before they are discarded. The only drawback is the seriousness of changing over from the old standard to the new.

The "wisdom-tooth" pinion was recently brought out to overcome this difficulty and to present the operating man with a practical opportunity to realize all the advantages of long- and short-addendum gearing without making any radical change or expending much money. The wisdom-tooth pinion (Fig. 8) is in every way a long-addendum pinion and partakes of all its advantages. It is, however, so designed and generated that it can be operated with the standard Brown & Sharpe 14½-deg. gear.

Hence it can be installed without any gear change, and the operator can go over to the true form of long- and short-addendum gearing with all its advantages by merely renewing pinions with those of the wisdom-tooth shape. There is no dark secret about this profile; it is purely an involute generation of a standard tooth on an oversized-diameter blank. Its use, however, involves one slight change—that is, a slight reduction in the ratio as one tooth is dropped out of the pinion when the wisdom tooth is adopted. The changes in speed and acceleration caused by the different ratio are so little noticed that, for instance, street cars in railroad work equipped with "wisdom teeth" are running on the same schedule as cars with standard pinions and even in one case are running in multiple-unit trains interchangeably. In another instance wisdom-tooth pinions have been put on motors on one end of the car and standard pinions on the other with reports from the mechanical department that this gives thoroughly satisfactory service.

Wisdom-Tooth Pinions Stop Breakage Trouble

To illustrate the close similarity between the wisdom-tooth and the standard long-addendum tooth Fig. 8 (a) shows the one superimposed on the other. The oldest wisdom-tooth pinions have been in service more years than comprise the average life of standard pinions and still are only one-third worn out. In several cases they have completely stopped what was otherwise serious breakage trouble.

A still further and successful innovation is the "oversize" pinion of either standard, wisdom-tooth or long-addendum design. Whether this shall be used is also purely a practical problem. When an automobile cylinder and piston rings become slightly worn they are replaced with new oversize piston rings. Likewise, when a gear is badly worn it can be mated with a pinion having thicker teeth than the normal standard. This takes out the major part of the backlash and uses the old gear under much better operating conditions than normal.

At the same time, as the oversize pinion has thicker teeth at the start, more material can be worn off them before they are reduced to the scrapping point. The

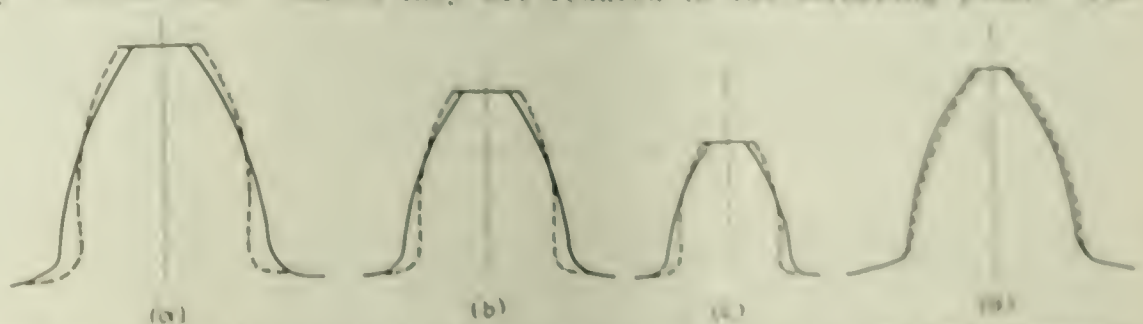


FIG. 8—WISDOM TEETH (HEAVY LINES) SUPERIMPOSED ON STANDARD TEETH

A wisdom-tooth pinion has one less tooth than the standard pinion for the same pitch, but the change makes little difference in operation.



FIG. 6.—PINION OVERSIZE; PINIONS HAVE A TOOTH WIDTH AT PITCH LINE LARGER THAN THE SPACE

When a gear is badly worn it can be meshed with a pinion having thicker teeth than is normal. By this means much of the backlash is avoided and the service of the old gears is improved.

teeth, being thicker, are stronger at the root, both when new and worn out. The advantages therefore are that the pinion wears longer and has greater strength and less backlash. The only disadvantage is that care must be exercised not to mesh oversize pinions with unworn gears. The manufacturer guards against this mistake by marking them with three peripheral grooves, illustrated in Fig. 7, and by using a wear gage to ascertain whether the gear tooth is worn sufficiently to work satisfactorily with the oversize pinion.

An Argument in Favor of the Steel Grid*

BY A. F. PHILPS†
Parkersburg, W. Va.

OPERATING conditions in the coal-mining industry are perhaps more trying to resistance boxes than those found in any other work in which they are employed. To meet these difficulties experiments into the possibility of using rolled-steel resistances instead of cast grids were started some ten years ago and have continued down to the present date. Tests have been made as to the best alloy to be used for that purpose, the best method of supporting the grids, the best kind of insulating tubes, the preferable method of ventilation and other problems relating to the construction of such grids.

Cast-iron grids, being made of small cross-section, are liable to break when subjected to rough use, and sudden changes of temperature also are likely to fracture them. It has been said that more failures arise from the latter than from any other cause. It is easy to see that this latter defect cannot exist in a rolled-steel grid of any reasonable construction and even when broken by violence a steel grid can readily be repaired at the mine. A large company in West Virginia which had one hundred locomotives spent more than $20,000 in one year repairing cast grids whereas the rolled-steel resistors, of which it had several, needed no repair in the same period. Originally designed solely for mine locomotives, they are now used for street cars, hoists, cranes, large alternating-current motors, railroad turntables, steel-mill motors, coal-cutting and coal-loading machines and as ballast resistance for storage-battery locomotives—in short for all machines subject to severe operating conditions.

HARD STEEL ONLY IS USED

Rolled-steel grids are made of Homanite steel and have a resistance of 400 ohms per mil-foot. This steel has a high silicon and a high-carbon percentage and is so hard that holes are punched in it only with difficulty. The method of punching having been developed after years of experimental work.

The rolled-steel grid has been so completely standardized that it is said the repair parts that have to be carried are only 15 to 20 per cent of those needed where cast grids are employed. What is equally important, the 6½x6½-in. grid is adapted for use with all locomotives. The grid has no loose ends or loops and has seven supporting rods which not only hold the grid but prevent its buckling. Mica tubes are used for insulating the grids. Each rod is insulated from the end frame.

In considering the use of grids of more expensive construction it must be remembered that a grid is a part and only a part of a large and expensive machine and that it is not a wise economy to use a grid that may cause a machine to be laid off. Furthermore, as the grid is but a part of the machine so a locomotive is a part of the equipment of a mine, and the laying off of the locomotive may be a source of much contingent expense and reduction of output. The electrician tries to avoid this loss by cutting out part of the resistance or by working the locomotive after the resistance is in part cut out, but that is not a safe way of operating. When the resistor is kept in condition a real saving is effected on armatures, controller parts and gears, and one company has found that with steel grids, armature burnouts were reduced 50 per cent.

*Abstract of paper prepared for submission to the West Virginia Mining Institute. Mechanical and Electrical Engineering Association of Mine, Mechanical and Electrical Engineers. The paper in brief summarizes the conclusions in the report of the committee on "The use in mine locomotives of resistance grids made of rolled-steel plates as compared with cast grids," which was presented June 21 at the meeting in Huntington, W. Va. This article was published in the issue of Coal Age of June 14, pp. 1047-1049.

†West Virginia Electric Co.

That Elusive Proximate Analysis of Coal

EVERYBODY knows that the constituents of coal are ill-named in the proximate analysis. What is termed fixed carbon, says the American Society for Testing Materials in its book of Tentative Standards, 1922, "is made up principally of carbon but contains also appreciable quantities of sulphur, hydrogen, nitrogen and oxygen." Some of these elements do not appear in the volatile matter or in the moisture yet are lost to the ash and so are grouped with the fixed carbon.

Volatile matter does not include moisture and whatever else may pass off below 105 deg. C. but does include incombustible matter given off in further stages of heating. Much of this is moisture. Ash consists in part of oxygen not contained in the coal and does not contain some of the constituents of the true ash of coal such as the water of constitution in clay. As the same authority declares, "The ash as determined" in the standard methods "is less in quantity than that of the actual constituents of dry coal owing to chemical changes which occur in these by burning."

"Sulphur in coal," quoting again the authority just mentioned, "although commonly reported with the proximate analysis, is not correctly a part of it, being elementary and of definite composition. Sulphur, moreover, is distributed in the proximate analysis as a constituent of two or more of the ingredients thus determined." It is not impossible that in some cases it is found in all four.

Some of the Surprises Which American Mining Congress Exposition Held for the Operating Coal Man

Hudson Company Shows Loree Breaker Model—Bearing Ball in Perfect Balance—Rough Way of Handling Shovels—Weighing Coal on a Running Belt—Box-Car Loaders, Fans, Pumps, Cages, Gears and Drills

COAL mining was the major theme, running through not only the program but also the machinery exposition, at the twenty-fifth annual convention of the American Mining Congress which was held in the new Public Auditorium at Cleveland, Ohio, Oct. 9 to 14. This was so marked that one or two exhibitors who were not making any effort to reach the interest of coal-mining men were moved to say that the exposition was a wonder—for coal. Locomotives, drills, shovelers and loaders, cars, pumps, ventilating systems—practically the full equipment of a coal mine was on display in about 150 booths both on the main arena floor and in the broad basement of the magnificent building. Never had the annual mine equipment exposition held forth in such handsome surroundings. The attendance was reasonably heavy but gave the impression of being less because of the vastness of the building.

The usual number of striking features drew the popular as well as the technical eye—and ear. The Hudson Coal Co.'s model of the Loree anthracite breaker occupied its usual spotlight location, attracting much attention as it went through the operations of handling hard coal. A cross-section of the mine itself, illuminated within, showed interesting points at each mine level, giving the uninitiated a good idea of the way a hard-coal mine would look if the earth were sheared down to the mine and one side of the section removed. This display weighs 12,000 lb., fills an express car and is attended by a crew of five men.

Smaller by 11,999 lb. 15 oz., but almost as memorable, was a single Atlas ball from an SKF ball bearing. Shot upward through a tube by air pressure the glistening little steel globule descended upon a 10-in. steel plate and bounced there for two minutes—always striking the same spot, thus illustrating its perfection of form—until inertia settled it upon the plate, when a gentle air blast rolled it into a trough which directed it into the air gun for another flight. This unique exhibit was much discussed.

Proving Resilience of Molybdenum Steel

Noise makers in the exhibition were the General Electric hard-rock drill working industriously on two 1,000-lb. blocks of stone and a glass-sided shovel-testing machine shown by the Wood Shovel & Tool Co. Shovels clamped to stout spokes on a rimless wheel revolving inside a drum incessantly dug their way through a pile of cobbles, putting over the idea that Wood molybdenum steel shovels stand a tremendous amount of racket, wear down uniformly and do not crack under frequent reverse bendings. The rattling roar of Westinghouse and General Electric gathering motors with their wheels mounted on rollers, the occasional shriek of Federal electric sirens for mine signaling and the lesser clank and whirr from lighter exhibits lent a busy sound to the exhibit from first to last.

One of the outstanding exhibits was that of a Merrick conveyor weightometer in action. One of the machines of standard size for the continuous automatic weighing of conveyor-handled materials was exhibited and was inspected by a steady stream of men who ascended a flight of steps to a small platform beside the "integrator box" containing the sensitive mechanism which was recording the weight of gravel passing on a belt. The weightometer can be installed on any belt conveyor, thus eliminating weighmen. A section of the belt is supported on a floating platform hung on compound levers, balanced by an iron float in a cylinder of mercury. The movement of the float is a direct measure of the weight on the conveyor belt. The float tips a roller-edged disk whenever a load goes over the belt. This disk is a part of the integrator, which multiplies the weight by the speed. A belt driven by the conveyor rubs against the rollers at the periphery of the disk. When this disk is perpendicular to the plane of the belt (the no-load position) the rollers revolve and exert no turning effort on the disk. When the disk, which is carried in a swinging frame, is tipped a component of motion of the belt acts to turn the disk. The greater the weight on the conveyor, the greater the tip and the faster the disk revolves. A simple mechanism records this motion after the manner of a gas meter. The weightometer is made by the Merrick Scale Manufacturing Co., of Passaic, N. J.

Rubber Insulation for Mine Power Cables

"Made like a cord tire," is the phrase that stuck in visitors' minds after they had seen the cable exhibit of the Rome Wire Co. Rubber insulated cables of nearly all sizes both in that booth and the display space of the Simplex Wire & Cable Co. were of interest because they had not been seen previous to a year ago. Heavy rubber insulation applied under pressure was put to all sorts of abrasion and kinking tests to show that cords and cables thus protected are built for heaviest coal-mine service whether used on a drill, a cutting or loading machine or a cable-reel locomotive. The cost may be twice that of ordinary braided cable but the service—many a mining man went away from the show with a new idea of the toughness and serviceability of good rubber insulation.

A lesson in quick loading of box cars with a minimum of coal breakage was taught at the Ottumwa Box Car Loader Co.'s display, where a model of an electric-driven pusher type loader was shown in action, illustrating the ease with which coal can be delivered clear into the ends of box cars without benefit of shovel and without the machine delay incident to the entry of a scoop gang into the car.

Modern ideas as to ventilation were set forth by the American Blower Co. and the Buckeye Blower Co. by an exhibit of reversible mine fans, capable of either blowing or exhausting, and booster fans to be used deep in the workings of a mine and especially with flexible

tubing such as that shown by E. I. du Pont de Nemours & Co. and the Hewitt Rug Co. With such tubing blind risers and working faces can be thoroughly and quickly ventilated where otherwise much time would be lost waiting for smoke and gases to clear.

Though pumps were shown by several companies, it remained for the Deming Co., showing a triplex horizontal 8 x 8-in. pump taking only 30 in. of headroom, to remember the pump maintenance man by featuring a valve cap hinged at one side and clamped down on the other by an eyebolt attached to the valve shell. Thus the cap can be lifted for pump cleaning and inspection without dropping a nut or washer into the muck.

A new type of all-steel self-dumping cage, which cannot dump in the shaft, was shown by Robert Holmes & Brothers, Inc. It is a type now being built for its first installation early next spring. The cage is heavier than most others on the market and is built to withstand severest service. The bed of the cage is supported on 15-in. structural steel beams, the rocking arrangement being made of heavy cast steel. With a 7-ft. platform such a cage will weigh 8,000 lb. Larger sizes will be made upon specification.

Novel equipment for handling coal in and out of storage with greater speed and less installation and operation expense than that incurred in the use of the average bridge crane attracted considerable attention in the exhibit of the Railway & Industrial Engineering Co., which now makes the Harrington Rocking Cableway. The construction is similar to that of any other standard cableway except in one important feature—its head and tail masts can be rocked in unison through an arc of 120 deg. Thus if the carriage is operating a clamshell bucket it can pick up or deliver coal over a wide area instead of merely along a single line, which is all that can be done when the masts are vertical and the cable line stationary. With 100-ft. masts the field of operation may be 180 ft. wide. The power consumed in rocking under load is greatly reduced by counterbalance weights.

Worm-Gear Speed Reducers Safe and Economic

An adventure in gears into the coal-mining field got its start at the exposition in the Dravo-Doyle Co.'s exhibit of Cleveland worm-gear reduction units. These worm-gear drives, designed for other uses, are now being applied to power transmission on picking tables, conveyors or any other comparatively slow, steady-moving machinery. Operating in an oil bath exactly on the principle of a worm gear in the rear transmission of a motor truck these units are expected to gain a foothold in mining because they occupy only about one-tenth the space of spur gears or belting and, being enclosed in a cast-iron case, they are protected against dirt and grit and do not tempt workmen to leave off the safety guards which are supposed to be bolted over drives of gears but which so seldom stay there.

A time and labor saver for roof drilling was a stoping drill shown by the Cleveland Rock Drill Co. This one-man machine had a bit that rotated at regulated speeds by an air turbine. The machine is operated without needing the usual aid of a pair of strong-backs held in place at the free ends of a plank. Instead it is lifted up and down on a telescopic cylinder that is operated by air admitted through a valve at the bottom. Thus the drill works on an air cushion. This adds at least 24 in. to its range.

Newest among safety devices displayed was the little "self-rescue" gas mask forming part of the exhibit of the Mine Safety Appliances Co. This little mask, which really is not a mask at all but merely a small canister with a tube for the user's mouth and a wire clip to hold his nostrils shut, is designed to give every miner 30 minutes' chance to escape in case he is caught by deadly gases while still able to travel. If the device were adopted as standard equipment at a mine, each man going below would have one hanging at his hip. In case of need he would snatch it from his belt, put the tube at the end of the canister in his mouth, clip his nose shut and be assured of safety from carbon monoxide for a given length of time in case the percentage of the gas was not too high.

In atmospheres contaminated by mine fires it is sure to be effective, for the very presence of fire is assurance that the air contains sufficient oxygen to sustain life. The canister is perforated at the outer end. Air inhaled passes through the usual granular charcoal and soda-lime absorbent and then through a layer of "hopcalite," or mixture of the oxides of manganese, copper, silver and cobalt, which changes the carbon monoxide to the relatively harmless carbon dioxide.

The same exhibit showed various other devices, including Burrell gas masks and also oxygen breathing apparatus. The latter device, despite the introduction of gas masks, has yet to find a real competitor except where there is certainty that the oxygen percentage will not be found at any point dangerously low.

Fusibility of Coal Ash

DATA regarding the softening temperature of coal ash from several hundred coals from the different fields of the country are contained in Bulletin 209, "Fusibility of Ash from Coals of the United States," by W. A. Selvig, assistant analytical chemist, and A. C. Fieldner, supervising chemist, U. S. Bureau of Mines, just issued by the bureau.

Information concerning the fusibility of coal ash has become of appreciable value to the consumer of coal, mainly in connection with the troublesome formation of clinkers resulting from the melting of the ash constituents of the burning coal. The growing interest in such data has led the Bureau of Mines to make a general survey of the "fusing" or "softening" temperature of the ash from coals of the United States. It is hoped that this information, when used together with the large number of coal analyses published by the bureau, will assist the consumer of coal in comparing different fuels and in selecting that best adapted for his purpose.

Coal ash is the incombustible residue remaining after the complete combustion of coal; it is derived from the inorganic mineral constituents of the coal. The ash-forming constituents are: (1) Inherent or intrinsic impurities that are present in an intimate mixture with the coal substance, and are derived either from the original material or from external sources such as sedimentation and precipitation while the coal-forming plant remains accumulated; (2) impurities, formed either during the laying down of the coal bed or subsequently, that occur in the form of partings, veins and nodules of clay, shale, slate, pyrite and calcite; and (3) impurities that become intimately mixed with the coal in the process of mining, such as fragments of roof and floor. Coal ash is composed largely of compounds of silica, alumina, lime and iron, with smaller quantities of magnesia, titanium and alkali compounds.

Utah's Only Coal-Retarding Conveyor Lowers Output Of Spring Canyon Mine, Two Hundred Feet

By Charles M. Schloss
Denver, Colo.

THE retarding conveyor as a means of lowering coal from mine openings on the mountain sides to tipples in the valleys, though common in West Virginia and Kentucky, is unusual in the Rocky Mountain region, despite the fact that many mines are so situated that this would be the simplest solution of the lowering problem.

Utah boasts only one retarding conveyor. In the Spring Canyon field the coal beds outcrop a considerable distance above the railroad tracks. The Carbon Fuel Co. has spanned this distance by a two-strand conveyor 375 ft. in horizontal and 200 ft. in vertical projection. The inclination of the major part is at over 34 deg. with the horizontal. Coal is dumped on the shelf or coal bench by a single-car rotary dump into a hopper, from which it is fed by a reciprocating plate feeder to the retarding conveyor. The conveyor discharges onto the shaker screen.

The construction cost of a conveyor system is about the same as that of a gravity plane, but the conveyor has the better of the argument from that point on. First, the severe service to which mine cars are subjected on the steeply pitching planes may roll up during the year a maintenance charge of nearly $50. Second, the track on an incline can be maintained only with difficulty and at much expense. Third, more cars are required when they are obliged not only to haul coal to the head house but to make the trip down the incline and back again. Lastly, with the plane it is necessary to have a terminal on the shelf and one at the bottom, and this demands a crew at each terminal. With the conveyor and dumping cars on top, the dumping crew only is necessary. This in itself is no inconsiderable saving.

It is interesting to hear the opinion of an engineer prominently identified with the design of plants for the handling and preparation of coal:

"Take the history of the coal industry in West Virginia, where almost every known device has been used to take coal down the sides of the mountains—inclined plane, monitor dumping the coal at the top and lowering it to the bottom and rope retarder. In every modern instance you will find that the two-strand conveyor is being used exclusively; as a rule installations with small tonnages are using other devices, and it will be only a question of time until they change. This has been the history of the industry in the Kentucky district. I have never known a retarding conveyor which had been built right to cause any serious delay, but every so often you hear of a trip getting away on an inclined plane. I was told that one wreck in Utah cost $12,000 besides all the incident delay; mine cars were threaded onto railroad irons like buttons on a string, and they were steel cars at that!"



SCENES AT PLANT OF CARBON FUEL CO., RAINS, UTAH, LOCATED IN SPRING CANYON

(1) Tipple and 136-ft. retarding conveyor, capacity, 200 tons per hour. (2) Dump track with derailed car. When a car will leave the track on a level, as here shown, it can hardly be expected to stay on when on an incline. (3) Another view of tipple and conveyor. (4) View up Spring Canyon as it comes [illegible] (5) Head of conveyor. Cars are [illegible] dump into hopper shown and are fed to reciprocating feeder on top of conveyor.

Reports and Investigations State Geological Surveys and Mining Bureaus

Coal Reserves in Fayette County, Pa., Contained in Seven Beds

By John F. Reese

FAYETTE COUNTY, Pennsylvania, has seven coal beds that may be considered of economic value at the present time. In order of importance, so far as production is concerned, these are the Pittsburgh, Sewickley, Upper Kittanning, Lower Kittanning, Upper Freeport, Waynesburg and Redstone.

Extensive development of the Pittsburgh bed and its outcrop throughout the county have furnished many measurements of its thickness, making possible an accurate and reliable computation of the quantity available. For some localities no information is at hand as to the size of mined-out areas, and an estimate of probable depletion has been based upon the age of development and the size of surrounding operations in those particular sections or on the difference between original areas and statements of areas unmined.

The outcrop and development of the Sewickley coal bed have given many reliable measurements of its thickness. This bed is considered of value as a shipping coal in eight townships. Many mines have been opened in this bed in recent years, and its economic value as a producer of fuel for industrial purposes is second only to that of the Pittsburgh coal.

A fair amount of data regarding the thickness of the Upper Kittanning bed has been gathered from the mines and outcrop along the Youghiogheny River in the Connellsville-Indian Creek region. It has been considered as being of economic value and its contents calculated only in Stewart and Henry Clay townships. Future development and prospecting, however, may show that it is minable in other localities west of Chestnut Ridge.

Development and prospecting of the Lower Kittanning coal in the Connellsville-Indian Creek region have furnished a fair number of measurements of its thickness. It has been computed as of economic value in four townships, namely, Bullskin, Springfield, Stewart and Henry Clay, but future prospecting may show that it is minable in other townships.

The Upper Freeport bed contains the greatest reserve in the county. Its extensive outcrop along Chestnut and Laurel ridges gives numerous opportunities for measurements, making fairly reliable computation of quantity possible. It is assumed that the continuity of this bed is unbroken from the west slope of Chestnut Ridge to the Monongahela River. Core drillholes along the river prove the existence in that region. The tonnage computations are based on many measurements along the outcrop and on an assumed thickness of 42 in. under the townships bordering the river.

A fairly reliable estimate of the quantity of Waynesburg coal available is made possible by the number of measurements along the extensive outcrop of this bed. Because of its accessibility the Waynesburg coal is mined at many places throughout the county for local use. This bed is badly broken by partings, but where the thickness is fairly uniform, there are several mines that are shipping this coal for industrial purposes. Because of the character of the bed, however, it will not become a great producer of shipping coal and will be of less economic value than any of the beds whose quantity has been computed.

Outcrop and shaft sections of the Redstone bed give a fair idea of the extent and thickness of this coal. It is not mined for shipment but is used for domestic purposes in several localities.

Other coal beds than these are mined for local use, but as they are not important and little is known of their extent and thickness, they have not been included in the computation of the reserves.

The result of computing the coal reserves in Fayette County based on the latest maps, engineering data, and methods is shown in the accompanying table.

COAL RESERVES IN FAYETTE COUNTY *

(In Net Tons)

Bed	Original Deposit	Mined Out	Recoverable
Pittsburgh	2,087,772,000	878,030,000	919,300,000
Sewickley	194,175,000	10,132,000	123,600,000
Freeport	2,088,153,000	1,650,000	1,029,000,000
Redstone	151,380,000		75,700,000
Waynesburg	316,854,000	3,216,000	199,800,000
Upper Kittanning	89,280,000	2,016,000	59,000,000
Lower Kittanning	302,120,000	4,500,000	198,000,000
Total	5,229,734,000	899,544,000	2,604,400,000

*The total area of Fayette County is 824.0 square miles.

Detailed tables of the coal reserves in each township have been prepared and will appear in printed form in a report now being written on the bituminous-coal fields of the State of Pennsylvania. They can be consulted in the office of the Topographic and Geological Survey, or figures for a single township will be sent on request.

Investigation of the occurrence and distribution of the forms of sulphur in coal has been continued during the recently ended fiscal year at Urbana, Ill., by the U. S. Bureau of Mines, in co-operation with the Illinois Geological Survey and the University of Illinois under two general heads: (1) The distribution of the forms of sulphur in the coal bed, and (2) sulphur forms in coal. Both are closely co-ordinated with coal washing. The steadily decreasing reserves of low sulphur-coal in certain sections renders it essential to have information on the occurrence and distribution of the forms of sulphur present in coals higher in sulphur, so that intelligent efforts may be directed toward reduction of sulphur and then utilization. The distribution of the forms of sulphur in coal beds was investigated at two mines in southern Illinois. A similar though less intensive investigation was made at a mine operating in the Pratt seam in Alabama. Since this work was done, one mine has materially reduced the sulphur content of both raw and washed coal by developing their lower sulphur areas. The work on the sulphur forms occurring in coal is being conducted with the object of correlating the occurrence of sulphur forms with the washability of various coals with respect to sulphur reduction. During the year all the raw coal upon which washing tests were made and the washed products have been examined for the various forms of sulphur. It has been found that the organic sulphur content of a raw coal plus its content of finely disseminated pyrite sulphur fixes a limit below which no reduction in sulphur can be effected by ordinary coal-washing methods.

Problems that develop in the mechanical preparation of coal in the Central and Eastern coal fields are being investigated at the Central experiment station of the U. S. Bureau of Mines at Urbana, Ill., in co-operation with the University of Illinois and the Illinois Geological Survey. Work on coal-cleaning methods is being continued, as the problem of cleaning coal is receiving more attention in the bituminous-coal mining industry. A study has been made of the methods of examining a coal as it exists in the raw state, in order to determine the practicability of improving it by coal-cleaning processes.



Problems of Operating Men

Edited by James T. Beard



Finding the Way to Industrial Peace

Solving the Labor Situation by the Golden Rule —Spirit of Goodwill and Co-operation Needed —Mutual Dependence of Capital and Labor

WITH much interest I read the excellent article of M. J. Facemeyer, entitled "Peace and Harmony," *Coal Age*, Sept. 28, p. 499. I was much impressed with the truth of his opening statement, which reads as follows: "Just now, nothing is of more interest and importance than suggestions looking to the promotion of peace and harmony in the general rank and file of the coal-mining industry."

Reading this article recalls the statement made by Roger W. Babson, in his report on the social, economic and political problems that confront the American people. As quoted in *Coal Age*, Vol. 17, p. 364, Mr. Babson says, "The need of the hour is more religion. The solving of the labor situation is wholly a question of religion."

As I understand it, the report of Mr. Babson seems to show that the recognition of God, in the financial affairs of men, is the only basis for industrial peace and lasting prosperity. It is, I believe, the only hope of a permanent settlement of the present industrial disturbances.

Our Greatest Need Today

We all realize, today, that the suggestions of this student of social and economic conditions have not been put into practice by either capital or labor. Controversies between these two factors of industry still continue, paralyzing business and bringing ruin to more and more innocent and helpless people, as the days go by.

To the thoughtful man, the greatest need of our country, today, is not the heralded mountain wave of prosperity; but, instead, a gentle wave of goodwill and co-operation in the hearts and minds of men, whether they labor with their hands or with their capital and brains.

Too often the question of right and wrong has not been mentioned as a factor in the adjustment of industrial differences. Instead, higher wages and larger profits have confronted each other in a hopeless struggle for ascendency. It is victory or defeat, for one side or the other, regardless of the cost. How different would be the aspect, if greed, hatred and selfish ambition was to give place to the practice of the Golden Rule, which is the only solution to these problems.

No wisdom is required to perceive that our present industrial controversies can never be permanently adjusted if capital and labor continue to seek to humiliate each other. Capital can never overcome labor by force and reduce it to starvation wages. On the other hand, labor cannot force capital to concede unjust demands that would destroy the country's business.

Prevailing Disregard for Law

Prosperity can only be permanent when it smiles alike on both capital and labor. It is not new laws or legislation that is needed; but the spirit of goodwill and co-operation must dominate. Never, in the history of our country, has there been so little regard for the supremacy of the law and its enforcement as there is today.

There is no need to rehearse those wanton acts of murder and destruction at which the world has so recently stood aghast. What is most discouraging is the evident approval given to such dastardly doings by local organizations and communities.

There is no mistaking the fact that dangerous un-American principles are present with us. Certain elements among our laboring classes have spread their poisonous doctrines, to such an extent that the fires of hatred and selfishness now smolder in the hearts of their helpless victims. It stands in hand for the better element of all classes of workmen and citizens alike, to be loyal in the preservation of those American principles of justice and individual rights, or these will soon be destroyed forever.

Capital and Labor Problems

The problems that confront industry, today, have grown to proportions that require level-headed judgment in the recognition of individual rights. All will agree that labor should receive something more than a living wage, in return for efficient service. Labor is entitled to a profit on its toil, as truly as invested capital demands a reasonable gain for its use. Labor must provide against the proverbial "rainy day," and capital must safeguard its interests against the fluctuations of trade.

When one considers the mutual dependency of capital and labor, the one on the other, it is hard to understand why labor should want to embarrass capital, or capital desire to humiliate labor. So akin are their interests that one is as much bound to promote and protect the welfare of the other, as though it was their own.

Both capital and labor are important in their respective spheres; both are indispensable factors in the industrial enterprises of the country. In my opinion, the time has fully come when the old order of things will be exchanged for the new. A more humane and Christian spirit must assert itself and prevail, while the old weapons of boycott, strike and labor warfare are forever laid aside.

In closing, let me say there is only one remedy that can be applied with any assurance of permanent success. It will be found in a return to the teaching of the Man of Nazareth, on the part of both labor and capital. There will then be no disposition to do anything but right in the treatment of another and the problem will be solved.

Dayton, Tenn. JOHN ROSE

Keeping the Mine Safe

Humidifying mine air with steam— Broadcasting salt in the airways— Removing all accumulations of dust —Spraying system not effective— Preventive measures more reliable.

READING the article of F. C. Cernet, *Coal Age*, Aug. 8, p. 169, dealing with the question of humidifying air currents by steam, leads me to offer a few comments on this and other methods of keeping the mine safe.

In regard to this method of humidifying mine air, I naturally assumed that the main haulage roads are the return airways, although it is not so stated in the article. In mines where the main haulage roads are made the intake airways, the use of steam would be objectionable, as it would seriously inconvenience the drivers and men working on the bottom.

Humidifying the Mine by Steam

Assuming an intake airway, however, I can heartily recommend the use of steam for humidifying the air current. Whether a straight line of pipe is installed for that purpose or a radiator system is employed is immaterial, as either method can be made alike effective.

In the first place, I would suggest a general clean-up of all roads and aircourses, removing any accumulation of dust and hauling it out of the mine. If a steam line is used the pipes should be tapped at short intervals, by drilling small holes to permit the escape of the

[illegible] salt on the mine.

Sprinkling Salt on the Mine

Let me suggest, here, that the broadcasting of salt on the roads, traveling-ways and aircourses throughout the mine is a good plan. By absorbing moisture from the air, the salt keeps everything in a damp condition and prevents the fine dust from rising and floating in the air.

At times, I have seen the mine drainage arranged to collect the water in a sump where a high-pressure pump was installed to force the water through a pipe system by means of which it is sprayed on the roads and traveling-ways. Three or four cross-pipes would sometimes be arranged across the intake airways and drilled with a line of small holes, thereby forming a spray for humidifying the intake air.

In my opinion, no spraying system is thoroughly effective. I believe that watering the dust does not increase the safety of the mine, or render the dust less explosive. If the mine is to be made safe, other means than watering and spraying the passageways must be evolved.

Necessity of Maintaining Good Circulation of Air

One of the chief factors, in mine safety, is maintaining a good circulation of air throughout the workings. To do this, it will often be necessary to repair doors, stoppings and air bridges, to prevent air leaks, and erect brattices to cause the air to sweep the face of the coal.

Blasting the coal is next in importance. Where the coal is hard and solid shooting is practiced, nothing but permissible explosives should be used. Every effort should be made to reduce the breakage of coal by avoiding excessive charges of powder. It is also important to use cars that will not require to be loaded above the sides.

The loading of cars with topping is a bad practice. When so loaded, much of the coal falls off the car in transit; and is ground into fine dust by the car wheels and the travel of men going to and from their work. These and many other items that might be mentioned play an important part in making the mine safe. Oscar H. Jones.

Wilder, Tenn.

Continuous Car Supply in Rooms

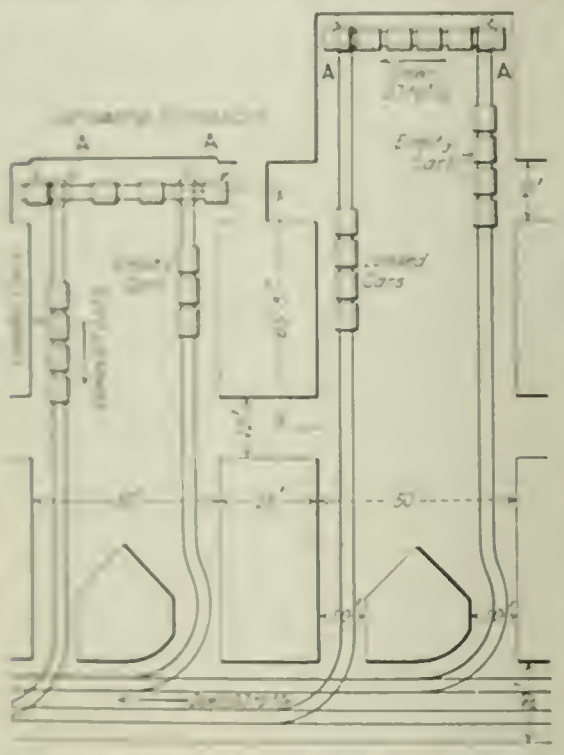
Expediting the loading of cars at the face—Use of turntables suggested—Practice in European mines—Sending details of arrangement of tracks and cars.

IN THE issue of *Coal Age*, Aug. 24, I wrote two suggestions for expediting the loading of coal at the working face in mines. The first of these occurs in the interesting article of E. N. Zern, page 241, entitled "Excelling the Turntable in Mechanical Coal Loading." The second is found in the letter of Charles H. Bohlen, page 256, who suggests extending the room track along the face of a room, so as to permit several cars to be loaded at one time.

Referring to the article of Professor Zern, it seems to me that the suggested use of turntables in coal mines deserves more than passing attention. Besides the particular case referred to in the article mentioned, there are many places in the average coal mine, where turntables could be used to advantage.

While I am unable to refer to a single case where turntables are used in present-day coal mining, it can be said they are a standard article of equipment in the metallic mines, on the European continent. As far back as the 80's, I remember seeing turntables in use in the phosphate mines of Belgium and in the Somme department in France.

In this connection, allow me to illustrate, by means of the accompanying



SHOWING TRACK ARRANGEMENT IN ROOMS

sketch, how turntables were used in the rooms of one phosphate mine that was famous about thirty-five years ago, in the region of Mons, in Belgium. The deposit mined there was a bed of phosphatic chalk, which was a mixture of chalk with a certain amount of fine dust and pure phosphate of calcium.

The phosphate was recovered from the finely crushed chalk by washing. The ore was first mined by hand and then shot down with either dynamite or black powder, depending on the condition of the strata. The bed varied from 14 to 18 ft. in thickness, and the cover did not exceed 75 or 80 ft.

Double-Track Room with Cross-Track and Turntables

As shown in the figure, double-track rooms were driven 15 m., or nearly 50 ft., wide. The two tracks were laid, one along each rib of the room, and a cross-track and pair of turntables served to connect them, at the face.

To show how this arrangement permitted a continuous supply of cars at the face, let me say that a driver would send in eight or ten empties on the righthand track, as close to the turntable as possible. Then, when ready to load, the miners would place five or six cars on the cross-track, using the turntable to make the transfer. These cars would all be loaded at one time and dropped out on the lefthand track, by means of the turntable at that end of the face, and hauled away by the driver.

Standard Rail Lengths Conform to Distance Between Crosscuts

The steel rails used were 5 m. (16 ft. 5 in.) long; but there were kept on hand, in each room, four half-rail lengths, which enabled the miners to set the face track forward whenever the face had been advanced that distance. The crosscuts were dug at intervals of 4-rail lengths. Whenever the face track was set where a crosscut had to be driven, rails were laid opposite to the turntable rails, on the rib side. In each room two opposite crosscuts were driven at the same time, half-way through the pillar, the other half being driven from the room adjoining.

Although the cars used were large self-dumping affairs, similar to what were in use by railroad and other contractors in the region; and, though they had a capacity of 2 cu.m., or nearly 71 cu.ft. level full, there was no difficulty in handling them over the turntables and across the faces.

My purpose in describing these arrangements thus minutely, is to ask why such an arrangement could not be used in coal mining to advantage. The plan should appeal to any one as affording a continuous car supply at the face and expediting the loading of the coal.

New York City. F. C. Cornet.

Flow of Water in Pipes Under Equal Heads

Attempt to simplify solution of flow of water in pipes under equal heads—Readers can judge for themselves.

HAVING been for several years somewhat of a dabbler in hydraulics, I was interested in the question of an Ohio student, appearing in *Coal Age*, Oct. 5, p. 551. While the answer given to the problem is entirely correct, it seems to me that the inquirer is left in the position of simply accepting it without knowing the reason.

The inquirer refers to a dispute regarding the number of 3-in. pipes required to carry away the same quantity of water as a single 12-in. pipe, all the pipes being under equal heads. Since the sectional area of the 12-in. pipe is equal to the sum of the areas of sixteen 3-in. pipes, it was claimed that the quantity of the flow would be the same in each case.

In replying to this question, the editor has shown that this is true only for an equal velocity. He states, "A more practical view of the question, however, is to consider the flow of water in these pipes as under a constant head or pressure," which is true.

Then, he adds, "owing to the frictional resistance in the pipes, a constant head will not produce the same velocity or quantity in pipes of different diameters," and goes on to explain by reference to the well-known formula for the unit pressure producing a flow of any fluid in a conduit.

Would it not have been better to have explained the situation somewhat as follows: Experiment has shown that the resistance of the flow of water in pipes is, approximately, proportional to the square of the velocity of the flow and also to the area of wetted surface of the pipe. The total pressure applied to overcome this resistance is equal to the unit pressure (lb. per sq.in.), multiplied by the sectional area of the pipe, expressed in square inches.

Now, the unit pressure corresponds to the head, which is the same for all the pipes. Again, the sectional area of a single 12-in. pipe being equal to the sum of the areas of sixteen 3-in. pipes, the resistance to the flow is the same in each case; and we can write $pa = v^2 s$, where p = unit pressure; a = total sectional area, in each case; v = velocity of flow; s = total wetted surface in the pipes, in each case.

Then, assuming equal lengths for all the pipes, and expressing the values of a and s in terms of the diameter d, remembering that $v = q/a$, we have

$$pd^2 \text{ varies as } \frac{q^2}{d^4} \times d$$

But, the unit pressure p being constant, we have by transposition q^2 varies as d^5; and, finally, q varies as $\sqrt{d^5}$. In other words the diameter of the 12-in. pipe being four times that of a 3-in. pipe, the flow of water in the former, under the same head, will be $\sqrt{4^5} = \sqrt{1,024} = 32$ times that in the latter. Therefore thirty-two 3-in. pipes will be required to give the same flow as one 12-in. pipe, under the same head.

Charleston, W. Va. T. L. F.

[Another letter of a similar nature to the foregoing was received from Thomas Anderson, Barnesboro, Pa. Neither of these gentlemen appear to have turned over the leaf and read the conclusion of the reply to this inquiry on page 552, as their letters contain nothing different from what is there stated.—Editor.]

Inquiries Of General Interest

Interchange of State Certificates

Certificates of Competency Granted by Examining Board in One State Honored by Similar Board in Another State —The Practice of Interstate Certificates Growing Rapidly

AS A subscriber to *Coal Age*, kindly permit me to ask for a little information regarding a certificate of competency granted by one state, being accepted by the examining board in another state. For example, I hold a first-class certificate granted me by the state examining board, in Alabama. For certain reasons, I now desire to remove to Illinois and have been wondering whether my certificate would be of any use to me in that state. If not, what are the requirements, in Illinois, in order that a man can take the examination for a certificate authorizing him to act as mine manager (foreman)? Is a first-class certificate granted in Alabama equivalent to a mine manager's certificate in Illinois? Any information on this subject will be greatly appreciated. R. FORTUNA.

Nauvoo, Ala.

This is the old question of interstate certificates, which has been so frequently discussed in mining papers and at meetings of mining men. While the practice of accepting certificates granted candidates in another state is by no means universal, the custom has been growing during the past few years; and many state examining boards now are willing to accept such a certificate when presented by a candidate coming from another state, provided the examinations are of the same grade and importance.

The question of accepting such certificates on the part of the Illinois Examining Board was recently put up to the director of the Department of Mines and Minerals, Robert M. Medill, Springfield, Ill. In his reply, Mr. Medill states that since his appointment as Director of the Department of Mines and Minerals he has taken the position that the department should honor a certificate from another state where the candidate was required to pass an examination similar to that given by the department in Illinois. Director Medill adds that such a candidate, however, would be subjected to a slight oral examination, in order to determine his fitness for the position desired and confirm his acceptability by the Illinois Mining Board.

It is needless to say that the practice of interstate certificates, properly safeguarded by subjecting a candidate to a sufficient oral examination to confirm the certificate he presents, is in accord with what has been advocated in *Coal Age*, for a number of years.

The subject of interstate certificates of competency was discussed at a meeting of the Mine Inspectors Institute of America several years ago. The concensus of opinion at that meeting was in favor of such certificates being given due consideration by state examining boards when presented by candidates applying for examination.

To what extent the certificate can be accepted will, of course, depend on the respective standards of examination in the two states, and this can only be determined by the examining board in considering a candidate's application.

Size of Pulley Required

Ratio of diameters of pulleys on motor and fan same as the inverse ratio of their respective speeds.

IN THE operation of a booster fan having a 24-in. drive wheel, what size of pulley will be required on the shaft of a motor running at a speed of 1,500 r.p.m., in order to drive the fan at 600 r.p.m.? MINE FOREMAN.

———, Ky.

Assuming there is no slippage of the belt connecting the fan with the motor, the ratio of the diameter of the pulley on the motor shaft, to the diameter of the drive wheel on the fan shaft, must be equal to the ratio of the required speed of the fan to that of the motor.

In other words, the diameter ratio is equal to the inverse speed ratio. Then, calling the required diameter of the pulley on the motor shaft x, we have

$$\frac{x}{24} = \frac{600}{1,500} = \frac{2}{5}$$

$$x = 2/5 \times 24 = 9.6 \text{ in.}$$

Estimating Available Tonnage

Approximate rule for computing available tonnage of coal underlying a given tract—Allowance per foot-acre varies with quality of coal—For inclined seams divide estimated tonnage by cosine of angle of inclination.

A DISCUSSION has recently arisen among some coal men, in this locality, concerning the available tonnage underlying a 1,400-acre tract, the seam being flat and averaging 8½ ft. in thickness. Allowing 1,400 tons per acre, the estimated tonnage of coal, in this seam, would be 156,800,000 tons. This amount being disputed by some, it was decided to ask *Coal Age* if it is correct. ENGINEER.

Meeker, Colo.

An approximate rule of thumb that has been often used in computing the weight of coal underlying an acre of land, assuming a flat seam of bituminous coal of average quality, is to base the estimate on 1,000 tons per foot-acre.

Later, however, when the extraction of coal became more complete, this rule was discarded and the estimate based on 100 tons per in. per acre, or 1,200 tons per foot-acre. Both of these rules had reference to bituminous coal in a flat seam. Anthracite will average 1

When a seam has any considerable inclination, this estimated tonnage must be divided by the cosine of the angle of inclination. It is understood that the application of this rule for computing available tonnage is only approximate and will vary with the quality of the coal and the percentage of extraction. The rule given allows about 80 per cent of extraction for average coal.

Examination Questions Answered

Miscellaneous Examination Questions

(*Answered by Request*)

QUESTION—*What is the best method of humidifying a dusty mine?*

ANSWER—The most practicable method of humidifying the air current in a mine is to introduce steam into the air current, on the intake airway, after heating the air by causing it to pass over a system of radiators or steam coils. The waste steam of this heating system is then permitted to escape into the warm air current, through perforations in the pipes. The escaping steam should be made to impinge on baffle plates or canvas curtains, for its better distribution.

QUESTION—*Find the mine resistance when the water gage reads 2.5 in., in an airway 6 x 10 ft. in cross-section.*

ANSWER—A water-gage reading of 2.5 in. indicates a pressure of $2.5 \times 5.2 = 13$ lb. per sq.ft. The sectional area of this airway is $6 \times 10 = 60$ sq.ft.; and the mine resistance is, therefore, $60 \times 13 = 780$ lb.

QUESTION—*What pressure and water gage will be required to pass 60,000 cu.ft. of air per min., through an airway 8 x 10 ft., 4,000 ft. long?*

ANSWER—The perimeter of this airway is $2(8+10) = 36$ ft.; and the rubbing surface is, therefore, $36 \times 4{,}000 = 144{,}000$ sq.ft. The sectional area of the airway is $8 \times 10 = 80$ sq.ft. The pressure required to circulate 60,000 cu.ft. per min. through this airway is, therefore,

$$p = \frac{0.00000002 \times 144{,}000 \times 60{,}000^2}{80 \times 80 \times 80} = 20.25 \text{ lb. per sq.ft.}$$

The corresponding water gage is, then, $20.25 \div 5.2 = 3.9$ in., nearly.

QUESTION—*What will be the diameter of an upcast shaft necessary to pass 200,000 cu.ft. of air per minute with a velocity of 500 ft.?*

ANSWER—Dividing the air volume, in cubic feet per minute, by the velocity, in feet per minute, gives the required sectional area of the shaft; thus $200{,}000 \div 500 = 400$ sq.ft. The required diameter of the shaft is therefore $d = \sqrt{400 \div 0.7854} = 22.56$ ft.

QUESTION—*A certain mine has two shafts, each 500 ft. deep. The temperature of the downcast is 50 deg. F. and that of the upcast 150 deg. F.; what is the motive column?*

ANSWER—The motive column can be estimated in terms of either the downcast or the upcast air. The downcast air being the heavier will give a shorter motive column than the upcast air. The calculation is as follows:

$$\text{Down cast air, } M = \frac{(T - t)\,D}{460 + T} = \frac{(150 - 50)\,500}{460 + 150} = 82 \text{ ft., nearly}$$

$$\text{Up cast air, } M = \frac{(T - t)\,D}{460 + t} = \frac{(150 - 50)\,500}{460 + 50} = 98 \text{ ft.}$$

QUESTION—*How is it possible to divide the air proportionately between two or more splits?*

ANSWER—Regulators must be placed in those splits that are passing more than their desired proportion of the air. The opening in each regulator must then be adjusted to give the desired results.

QUESTION—*What is the law regarding the method of approaching abandoned mines?*

ANSWER—The Indiana Mining Laws (Chap. 258, Sec. 14) require that places being driven toward an abandoned mine shall not exceed eight feet in width; and a borehole shall be kept in the center of each place and not less than three yards in advance of the face. Also, sufficient flank boreholes must be kept on each side of the place so driven.

QUESTION—*What are the causes of mine fires? How would you proceed in case of a fire in a mine of which you had charge? Give full details.*

ANSWER—Mine fires may result from the careless use of open lights, in proximity to combustible material; the ignition of a gas feeder by the flame of a shot, and the fact not discovered until the coal has been ignited and the fire has spread; spontaneous combustion of fine coal and slack, buried in the waste in abandoned places; the ignition of combustible matter by the sparking of wires, short-circuiting of the current, etc.; the ignition of gas or dust by similar causes; explosion of gas, dust or powder, due to careless handling or disregard of safety precautions and rules.

In case of fire occurring in a mine, the men working therein should be promptly notified and withdrawn by the safest route possible. Treatment of the fire will depend wholly on its location and the headway it has gained. Immediate steps must be taken to get water to the fire, and to prevent the gases and smoke from entering the workings, as far as this may be possible, by short-circuiting the current at some accessible point inby of the fire. If progress is slow in gaining control of the situation it may become necessary to seal off the fire by building air-tight stoppings. The advisability of this proceeding can only be determined on the ground. Only as a last resort should recourse be had to the flooding of the mine, in order to extinguish the fire.

Critics of British Coal Strike Settlement Charge Juggling of Production Costs

By C. H. S. Tupholme
London, England

Some critics of the British coal strike settlement of June, 1921, contend that the proportion of profits to wages is unduly high and that the ratio will have to be adjusted in favor of the men; others profess to believe that the scheme lends itself to figure "juggling" by the owners. Vague charges have from time to time been brought against the colliery companies in respect of "rigging" the costs of production. It has been alleged that "other costs"—i. e., items other than wages, stores and material—have been piled up in order that the employers may benefit at the expense of the men. It is true that none of the responsible leaders of the workmen has made such an accusation, but there is some evidence to show that others have not scrupled to sow the seeds of suspicion among the men with the object of stirring up discontent and arousing hostility against the pact of last year.

In the circumstances it is necessary to emphasize the fact that the independent chairman of the National Board has laid down categorically every item which is to be treated as a working cost other than wages, while he has further carefully laid down the basis upon which items are to be calculated. In addition to timber and stores, the following have been admitted as "other costs": (1) Depreciation and renewals; (2) freehold coal royalties; (3) surface damage and restoration of service at end of lease; (4) workmen's compensation payments and insurances; (5) national health and unemployment insurance (owners' proportion of contributions); (6) remuneration of owner managers; (7) fire brigade, rescue, and aid services, etc.; (8) welfare levy payable under the Mining Industry Act, 1920; (9) allowance to make up subsistence wages; (10) local rates; (11) remuneration of directors, mine manager, general manager, and secretary; (12) remuneration of clerical and administrative staff other than No. 11; (13) pensions; (14) general expenses; (15) coal and power purchased and consumed; (16) repairs and renewals of colliery wagons; (17) schedule A assessment of workers' houses and occupiers' rates borne by owners and not recoverable; (18) wagon charges; (19) other debits.

The accountants acting in the men's interests have access to all accounts bearing on these costs, and they are, therefore, in a position to check every item and satisfy themselves that everything is as it should be. The men themselves are now able to obtain much fuller and more detailed information that was available when the argument was first put into operation, and so they are afforded ample safeguard against any undue inflation of costs.

Overhead Expenses in American Coal Mines Considered in Relation to "Rigging"

By W. B. Reed
Washington, D. C.

Mr. Tupholme's article on the possibility of "rigging" or padding the cost of coal in order to increase the actual profit to the operator or owner under the British system of a division of profits between the owners and the miners gives us an opportunity to compare "overhead expenses," as we designate what the English accountants term "Other Costs."

A comparison of the items of overhead and other operating expenses set out by the British National Board with the generally accepted items in this class as recommended by the cost accounting committee of the National Coal Association shows considerable similarity of treatment. There are several items embraced in the British plan which do not appear in the accounting practice here. For instance, "surface damage and restoration of surface" does not appear specifically as an item of cost in our cost sheets, although such items are properly chargeable to operation. The American practice is to set up a fund for mining hazards and to charge the cost of such contingencies to this account when they occur. Our accounting practice does not recognize any specific account of national health and unemployment insurance, our nearest approach being group life insurance as carried by some concerns. We have no legal liability such as is termed "welfare levy," the welfare work, where it obtains, being the voluntary contribution of the operator, while in Great Britain it is apparently obligatory on the owner to finance to an extent such activities. Neither do we have "allowance to make up subsistence wages." The item of pensions is one which we would ordinarily consider as a charge against income rather than a direct item of cost.

It may be profitable, perhaps, to examine our own generally accepted method of cost determination to see if it is open to the charge of "rigging" or padding of the items indicted in the English mind. The accounts which lend themselves most readily to the abuse mentioned are the depreciation account, the accounts carrying officers' salaries and the supply accounts. Of these, the depreciation account is the most difficult to police, for when based on a rate per cent it is a matter of good judgment as to the rate to be used. Conditions in each separate mine, the policy of the management as to maintenance and replacements, and the life of the coal all have to be taken into consideration. When based on exhaustion, or, in other words, on the depletion plan, a more even measure of the consumption of capital by depreciation may at times be obtained. But the Internal Revenue Bureau has held that depreciation may be forestalled and "sound value" maintained by a policy of the management in keeping machinery and equipment up to its productive capacity.

Undue Increase in Officers' Salaries Unlikely

With respect to officers' salaries and expenses, there is little likelihood of their being increased unduly except in the case of closely held corporations, in which the disbursement takes the form of a dividend. The Internal Revenue Bureau is continually on the lookout for this method of distributing earnings and it cannot long pass undetected. The same "policeman" is always on the lookout for the former item of depreciation and for the abuse of the practice of charging of additions and betterments to the supply account.

In the last-named item the line of separation in the past few years has been quite clearly drawn. If the item purchased or installed will materially increase production or materially and permanently decrease production cost, it should be capitalized; otherwise after the development stage is passed there should be no capital additions, but everything of this nature treated as operating cost.

The studies made by the engineers' committee of the United States Fuel Administration and by the Federal Trade Commission with respect to coal costs are interesting as showing the small difference between "reported costs" and "adjusted costs" during the period in which the coal industry reported to these bodies. These adjusted costs were used by the Fuel Administration engineers in their cost studies. This committee frequently found it necessary to add to the item of salaries of officers and management as well as to deduct from others, that a representative showing might be made. The engineers committee reported that in their first study on a production of nearly 72,000,000 tons of coal the average cost was "adjusted" exactly 1c, and that they *increased* the cost by the adjustment.

The Federal Trade Commission in its report on cost of production of Pennsylvania bituminous coal shows a revision downward from all causes of about 7c. per ton for the year 1918. The report says, "The Commission is able to point out that the costs of from 90 to 95 per cent of the tonnage reported from a given field were as a rule accepted as substantially correct. Certain revisions were found necessary, however, and while generally they operated to reduce costs, in some instances they increased them. Most of the revisions occur under 'general expense,' where most of the inflations were found to have taken place."

Preliminary Statistics of Production of Coal in 1921

Ohio

County	Total Quantity (Net Tons)	Total Value	Average Value per Ton	Number of Employees — Underground — Miners, Loaders, etc.	Underground — All Others	Surface	Total	Average Number of Days Worked
	1,836,590	$10,038,000	$2 62	5,356	1,730	873	7,959	102
	11,681,150	29,845,000	2 57	9,818	3,093	1,480	13,891	179
	265,623	717,000	2 70	142	125	60	527	159
	684,728	1,866,000	3 09	825	301	171	1,297	150
	207,166	562,000	2 71	390	133	74	597	101
	205,641	540,700	2 65	311	103	47	461	121
	2,982,155	8,143,000	2 73	2,802	1,322	410	4,534	135
	1,635,430	4,219,000	2 58	1,057	359	592	2,008	136
	869,870	2,454,000	2 82	1,471	433	313	2,217	80
	4,515	14,000	3 09	11			11	167
	178,603	503,000	2 82	589	199	113	901	64
	4,353,870	11,934,400	2 74	3,526	1,323	1,125	5,974	137
	57,569	122,000	2 12	168	45	37	250	91
	36,123	107,300	2 97	73	12	9	94	163
	3,184	16,100	5 06	10	1	1	12	248
	932,035	2,535,000	2 72	1,383	557	276	2,216	123
	185,475	478,000	2 58	387	105	99	591	77
	518,971	1,408,000	2 61	543	265	66	874	136
	1,584,017	3,928,000	2 48	2,213	689	668	3,570	89
	98,061	394,000	4 02	152	74	57	283	115
	291,890	985,000	3 37	484	136	102	722	151
	1,360,779	3,604,000	2 65	1,448	478	455	2,381	133
	109,311	273,000	2 50	284	72	59	415	113
Total	31,942,776	$84,686,500	$2 65	33,143	11,555	7,087	51,785	134

North Dakota

	97,807	$264,000	$2 70	63	20	27	110	218
	33,339	88,000	2 64	24	7	10	41	235
	123,722	301,000	2 43	7	3	73	83	177
	237,424	651,000	2 74	150	71	61	282	171
	37,884	115,100	3 04	45	10	24	79	147
	20,669	53,400	2 58	29	11	8	48	181
	129,908	359,000	2 76	81	48	39	168	265
	29,851	63,000	2 11	19	5	6	30	162
	42,704	117,000	2 74	27	11	16	54	219
	58,603	166,000	2 83	69	9	13	91	151
	52,992	152,000	2 87	52	14	12	78	193
Total	864,903	$2,329,500	$2 69	566	209	289	1,064	194

Oklahoma

	83,910	$400,000	$4 77	20	12	48	80	140
	187,451	912,000	4 87	526	272	110	908	91
	27,503	119,000	4 33	3		55	58	191
	344,659	1,611,000	4 67	573	360	164	1,097	115
	296,814	1,326,000	4 47	404	173	101	678	165
	974,457	3,939,000	4 04	1,573	594	429	2,596	119
	1,283,551	6,532,000	5 09	1,750	983	398	3,131	176
	164,278	707,000	4 30	161	31	124	306	135
	3,362,623	15,546,000	4 62	5,000	2,425	1,429	8,854	140

Montana

	1,315,722	$4,702,000	$3 57	930	405	323	1,658	181
	686,446	1,877,000	2 73	588	212	154	954	156
	9,030	28,000	3 10	10	3	3	16	186
	662,087	2,090,000	3 16	640	313	132	1,085	111
	2,200	5,000	2 27	7			7	150
	9,104	22,300	2 45	18	4	2	24	168
	49,369	197,300	4 00	203	127	104	434	41
	2,733,958	$8,921,600	$3 26	2,396	1,064	718	4,178	143

New Mexico

	1,714,851	$6,077,000	$3 54	1,601	641	425	2,667	150
	514,645	2,380,000	4 62	727	353	177	1,257	123
	20,716	65,000	3 14	25	8	7	40	245
	203,270	1,063,000	5 23	382	118	113	613	194
	2,453,482c	$9,585,000	$3 91	2,735	1,120	722	4,577	150

(c) Lincoln, San Juan, Santa Fe and Toole. Total production was therefore 2,456,942 tons and the total

Union Mines in Washington State Resume: Open-Shop Operations Unaffected

"With the union properties again operating the state's normal flow of coal will doubtless soon be available, and until further interruptions occur, any danger of a shortage to either industry or household is past. The danger rather is that because of the most severe competition of low-priced fuel oil and of cheaply mined foreign coal, the commercial mines may have difficulty in securing sufficient market to keep steadily working.

"It is fair to assume, however, that because of their more dependable basis of operation and because of having been in a position to supply and keep a continuous hold on their markets during the recent crisis, the western Washington mines will be in the most favorable position to retain those markets.

"The Pacific Coast Coal Co. takes this opportunity of again stating that its policies have not been in any way affected by the recent union settlement, nor will they be by any future developments."

Valuation of Anthracite Lands for Taxation Soars; Schuylkill County Makes 650 Per Cent Raise

Systematic efforts to burden the anthracite industry with taxation amounting to a levy on capital are creating an issue of the highest importance to all coal-land owners in Pennsylvania and to all consumers of coal. With due regard to all the complications arising from the recent strike and to all the possibilities contained in the investigation by President Harding's commission, this matter of taxation is in some phases the most important question before the coal-producing and coal-consuming public.

The hotbed of the present tax movement is in Schuylkill and Northumberland counties, comprising the southern and western middle anthracite fields. The Schuylkill County commissioners, in making their triennial assessment this year, have marked up county valuation for all tax purposes from $99,935,909 in 1921 to $497,510,263 for 1922.

The great bulk of this increase has been placed upon anthracite lands, which were valued at $55,907,496 in 1921 but which are placed at approximately $422,000,000 for 1922, the increase being more than 650 per cent. As the tax rate for 1922 has been placed at 2.75 mills for county purposes, the total tax yield on a basis of 100 per cent collection would be $1,368,153 on the 1922 valuation, and of this $1,160,500 would be taken from coal-land owners.

As matters stood under the 1921 assessment, coal-land owners paid about 65 per cent of the total county tax collected. Under the proposed valuations coal-land owners would have to pay about 89 per cent, allowing for exonerations and non-payment by individuals.

Up to this point only county taxes have been considered. There remain school taxes, road taxes in townships and the ordinary municipal taxes in the boroughs and the City of Pottsville. The new schedule of valuations means that a burden similar to the county taxes will be placed on coal-land owners by school, township, borough and city authorities.

Last year the county tax in Schuylkill was, roughly estimated, about one-quarter of the taxes collected by all agencies, other than state and federal. If this proportion should be carried through on the 1922 valuations it is probable that coal-land owners would be billed for about $5,250,000 county, school and municipal taxes. This is equivalent to about 35c. or 40c. per ton of anthracite production in that county. Applied to the production of domestic sizes only it means a local tax burden of between 60c. and 70c. per ton.

Owners Petition for Setting Aside of Valuations

Naturally, coal-land owners intend to appeal. They have already attacked the action of the commissioners through an equity proceeding brought by the Pardee interests and joined by numerous other coal-land owners as intervenors. The contention was that the commissioners were not proceeding according to law, and the petition was for setting aside their valuations, with instructions from the court to do the work in accordance with the statutes. This bill was dismissed by the Schuylkill County Court, but an appeal has been taken to the Pennsylvania Supreme Court and will be heard early in the January term.

This equity proceeding is no bar to an appeal in law from the commissioners to the Schuylkill County Court on the ground that the valuations are inequitable, excessive or unjust. This appeal in law must be taken by Dec. 6. As the coal-land owners will neglect no effort to obtain relief, this proceeding in law undoubtedly will be well under way before a final decision in the equity case is given by the Supreme Court.

From a political standpoint the commissioners have proceeded admirably, for they have forestalled objections from the selfish or unthinking part of the public. Last year the county tax rate was 9 mills. This year it is to be 2.75 mills. In effect, property owners outside of coal-land owners have been given to understand: "This soaking of the coal companies is a good thing for you. It is true we have increased your valuations a little, but we have cut your rate, so that you will pay less money in taxes on the 1922 valuation than you did in 1921."

The result is an almost entire absence of public opinion against what is in its essence a grave assault against the fundamental industry of the region. The expression "soaking the coal companies" is literally exact, for the county, whose real-estate tax revenue last year (100-per cent basis, 9 mill rate, $99,935,909 total valuation) was $899,423, this year proposes to collect, on the 100-per cent basis, $1,368,153.

The following list embraces most of the important towns and townships within the Schuylkill coal measures, and shows how the County Commissioners have marked up valuations:

District	1921 Valuation	1922 Valuation
Ashland Borough	$2,014,391	$11,106,000
Coaldale Borough	1,993,556	11,581,000
Girardville Borough	896,675	4,031,000
Mahanoy City Borough	2,436,000	7,309,000
Minersville Borough	1,444,767	4,874,000
Shenandoah Borough	4,355,490	12,339,000
Tamaqua Borough	3,122,150	11,592,000
Pottsville City	8,672,187	22,926,000
Foster Township	1,871,993	6,181,000
Hegins Township	3,153,893	12,998,000
Kline Township	945,008	2,541,000
Mahanoy Township	6,084,157	30,900,000
West Mahanoy Township	4,679,205	13,721,000
New Castle Township	1,755,571	7,566,000
Norwegian Township	2,132,458	23,109,000
East Norwegian Township	979,970	9,792,000
Porter Township	3,170,637	17,379,000
Rahn Township	1,742,268	13,652,000
Reilly Township	3,317,321	30,121,000
Schuylkill Township	2,965,728	28,556,000
Tremont Township	3,863,813	29,454,000
Union Township	1,446,764	2,511,000
Walker Township	835,226	12,064,000

The County Commissioners retained as "expert" engineer a man named William H. Monroe, of Scranton, paying him $25 per diem, with expenses. The contention of the coal-land owners, made in the equity case before the Schuylkill County Court, was that the commissioners did not take the reports of the assessors, who are the only valuation officers known to the law, but set aside the returns and had new ones made out. In general the valuations, they hold, do not meet the plain terms of the Pennsylvania tax law, which requires that the market value, actual or as nearly as may be determined, shall be the valuation for tax purposes.

The contention with respect to the latter point is unquestionably well founded. For example, 241 acres of coal in the Pottsville coal reserve changed hands this year. This is nothing but a mineral right, carrying no surface rights. The character of the geological measures in this tract is such that probably as much as 250 ft. of surface support must be maintained. As a practical mining proposition this means that this particular acreage cannot be utilized until mining adjacent to Pottsville gets down below 250 ft., so that this 241 acres can be reached through workings whose outlet is beyond the city limits. There is no prospect of any such development for 40 or 50 years, and maybe longer.

This property was offered at public sale, two bidders appearing and the whole area being sold for $115,000. The valuation for tax purposes last year averaged $250 per acre. In the face of this bona fide transfer, however, the County Commissioners have this year valued this coal for tax purposes at $4,700 per acre, or almost ten times as much as the actual sale price shown in the deeds recorded within the last few months.

The Lehigh Coal & Navigation Co., which has some holdings in the Pottsville basin, is offering at public sale a tract of 574 acres, partly in Pottsville and partly in the two Norwegian Townships and the boroughs of Mechanicsville and Port Carbon. This is a homogeneous property, being of the same general character throughout and containing the

principal veins of that basin—Buck Mountain, Mammoth and Primrose. But this land is valued at $4,700 an acre in Pottsville, $4,150 in the adjacent borough of Mahanoyville, $3,750 in the borough of Port Carbon and $5,220 in the Tuscarora—a variation of $970 per acre in valuation in a tract of less than one square mile.

Anthracite taxation conditions in Northumberland County bear a strong family resemblance to those in Schuylkill County. William H. Monroe, of Scranton, who was associated with the late Ellsworth Davies in many of his enterprises with respect to coal lands and coal-land valuations, appears in Northumberland County, as in Schuylkill, as the "expert" adviser of the County Commissioners, although the county has a capable mining engineer in H. F. Bickhard, of Shamokin.

The total valuation of coal lands in Northumberland County in 1921 was $26,318,000. This year they were marked up over the neighborhood of $100,000,000, and then the commissioners, on June 12, fixed upon $50,353,541 as the final revised valuation. This final revised valuation has been appealed to the Northumberland County Court, and the case will be heard soon. This increase in valuation is not as excessive as that in Schuylkill County, but the whole transaction carried some unusual features which have attracted wide attention in the hard-coal country.

County Commissioners John Roach and David Hughes, over the negative of Commissioner John W. O'Gara, entered into an arrangement with Monroe and with former Judge Fred E. Moser as special assistants, binding themselves to pay each a retainer of $1,000, a maximum fee of $10,000, and to fix their final pay on the basis of one-tenth of 1 per cent for each man on the total increase over the previous valuations.

Monroe and Moser were hired in March, and the final revised valuation was announced by the County Commissioners three months later. For their services these men stand to get $26,315 each, equivalent to nearly $9,000 a month. The Taxpayers' Association at once carried its protest to court, and early last month President Judge Frank H. Strouse and Judge Albert Lloyd united in a scathing opinion in which they referred to the questionable ethics of contingent fees and an arrangement whereby the special advisers of the commissioners would have a financial stake in any appeal. They concluded by saying that there was no warrant for the course taken by the commissioners, that the contract was against public policy and beyond the power of public officers and therefore void, and that an injunction should issue restraining the commissioners from issuing warrants for any payment whatsoever to Moser and Monroe for work under the contract, and restraining the County Controller from passing any accounts in favor of them was under the arrangement of last March.

Coal Commission Seeks Aid of Experts to Complete Task at Time Appointed

As the President's Coal Commission draws nearer to the termination of work which it has been assigned to do, the commissioners are receiving a new impression of the enormity of the task and the short time at their disposal. At a time when every hour is precious they are experiencing exasperating delay in obtaining technicians for their staff. It has become evident during the past week that there is no surplus of coal specialists in the country. As a result the commission is being forced to attempt to draft some of the trained men in the employ of the interests concerned. Due to the limited time and the large amount of work to be done a comparatively large staff of trained men must be put to work. There is a feeling that mine operators, the United Mine Workers, exporters and large consumers of coal should be willing to contribute to the success of the commission's work by being willing to make some sacrifice in the way of releasing specially qualified members of their own staffs.

The managing editor of a large newspaper was summarily discharged a few years ago when the general manager of the paper came into the news room on election night and found the managing editor running an adding machine. At a time when there was such unusual need for broad direction in the handling of election returns the man who was paid to deal with the broad aspects of the situation was devoting himself to the most detailed part of the job. It is believed that the members of the Coal Commission are strenuously avoiding any program of work which would allow them to fall into the error which cost the managing editor his job. Plans for the commission's work have not been worked out as yet in detail but it is believed that the commission will subdivide so that the members best qualified to pursue the broad direction of certain phases of the inquiry can specialize on it, while the work in another line will be carried on by other members.

An idea of the task that is facing the members of the commission may be obtained from some of the alternatives between which they must choose. One of the most important questions the commissioners will have to consider is whether or not they will recommend amendments to the anti-trust statute which will permit consolidations and a scheme of collective marketing.

While it is possible that the commissioners will avoid a flat recommendation as to the rates of wage which they may regard as fair, it is certain that they must go deeply into the wage and living-cost questions. In their report they will be expected to discuss and express opinions on such questions as a minimum wage, a guarantee of employment and unemployment insurance.

It is not unreasonable to suppose that they will consider the place of trade unions in the business of coal production, especially when the organization of coal miners exerts such an important influence on the production of two-thirds of all the coal produced in the United States, which, incidentally, is nearly half the world's output. The commission is called upon to probe deeply into the affairs of the strongest labor union in the world.

While nationalization is specified as one of the points on which the commission must report, it is regarded as probable that it will be dismissed without extended discussion, although it is probable that the commission will see in the cry for nationalization a reflection of the course which the public instinctively pursues when called upon to pay unusual prices as a result of manipulations for which it is in no wise responsible.

Another big question with which the commission must wrestle is that of regulation. The commission will be expected to express its opinion as to whether or not coal falls into a public-utility category.

Commission Query to Miners and Operators Asks Data on Wages and Profits

In the effort to find remedies for the ills of the coal industry the President's Fact-Finding Commission, following three conferences with hard- and soft-coal mine workers and operators last week, sent a questionnaire asking both for suggestions.

Accompanying this questionnaire is a letter from John Hays Hammond, chairman of the commission, bespeaking all possible light on clearing up troubles, so that in the end there shall be a square deal for all concerned. The letter says:

"The commission particularly desires your carefully formulated views as to what efficient policy, if any, could or should be adopted by the government relative to the coal industry, having proper regard to the interests of the mine worker, the mine operator and the public." A résumé of the topics upon which the law creating the commission requires facts (*Coal Age*, Sept. 28, p. 503) accompanies the questionnaire.

"The commission desires you to go carefully over this list of topics," the letter continues, "and advise it in writing at your earliest convenience on the following principles:

"(a) What specific data should be secured under each one of the topics enumerated in the law in order to carry out adequately the direction of the law?

"(b) What in your judgment would be the best and most practicable method for the commission to adopt for securing these data?

"(c) What, if any, topics should the commission investigate in addition to those already enumerated in the law, in

order to give to Congress and the public complete information necessary to the proper understanding of the conditions in the coal industry?

"(d) To what extent are you in position to co-operate with the commission in securing necessary data in such manner as will eliminate in the largest possible degree any basis for criticism of the accuracy or the validity of the data which have been secured?

"In addition to the above, the commission further desires you to advise it in writing at some date in the near future, tentatively:

"(e) What in your judgment are the elements that have caused and are causing the acknowledged demoralization in the coal industry and which are working hardships alike upon the parties engaged in the production of coal and the consuming public?

"(f) What in your judgment are the practical remedies that would eliminate any or all the elements that you feel are responsible for the condition?"

J. D. Rockefeller, Jr., Says Miners Should Have Voice in Working Conditions

John D. Rockefeller, Jr., who is resting at Battle Creek, Mich., telegraphed F. Ernest Johnson, secretary of the research department of the Federal Council of Churches, New York City, last week that the grievances of the coal miners in Somerset County, Pennsylvania, are "well founded." "I have urged with all sincerity and vigor at my command," he added, "that the present labor policy of the operators, which seems to me to be both unwise and unjust, be radically altered."

Mr. Rockefeller's telegram was sent in response to a letter sent by Mr. Johnson to the former calling attention to the strike in parts of central and western Pennsylvania and particularly in Somerset County. "As I understand it," wrote Mr. Johnson, "two large companies in particular, namely, the Berwind-White Coal Co. and the Consolidation Coal Co., are so prominently involved that any remedial policy adopted by them would be likely to have a far-reaching influence. Is it not possible for you as a stockholder to take some effective action with regard to the distressing conditions which now exist in Somerset County?"

In replying to the letter Mr. Rockefeller said that he was not now and never had been a stockholder in or in any way connected with the Berwind-White Co., but was a stockholder with a minority interest in the Consolidation Coal Co. As a minority stockholder Mr. Rockefeller said he had no legal power, even if he were so disposed, to dictate the policies of that company. Moreover, he said, "I must concede the administrative rights of management within certain limits of authority and responsibility. Apart from these usual and recognized limitations, whether legal or administrative, I am now and long have been, a believer in the moral responsibility of stockholders."

"In this special case of Somerset County," continued Mr. Rockefeller, "I have not hesitated to accept my personal responsibility or to record my own position. This I have done directly and through competent representatives. I believe that the underlying grievances of the miners in this district are well founded, and I have urged with all the sincerity and vigor at my command that the present labor policy of the operators, which seems to me to be both unwise and unjust, be radically altered.

"It is my understanding that the operators in the Somerset County coal mines have hitherto denied their employees all voice and share in determining their working conditions and any adequate machinery for the uncovering and adjustment of grievances. The day has passed when such a position can justly be maintained by any employer, or group of employers, in a country like ours. I have long advocated, and never more earnestly than now, a labor policy which concedes to the employees in every industrial unit what I believe to be a fundamental right, namely, the right to representation in the determination of those matters which affect their own interests."

The Committee of City employees appointed by Mayor John F. Hylan to go to Windber to investigate conditions left New York City on Saturday, Oct. 28. The committee is headed by David Hirshfield, Commissioner of Accounts. Before going, James Mark, vice-president of District No. 3, United Mine Workers of America, who was in New York City with the Somerset County miners' delegation, sent a letter to Commissioner Hirshfield in which he said:

"By holding public hearings in Windber you may soon obtain facts of the un-American conditions under which coal for your city subways has been mined and you can form your own conclusions as to whether the citizens of New York really want to profit by the suffering of whole communities of coal diggers. We are frank to express our belief that the results of any fair investigation should lead the New York City government to lay down the following policy for the public utilities partly owned by it:

"That a steady supply of good fuel, mined under American conditions, is possible only where operators and miners have arrived at a union agreement."

Declaring Strike Off in Mingo, Union Prepares to Move Tent Colonies

Officials of the United Mine Workers began preparations Oct. 27 to move hundreds of miners and their families quartered in tent colonies to union coal fields, as a consequence of the official abandonment of the bituminous strike in the Mingo field.

The tent dwellers number approximately one thousand men, women and children, according to R. D. White, international organizer. "We do not intend that these people shall spend a third winter of hardship," said Mr. White.

Decision by union executives to call off the strike was reached at Indianapolis several days ago, it was reported. First announcement was contained in a letter from John L. Lewis, international president, pointing out that the strike has cost the union approximately two million dollars.

During the twenty-eight months of the strike there were thirty known deaths and fifty persons were wounded. Mining equipment destroyed by dynamite and fire was valued at a quarter of a million dollars.

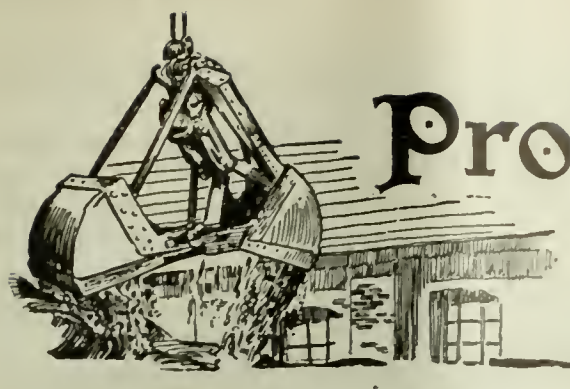


RENEW YOUR MEMBERSHIP

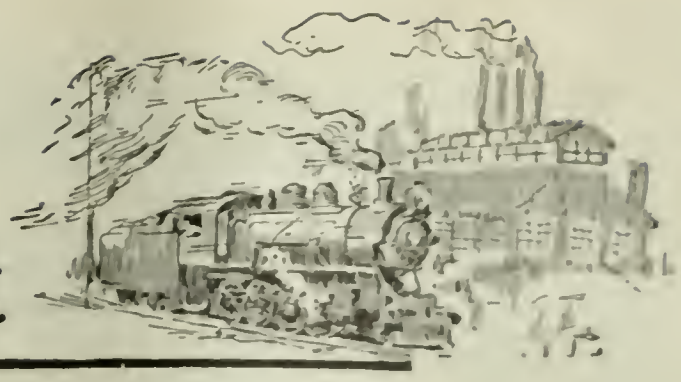
The annual roll call of the American Red Cross, at which its membership is renewed, will take place in the period between Armistice Day, Nov. 11, and Thanksgiving Day, Nov. 30. This is the sole appeal that the national organization makes during the year, in for the purpose of maintaining its membership at a point that will enable it to perform the many great work it is Congress.

Distribution of Lake Cargo Coal Loaded at Lake Erie Ports to Oct. 15*

	1921		1920		1919	
	Tons	Per Cent	Tons	Per Cent	Tons	Per Cent
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]



Production and the Market



Weekly Review

The inherent weakness of the bituminous-coal market is indicated by the wide range in prices. Prices of good grades are still firm while on off grades and the output of small mines quotations are low—that is to say, the market is extremely spotty. In a strong market coal is coal, and it all takes the ruling price. Today the range of prices on the product of mines in the same field varies a dollar or more per ton, depending on quality. *Coal Age* Index of spot bituminous prices receded to 346 on Oct. 30—a decline of 6 points for the week. This corresponds to an average mine price of $4.19. The curve of prices, which since reaching the peak of $6.73 the last of July has been falling sharply, is flattening out. The decline appears to have been largely arrested, partly accounted for by seasonal domestic orders, but also due in part to the firm selling tactics of the largest houses. There is a "take it or leave it" note to the sellers' canvassing today—and good grades are not left stranded.

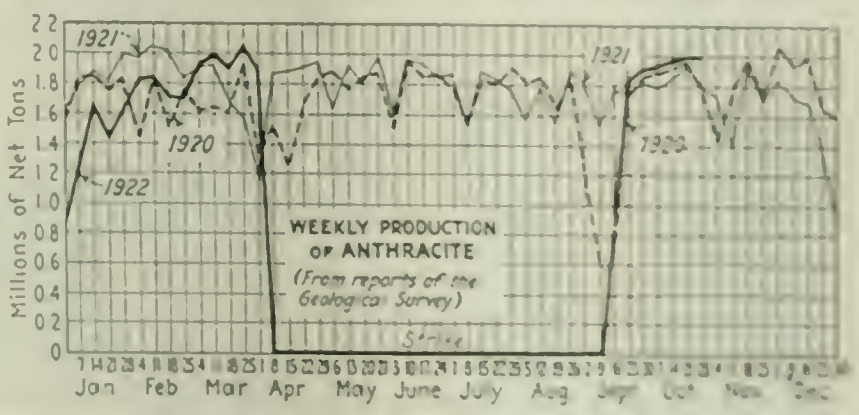
Market Sensitive to Transportation Conditions

The margin of supply in excess of demand is at a point where any sudden dislocation of transportation has an immediate effect on the market. Thus prices at the Cincinnati gateway were markedly stimulated last week by an embargo placed against the westward movement of coal by the Chesapeake & Ohio. Steam prices quickly rallied to the level of gas and byproduct coal, while domestic fuels skyrocketed. Facilities of the L. & N. and N. & W. were pushed to the limit to meet the emergency and congestion appeared at once.

Federal Fuel Administrator Spens has obtained the co-operation of representative Smokeless, Pittsburgh and Ohio operators in holding down their domestic prices. The market range is narrowing down to this level, but slowly, and with intermittent relapses in such emergencies as the Cincinnati occurrence of last week.

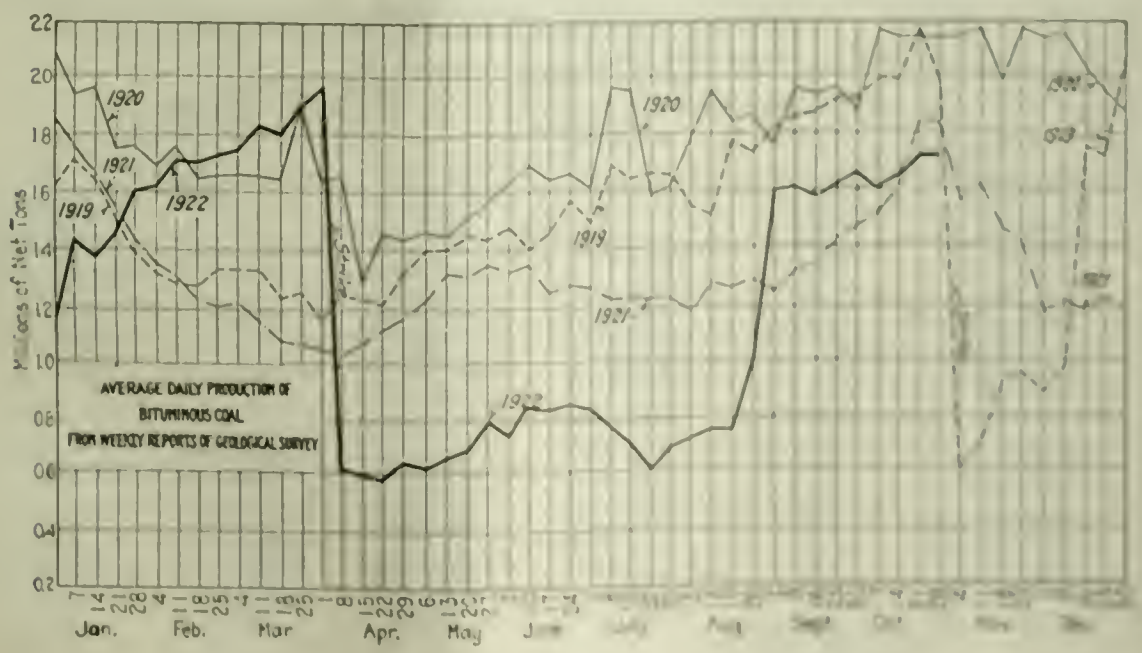
Warm weather has cut the Middle West steam market into ribbons. Producers are eagerly taking domestic orders and sacrificing their resultant coals in an effort to maintain production. Competition is so keen in that section that local producers have crowded West Virginia and Kentucky coals from that market. Improvement in rail conditions is slow and not yet indicative of any general betterment.

Ohio price regulatory laws are proving a burden to the trade. Coal produced in that state is seeking outside markets and a heavy tonnage is moving to the Lake and Michigan points. Ohio retailers are forced to buy outside coals at fancy prices. This involves longer hauls and further taxes railroad facilities and car supply.



Heavy shipments to the Northwest have lulled the consumer to a sense of security and dock sales are slow, despite lowered quotations made in the past ten days. Tonnage is piling up at the Head-of-the-Lakes and there is little buying activity shown, aside from a few large consumers who are stocking.

Domestic sizes of anthracite are in great demand and retailers are unable to maintain their yard stocks. The complaint is heard in the East that concentration of tonnage for the Lakes is reducing receipts to the



Estimates of Production

(Net Tons)

BITUMINOUS

	1923	1922
Oct. 7 (a)	[illegible]	[illegible]
Oct. 14 (b)	[illegible]	[illegible]
Oct. 21 (c)	[illegible]	[illegible]
Daily average	[illegible]	[illegible]
Calendar year	[illegible]	[illegible]
Daily av. since Apr. 1	[illegible]	[illegible]

ANTHRACITE

Oct. 7 (d)	[illegible]	[illegible]
Oct. 14 (d)	[illegible]	[illegible]
Oct. 21 (e)	[illegible]	[illegible]
Calendar year	[illegible]	[illegible]

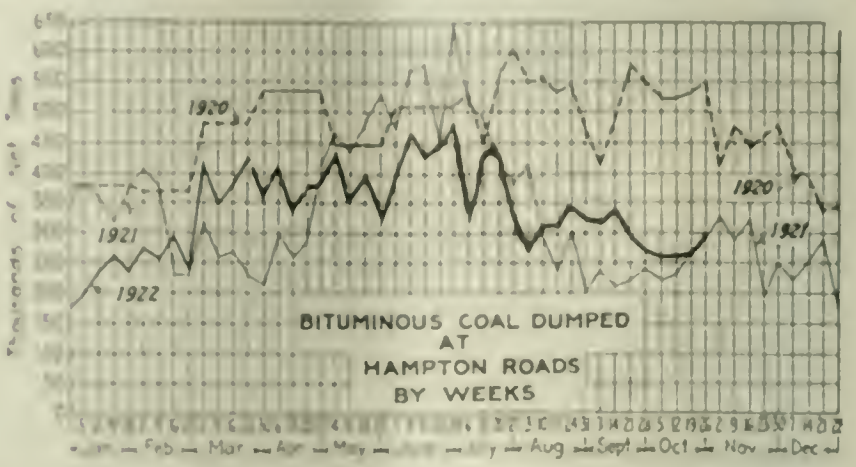
COKE

Oct. 14 (d)	[illegible]	[illegible]
Oct. 21 (e)	[illegible]	[illegible]
Calendar year	[illegible]	[illegible]

(a) Subject to revision. (b) Revised from last report.

expected to show a total of 190,000 cars and indicate a production of 10,400,000 tons."

Approximately 1,000,000 tons of coal reached the Head-of-the-Lakes during October, of which 90,000 tons was anthracite. If this rate is maintained the season's total will approximate one-half of last year's receipts. An acute



shortage of cars is reported by the dock trade. Storage space is rapidly being filled and prices have softened. All-rail tonnage is already an undermining factor in dock prices. Buyers are apathetic and aside from a few large

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Oct. 2, 1922	Oct. 16, 1922	Oct. 23, 1922	Oct. 30, 1922†
	Columbus	$3 [illegible]	$3 75	$3 10	[illegible] 00
	Columbus	[illegible]	6 [illegible]	6 25	6 00@ 6 50
	Columbus	[illegible]	[illegible]	[illegible]	[illegible]
	Chicago	[illegible]	6 [illegible]	6 50	5 75@ 7 00
	Chicago	[illegible]	5 [illegible]	6 [illegible]	[illegible] 6 00
	Cincinnati	6 [illegible]	6 [illegible]	6 [illegible]	**6 00 — 8 00**
	Cincinnati	[illegible]	5 95	5 55	**6 00 — 6 25**
	Cincinnati	[illegible]	5 [illegible]	5 30	**6 00 — 6 25**
	Boston	8 [illegible]	7 [illegible]	7 10	7 00@ 7 25
	Boston	4 [illegible]	4 25	3 75	3 [illegible] 4 00
	Boston	4 75	4 50	4 25	3 [illegible] 4 75
	Boston	4 [illegible]	4 [illegible]	3 95	3 [illegible] 4 00
Pool 1 (New Standard)	New York	5 [illegible]	5 25	5 00	[illegible] 25
	Baltimore	[illegible]	[illegible]	[illegible]	[illegible]
	New York	4 [illegible]	4 65	4 25	4 00@ 4 50
	Philadelphia	4 [illegible]	4 35	4 35	[illegible] 4 65
	Baltimore	5 [illegible]	4 60	4 35	3 75@ 4 25
	New York	4 [illegible]	4 [illegible]	3 85	3 [illegible] 3 75
	Philadelphia	4 25	3 60	3 60	3 [illegible] 3 70
	Baltimore	4 [illegible]	4 35	3 90	3 00@ 3 75
	New York	3 85	3 [illegible]	3 30	2 85@ 3 25
	Philadelphia	4 [illegible]	3 25	3 25	2 [illegible] 3 40
	Baltimore	4 [illegible]	4 [illegible]	3 55	3 00@ 3 60
High-Volatile, Eastern					
	New York	4 [illegible]	3 85	3.50	3 [illegible] 3 60
	Philadelphia	4 [illegible]	3 75	3 75	3 [illegible] 3 75
	Baltimore	4 [illegible]	4 [illegible]	3 60	3.[illegible] 3 60
	Pittsburgh	5 [illegible]	5 25	5 05	[illegible] 5 25
	Pittsburgh	4 [illegible]	3 [illegible]	3 25	3 00@ 3 50
	Pittsburgh	4 [illegible]	3 [illegible]	3 60	3 50@ 3 75
	Columbus	6 [illegible]	6 25	6 25	6 00@ 6 50
	Columbus	5 [illegible]	4 50	4 50	**4 50 — 5 00**
	Columbus	[illegible]	3 [illegible]	3 75	**4 00 — 4 25**
	Cincinnati	6 [illegible]	6 25	6 10	6 00
	Cincinnati		4 [illegible]	4 35	4 2[illegible] 4 50
	Cincinnati		3 75	3 35	**4 00 — 4 25**
	Cincinnati	4 75	4 [illegible]	3 65	**3 75 — 4 25**
	Columbus	6 25	5 45	5 25	[illegible]
	Columbus	4 [illegible]	3 [illegible]	3 [illegible]	**3 50 — 3 75**
	Cincinnati	4 [illegible]	3 25	3 25	[illegible] 3 25
	Cincinnati	4 [illegible]	3 81	3 81	3 81

	Market Quoted	Oct. 2, 1922	Oct. 16, 1922	Oct. 23, 1922	Oct. 30, 1922†
Pitts. No. 8 mine run...	Cleveland	$4 40	$3.56	$3.56	$3.56
Pitts. No. 8 screenings.	Cleveland	4 10	3 31	3.25	**3 31**
Midwest					
Franklin, Ill. lump.....	Chicago	5 40	5 35	5 30	5 25@ 5.50
Franklin, Ill. mine run.....	Chicago	4.75	4.50	4 50	4 00@ 4.25
Franklin, Ill. screenings....	Chicago	3 85	3.25	3 25	2 25@ 3 00
Central, Ill. lump.....	Chicago	5.10	5.10	5.10	4.75@ 5.25
Central, Ill. mine run.....	Chicago	4 55	3.60	3.60	3 00@ 3.25
Central, Ill. screenings....	Chicago	3.35	2.35	2.00	1.75@ 2.00
Ind. 4th Vein lump.....	Chicago	5 25	5.10	5.10	5 00@ 5.25
Ind. 4th Vein mine run...	Chicago	4 85	4.60	4.35	3.75@ 4.00
Ind. 4th Vein screenings..	Chicago	3 85	3.25	2.75	2.25@ 2.50
Ind. 5th Vein lump.....	Chicago	5.10	5.10	4.75	4.50@ 5 00
Ind. 5th Vein mine run...	Chicago	4 65	3.75	3.75	3.50@ 3.75
Ind. 5th Vein screenings..	Chicago	3 60	2.85	2.75	2.00@ 2.25
Standard lump.....	St. Louis	4 75	4.25	4.35	3.50@ 5.00
Standard mine run.....	St. Louis	3.75	3.35	2.75	2.50@ 2.75
Standard screenings.....	St. Louis	2 35	2.10	2.10	2 00
West Ky. lump.....	Louisville	5.50	5.05	5 00	4 75@ 5.25
West Ky. mine run	Louisville	3.85	3.00	2 45	**2 65@ 3 00**
West Ky. screenings	Louisville	3.55	2.85	2.10	1 75@ 2.25
West Ky. lump.....	Chicago	4.25	4.10	4.10	4 00@ 4 25
West Ky. mine run	Chicago	4.25	3.50	3.25	2.75@ 3 60
South and Southwest					
Big Seam lump	Birmingham	3 75	3.25	3.95	3.45@ 4.45
Big Seam mine run	Birmingham	2.75	2.75	2.60	2.50@ 2.75
Big Seam (washed)	Birmingham	3 35	3.25	2.75	2.50@ 3 00
S. E. Ky lump	Chicago	6.25	6.25	5.50	5.00@ 6 00
S. E. Ky. mine run	Chicago	4.75	4.75	4.25	4.00@ 4 50
S. E. Ky. lump	Louisville	7.00	6.75	6.50	**6.50@ 7 00**
S. E. Ky. mine run	Louisville	5.35	4.35	3.85	**3 75@ 4.25**
S. E. Ky screenings	Louisville	5.10	4.10	4.10	4.00@ 4.20
S. E. Ky. lump	Cincinnati	6.50	6.75	6.75	5.00@ 6.75
S. E. Ky. mine run	Cincinnati	5.10	4.10	3.85	**3.75@ 4.75**
S. E. Ky. screenings	Cincinnati	5.00	4.00	3.60	**3.75@ 4.25**
Kansas lump	Kansas City		5.75	5.75	5.50@ 6.00
Kansas mine run	Kansas City		4.25	3.75	3.50@ 4.00
Kansas screenings	Kansas City		2.50	2.50	2.50

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Latest Independent	Pre-Strike Company	Oct. 23, 1922 Independent	Oct. 23, 1922 Company	Oct. 30, 1922† Independent	Oct. 30, 1922† Company
	New York	$2 34		$7 60@ $7 75	.....	$7.75@ $8 15	..	$7.75@ $8.15
	Philadelphia	2 39	$7 [illegible] 7 50	7 75@ 7.85	.....	7.90@ 8 10	..	7 90@ 8.10
	New York	2 34	7 [illegible] 7 75	7.60@ 7.75	$9.25@ 11.00	7.75@ 8 35	$9.25@ 10.50	7.75@ 8.35
	Philadelphia	2 39	7 2[illegible] 7 75	7 75	9.25@ 9.75	8.10@ 8 35	9.25@ 9.75	8.10@ 8.35
		5 67	7 50	6 [illegible] 7.40	10.00@ 12.00	7.75@ 9 25	..	
	New York	2 34	7 [illegible] 8 20	7 9[illegible] 8 10	9.25@ 11.00	8.00@ 8 35	9.25@ 10.50	8.00@ 8.35
	Philadelphia	2 39	7 8[illegible] 8 10	8 0[illegible] 8.25	9.25@ 9.75	8.15@ 8 35	9.25@ 9.75	8.15@ 8.35
		5 67	7 75*	7.20@ 7.60*	10.00@ 12.00	8.00@ 9.25		
	New York	2 34	7 [illegible] 8 20	7 90@ 8.10	9.25@ 11.00	8.00@ 8 35	9.25@ 10.50	8.00@ 8.35
	Philadelphia	2 39	7 8[illegible] 8 10	8 0[illegible] 8.25	9.25@ 9.75	8.15@ 8 35	9.25@ 9.75	8.15@ 8.35
		5 67	7 75	7.2[illegible] 7.60*	10.00@ 12.00	8.00@ 9.25		
	New York	2 34				8.15		8 15
	Philadelphia	2 22	5 [illegible] 5.75	5 7[illegible] 6 45	6 55@ 8.00	6 15@ 6 20	7 00@ 7.50	6 15@ 6.20
	Philadelphia	2 14	5 [illegible] 6.[illegible]	6 1[illegible] 6.25	7 00@ 7.25	6 15@ 6 20	7 00@ 7.25	6 15@ 6.20
		5 [illegible]	6.50	5 6[illegible] 6.10*	8 50@ 9.50	6 15@ 7 00		
	New York	2 22	2 7[illegible] 3 50	3 50	3 00@ 4 00	4 00@ 4 25	2 25@ 4 00	4 00@ 4 25
	Philadelphia	2 14	2 7[illegible] 3.25	3 50	3 25@ 4 00	4 00	3 25@ 4 00	4 00
	New York	2 22	2 [illegible] 2 50	2 5[illegible]	1 85@ 2 50	2 75@ 3 00	2 00@ 2 50	2.75@ 3.00
	Philadelphia	2 14	2 [illegible] 2 50	2 50	2 25@ 2 75	2 75@ 3 00	2 25@ 2.75	2.75@ 3.00
	New York	2 22	1 [illegible] 1 [illegible]	1 5[illegible]	1 00@ 1.75	2 00	1.00@ 1.75	2 00
	Philadelphia	2 14	1 [illegible] [illegible].75	1 5[illegible]	1 00@ 2 00	2 00	1.00@ 2 00	2 00
	New York	2 22		2.[illegible] 2 50	....	2 25	.. ..	2 25

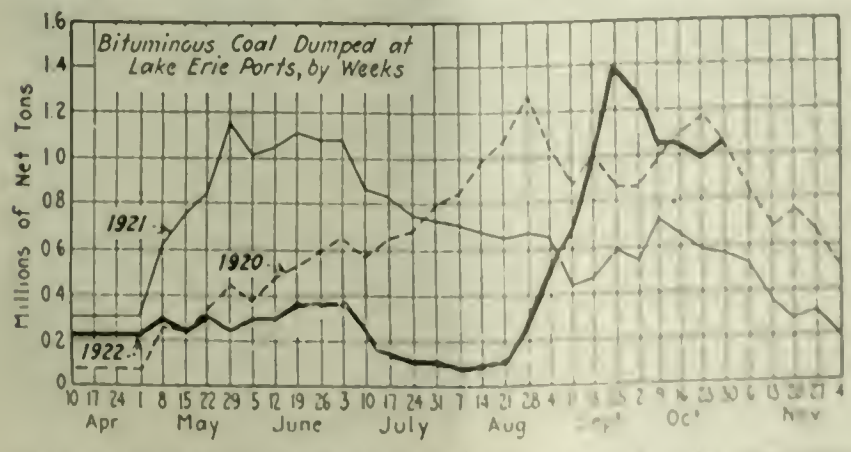
*[illegible] †Advances over previous week shown in heavy type, declines in *italics*.



Coal Age, Index 346, Week of Oct. 30, 1922. Average spot price for same period, $4.19. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

consumers who are taking stock the Northwestern market for soft coal is becoming sluggish.

Lake dumpings were 1,011,051 net tons during the week ended Oct. 30, as compared with 1,004,094 tons in the preceding week. The season's movement to date is 14,474,345



tons; last year it was 21,461,460 tons. Of this quantity approximately 1,050,000 tons has been forwarded to parts not ordinarily taking Lake coal.

All-rail shipments to New England declined to 3,092 cars during the week ended Oct. 21, as compared with 3,646 cars in the preceding week. Shippers are finding few takers for their tonnage, although prices have declined steadily.

Hampton Roads dumpings for all accounts were 292,560 net tons during the week ended Oct. 26, as compared with 260,358 tons in the previous week. The Sewalls Point piers registered an increase, while the Norfolk & Western tonnage dropped. There is less coal on hand, although it is likely that the Chesapeake & Ohio embargo on westbound movement will throw more tonnage to Tidewater. Coastwise business is still the mainstay of the Roads, and the low prices prevailing afford Southern fuels an excellent competitive position in New England with all-rail grades. There is little activity in that market, however, aside from contract movement.

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report

	Six Months July to Dec., 1921	Jan. 1 to Apr. 1, 1922 Inclusive	Sept. 5 to Oct. 14, 1922 Inclusive	Week Ended Oct. 14
U. S. Total	45.6	55.7		
Alabama	63.5	64.6	85.2	79.8
Somerset County	55.5	74.9	35.2	31.2
Panhandle, W. Va.	55.3	51.3	59.2	56.5
Westmoreland	54.9	58.8	72.7	63.1
Virginia	54.8	59.9	57.6	61.2
Harlan	53.3	54.8	21.6	26.6
Hazard	51.7	58.4	13.6	13.5
Pocahontas	49.8	60.0	35.2	41.5
Tug River	48.1	63.7	33.1	36.1
Logan	47.6	61.1	24.1	22.8
Cumberland-Piedmont	46.6	50.6	32.0	35.1
Winding Gulf	45.7	64.3	38.3	38.4
Kenova-Thacker	38.2	54.3	40.1	34.7
N. E. Kentucky	32.9	47.7	32.0	33.6
New River	24.3	37.9	38.5	29.4
Oklahoma	63.9	59.6	63.2	75.0
Iowa	57.4	78.4	86.0	80.6
Ohio, Eastern	52.6	46.6	46.8	43.2
Missouri	50.7	66.8	57.9	80.0
Illinois	44.8	54.5	47.8	46.4
Kansas	42.0	54.9	62.9	57.8
Indiana	41.4	53.8	(a)	(a)
Pittsburgh†	41.2	39.8	58.6	48.7
Central Pennsylvania	39.1	50.2	62.0	59.2
Fairmont	35.3	44.0	45.0	50.1
Western Kentucky	32.5	37.7	39.5	32.7
Pittsburgh*	30.4	31.9	41.0	41.5
Kanawha	26.0	13.0	14.2	17.6
Ohio, Southern	22.9	24.3	(a)	(a)

* Rail and river mines combined
† Rail mines.
(a) No report.

Car Loadings, Surplusages and Shortages

	Cars Loaded All Cars	Cars Loaded Coal Cars
Week ended Oct. 14, 1922	883,470	198,926
Previous week	868,168	185,312
Same week in 1921	918,529	195,547

	Surplus Cars All Cars	Surplus Cars Coal Cars	Car Shortage	
Oct. 15, 1922	4,275	1,588	156,899	44,984
Oct. 8, 1922	5,500	3,024	141,252	40,493
Same date in 1921	120,000	62,000		

ANTHRACITE

Estimates of production of hard coal for the week ended Oct. 28 place the output at 2,100,000 net tons, as compared with 2,003,000 tons during the preceding week.

Domestic coal is moving out to householders as rapidly as it is received by retailers. Canada and the West are clamoring for coal—and receiving but little. Lake movement is being pushed during the short remainder of navigable weather this season. This has caused a diminution of receipts at Eastern points and while there is no actual suffering, federal authorities are understood to have been requested to increase the allotments for New York State. Rail deliveries to New England were 3,477 cars during the week ended Oct. 21, as compared with 3,256 cars in the preceding week.

COKE

Production of beehive coke was 211,000 net tons during the week ended Oct. 21, an increase of 20,000 tons when compared with the preceding week. The largest increase occurred in the Connellsville region.

Contract offerings are higher than spot prices, in view of transportation difficulties to be expected later. With increasing output the market hinges on the position of the consumer, whose outlook, while not poor, is uncertain. The market for pig iron is sluggish. With increasing production it is no longer a question of obtaining sufficient coke and steam furnaces may have to blow out because of a lack of market.

Foreign Market And Export News

Good Export Demand Aids British Market; Production Sets New High

The prospects of the Welsh coal trade are still bright, the only fly in the ointment being the threat of a strike on the non-unionist controversy. It is believed that the Miners' Federation will decide to postpone the threatened strike. The export trade continues strong, especially to South America, Europe and Mediterranean, sailing despite, on the other hand, exports to the U. S. and Canada have declined from around 200,000 to 60,000 tons per week.

The chief market is found in steam coals which are going to Germany, France and Italy. These countries, it will be remembered, first held their orders for a fall in prices, then were crowded off the market by American orders, and so their requirements now are heavy.

British production during the week ended Oct. 14 set a new record for the year when a total of 5,235,000 gross tons was mined, according to a cable to *Coal Age*. The preceding week's output was 5,109,000 tons.

The situation in North England enables sellers to hold for advances on current quotations. The perennial labor uncertainty in Wales has greatly helped Northumberland and Durham and there is a strong demand for practically all classes of coal.

French Coal in Better Demand

Nord and Pas-de-Calais coals remain very active, orders are easily absorbing the production and small tonnages are being taken from stocks. The demand for domestic, stirred up by the difficulty of procuring Belgian coals, has become pressing and delays of delivery of two or three weeks are common.

Welsh machine-made anthracite nuts are selling now on the basis of 80s. c.i.f. Rouen, or 282 fr. and are retailed to Parisian households at prices varying between 300fr @ 340fr. The excess of this price has induced consumers to purchase Belgian anthracites instead, which are now almost unobtainable.

In the Center fields, stocks of industrial coals are still large, but those of domestic coals are rapidly decreasing. Nevertheless, a certain improvement in the industrial demand in that district also begins now to be felt.

Although French operators of the Nord and Pas-de-Calais have agreed not to press for the present their former decision to reduce wages, they are determined to obtain from Parliament the amendment to the Mines Act, which would increase the underground working time. Miners are no less opposed to any modification of the Act.

Hampton Roads Export Clearances, Week Ended Oct. 26, 1922

Nor SS. Jose Kingston, 1,181 tons.
Br SS. Berwindvale, Havana, 7,814 tons
Amer Schr. James M. W. Hall, Hamilton 458 tons
Amer Schr. Grand Turk, Hamilton, 758 tons
Amer SS. Cristobal, Cristobal, 9,485 tons.

Hampton Roads Pier Situation

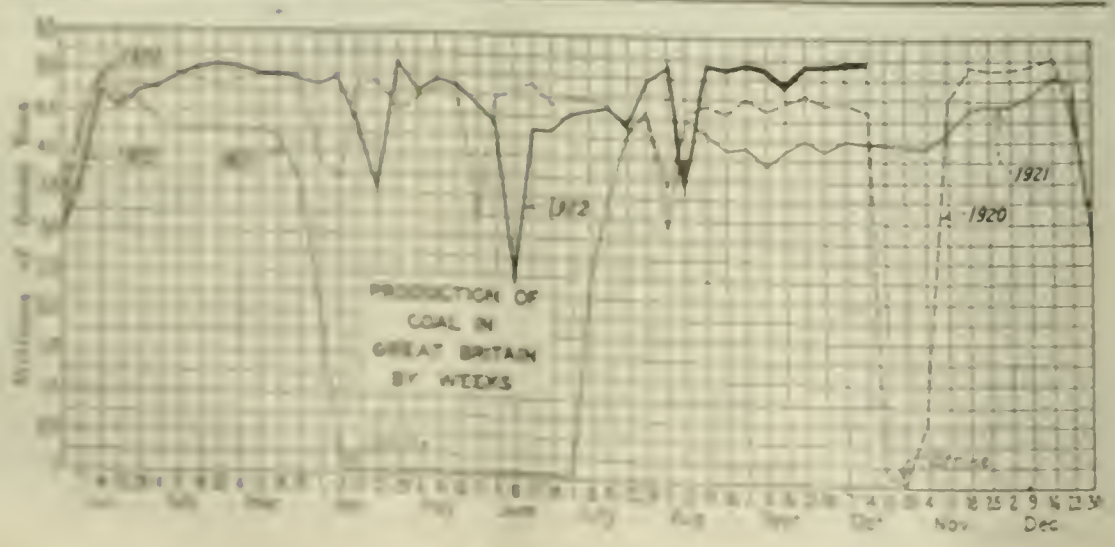
	Week Ended Oct. 19	Oct. 26
N. & W. Piers, Lamberts Point:		
Cars on hand	1,099	937
Tons on hand	85,984	60,322
Tons dumped	104,906	96,336
Tonnage waiting	3,050	13,875
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	1,208	725
Tons on hand	68,400	46,650
Tons dumped	73,776	110,823
Tonnage waiting	13,684	7,149
C. & O. Piers, Newport News:		
Cars on hand	566	348
Tons on hand	28,800	17,400
Tons dumped	53,781	54,057
Tonnage waiting	450	250

Coal Paragraphs from Foreign Lands

GERMANY—Production in the Ruhr region during the week ended Oct. 14 was 1,972,000 metric tons, according to a cable to *Coal Age*, as compared with 1,855,000 tons in the week preceding.

ITALY—Genoa quotations on Cardiff steam first are now around 40s. 6d., according to a cable to *Coal Age*. Last week's price was 39s. 6d.

BELGIUM—The market is becoming very firm and orders are of extraordinary size. After a year of crises the Belgian coal basins are enjoying a period of exceptional prosperity. The foreign demand for classed descriptions is growing.



British Coal Exports in September

Country	Gross Tons 1920	1921	1922
Russia	12,089	14,810	83,152
Sweden	51,843	215,884	229,276
Norway	39,217	91,521	132,198
Denmark	66,410	226,393	351,387
Germany	1,916	161,530	1,060,801
Netherlands	16,528	247,582	611,147
Belgium	19,154	80,727	276,390
France	532,919	846,085	1,108,927
Portugal	15,518	86,250	65,483
Azores and Madeira	19,908	2,911	5,035
Spain	5,838	110,854	142,710
Canary Islands	39,089	34,149	42,431
Italy	164,456	400,991	538,002
Austria-Hungary	2,665	.....	.....
Greece	15,466	65,737	44,066
Algeria	73,136	38,184	91,395
French West Africa	2,260	2,818	1,934
Portuguese W. Africa	32,176	21,544	.....
Chile	90	103	12,448
Brazil	.....	47,741	130,311
Uruguay	8,157	41,895	26,509
Argentine Republic	5,528	103,053	143,387
Channel Islands	13,280	9,309	11,968
Gibraltar	130,535	60,363	31,109
Malta	31,380	39,473	17,586
Egypt	118,952	87,488	195,521
Aden and Dependencies	..	16,495	7,645
British India	235	103,060	27,998
Ceylon	5,151	28,055	9,770
Other countries	44,718	221,574	1,684,143
Total September	1,475,623	3,406,579	7,082,729
Total August	1,847,403	3,103,207	6,146,121

QUANTITY AND VALUE

	Gross Tons September	1st 9 Mos.
1920	1,475,623	19,851,555
1921	3,406,579	13,351,554
1922	7,082,729	45,476,573
	Value September	1st 9 Mos.
1920	£6,622,515	£78,492,476
1921	5,194,356	27,856,159
1922	8,110,083	51,410,935

Pier and Bunker Prices, Gross Tons

PIERS

	Oct. 21	Oct. 28†
Pool 9, New York	$8.00@$8.25	$7.50@$7.75
Pool 10, New York	7.35@ 7.60	6.85@ 7.15
Pool 11, New York	7.00@ 7.25	6.50@ 6.75
Pool 10, Philadelphia	7.25@ 7.75	7.15@ 7.65
Pool 11, Philadelphia	7.00@ 7.50	6.90@ 7.35
Pool 1, Hamp. Roads	7.00	6.85@ 7.00
Pools 5-6-7 Hamp. Rds.	6.75	6.75
Pool 2, Hamp. Rds.	7.00	6.85@ 7.00

BUNKERS

	Oct. 21	Oct. 28†
Pool 9, New York	$8.35@$8.60	$7.85@$8.15
Pool 10, New York	7.70@ 7.95	7.20@ 7.50
Pool 11, New York	7.35@ 7.50	6.85@ 7.10
Pool 10, Philadelphia	7.75@ 8.25	7.65@ 8.15
Pool 11, Philadelphia	7.50@ 8.00	7.40@ 7.90
Pool 1, Hamp. Rds.	7.10	6.85@ 7.00
Pool 2, Hamp. Rds.	7.10	6.85@ 7.00
Welsh, Gibraltar	40s. f.o.b.	38s. f.o.b.
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	50s. f.o.b.	37s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	41s. t.i.b
Welsh, Algiers	41s. 6d f.o.b.	38s. f.o.b
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b
Welsh, Bahia	65s. f.o.b.	64s. f.o.b
Welsh, Madeira	45s. 6d f.a.s.	42s. 6d. f.a.s.
Welsh, Teneriffe	43s. 6d. f.a.s.	38s. 6d. f.a.s
Welsh, Malta	42s 6d. f.o.b	41s f.o.b.
Welsh, Las Palmas	43s. 6d. f.a.s.	38s 6d. f.a.s.
Welsh, Naples	42s. f.o.b.	41s. f.o.b
Welsh, Rosario	52s. 6d f.o.b.	52s. 6d f.o.b.
Welsh, Singapore	52s. t.i.b	52s. 6d. t.i.b.
Welsh, Constantinople	50s. f.o.b	52s. 6d f.o.b.
Welsh, St. Michaels	50s. t.i.b.	50s. t.i.b.
Welsh, Port Said	51s. 6d. f.o.b	49s. f.o.b.
Welsh, Oran	40s. f.o.b.	38s. f.o.b.
Welsh, Fayal	50s. t.i.b.	50s. t.i.b.
Welsh, Dakar	46s 6d. f.o.b.	42s. 6d. f.o.b.
Welsh, St. Vincent	46s f.a.s.	42s. f.a.s.
Welsh, Montevideo	50s. f.o.b.	50s. f.o.b.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	Oct. 21	Oct 28†
Admiralty, large	27s.6d @28s	27s.6d.@28s 6d.
Steam, smalls	16s.@16s.6d.	16s @16s.6d.
Newcastle:		
Best steams	27s.	27s.
Best gas	24s.@25s.	24s. @ 25s.
Best bunkers	23s.6d.	23s. 6d.

North Atlantic

Receipts Overabundant; Market Conditions Muddled

Higher Grades Well Sold Up—Prices Easy on Other Qualities—Heavy Users Active, Average Consumer Still "Lying in Wait."

Prices are easy, except on the higher grades, which are not in oversupply. Receipts are still more than adequate, but the consumer insists on quality coal, with the result that good fuel is well sold up. The market is badly muddled and a wide range of prices is quoted, especially for medium- and low-grade fuels. Heavy users are the most active and are still the saving feature in the situation, as the average consumer remains on a hand-to-mouth basis.

British coal receipts are diminishing, but some heavy consignments still seek an outlet. Southern coals are coming forward in good volume, but only on order.

NEW YORK

Demand was spasmodic toward the end of the week. Quotations changed as frequently as the temperature and cool weather caused a slight stiffening. The general trend indicated little change from the previous week, although quotations in some instances were lower and the range wider.

The tendency of buyers to stay out of the market continues but most dealers look for considerable activity the early part of November. One feature of the market was the apparent unwillingness of some operators to book orders although given the order at the quotation they had made. While this action may have been due to heavy orders already booked or otherwise no reason was given to the middle houses offering the orders.

Receipts of British coal are growing less each week, but it is said there is considerable here still unsold. Southern coals are coming in good volume and on order.

There were upward of 1,500 cars at the various piers on Oct. 27 with no large surplus of the better grades. Boat rates in the local harbor are stronger, due to the many boats loaded with anthracite steam coals.

PHILADELPHIA

The situation continues to be badly muddled on account of the average consumer's attitude toward ordering. On the other hand there are actually instances of consumers who are short of coal and have come into the market in great haste to replenish supplies. Often these are users of the highest grade coals and they have not been plentiful at any time. Car supply is still a severe handicap on production, but there are some signs of improvement.

The users of heavy tonnages are still in the market and are really the saving factor in the situation. The producer is still inclined to criticize the ordinary consumer, because in the shortage that all feel sure is to come before midwinter, with the consequent upward bound of prices, it is the man without coal who cries the loudest, yet is short of coal on account of his own shortsightedness.

Each week seems to turn up consumers who have adopted oil as a fuel, wholly or partially, although the installations to date are not sufficient to make any impression upon coal consumption.

Prices have eased off a bit, and the slight firmness evident ten days ago, has vanished. High-grade coals continue to lose the least ground, as the most of this tonnage is applied on contracts and very little reaches the spot market. Recently some cheap offerings have been made, likely the output of wagon mines.

BALTIMORE

Bituminous coal demand is weak and prices have softened further. Consumers are buying on a current basis only although some of the large users are continuing to take advantage of the ruling prices and are putting in reserves.

Pools 9 and 71 are quoted $3.75@$4.25, net mines; Pools 10 and 11 are $3@$3.75; Pool 64, $3.25@$3.50, and Pool 63 is $3.50@$3.75.

Car supply is very short and deliveries slow and uncertain. Despite this, however, sufficient coal is being received to meet all spot demands. Good grades move the easiest; lower-quality coals are often in distress on the present sluggish market.

FAIRMONT

Operations are limited to about one or two days a week and many mines are unable to operate even that much. Some are forced to go without loading equipment for more than a week at a time owing to the general practice of the roads in assigning cars for railroad fuel loading. There has been little or no change in the market situation. The prevailing price on steam mine run for Western delivery is $3.75. In Eastern markets it ranges $3@3.50.

UPPER POTOMAC

Managing to secure a more regular supply of empties, plants in the Upper Potomac are operating with less interruption than is the case elsewhere in the state. Production is on a smaller scale in the Georges Creek region, not because of a shortage of cars but because of the fact that the strike trouble has not been entirely eliminated. There is still lack of pronounced activity in buying in the East although mines are not falling behind any on that account.

CENTRAL PENNSYLVANIA

Prices show a further decline. Prices to local consumers in the district are due for a drop because of an order issued by the I.C.C., effective Oct. 25, which does not permit the placing of open-tops or hoppers on sidings for operators unless they can be loaded within 24 hours. This order will force many wagon mines out of the market as many of them cannot load a car within the specified time.

Pool 18 is now quoted $3@$3.25, f.o.b. mines. Pool 10 ranges $3.75@$4.

West

KANSAS CITY

Snappy temperature stimulated the demand for domestic coal and dealers are rushed to take care of orders. The demand was also aided by orders from customers who changed to oil-burning equipment that failed to perform as provided and who went back to coal.

Demand for steam coal is holding up and all are being supplied. Aside from delay in transportation the coal business in this section is in a more active condition than for some time.

Prices are too low to yield any revenue to either the operator or retail dealer. At the same time the public is kicking about the price being too high. The strike put a lot of new coal operators in business. Most of them run small mines, and as they keep no cash accounts, they will not know that they are broke until they run out of money to meet their payroll.

SALT LAKE CITY

Mines are working on an average of less than three days a week. Car shortage is steadily growing worse and the market is also weak. The coast trade is falling off, while the demand from neighboring states is very slight compared with what it was. The ideal weather which prevails, together with the reopening of the Wyoming mines, is largely responsible for this.

Salt Lake City yards have about 15,000 tons now, which is less than in former years. Consumers have been waiting for the Grand Jury to finish its investigation of high prices. Now that it recommends price fixing by the governor, they will no doubt wait for that though lump is in better call already. The demand for slack is weaker.

DENVER

Instead of cars being delivered to Colorado mines enabling them to work on a percentage basis of from two to three hours a day, the Union Pacific on Oct. 23 started distributing cars to a certain number of mines all day and the balance of the mines the next day. This enables the operators to reduce the cost of production during the car shortage.

Business on first-grade lignite is practically at a standstill as most of the dealers are buying second-grade lump at $3 per ton. First grade is quoted at $4.90. Many Denver operators are getting inquiries from Omaha dealers for quotations on lignite slack. This would indicate from this point that there is an unusual shortage in the supply of cars in Illinois and Iowa

Anthracite

Domestic Business Brisk; Receipts in East Lower

Retailers Hard Put to Maintain Yard Supplies—Efforts Bent to Get Coal to Northwest—New York May Ask Increased Allotment.

Domestic business is very active and retailers are unable to maintain their yard supplies. Eastern centers complain of diminished receipts, which probably will be the case until the close of Lake navigation, as every effort is now being made to send coal to the Northwest in the few remaining weeks of the season. Canadian buyers are unable to place orders for a satisfactory tonnage except at high premiums.

So much of the coal received at New York terminals is transshipped to New England that there is a rumor that the federal authorities will be requested to increase the allotment for that state. Steam business has been aided by the cool weather, but mine-storage space is still being utilized.

PHILADELPHIA

Heavier receipts have increased the seriousness of the situation. Dealers are being heavily pressed for fuel, and it is necessary to ask the buyer to take what is on hand.

The shippers, especially the companies, have but the one answer for the short shipments, that being the movement to the North and to the Lakes, before winter sets in. This year, on account of no summer shipments, dealers are inclined to criticise the action of the shippers. The outlook cannot be said to be promising.

There is some tendency to a strengthening of retail prices. While most sales are being made \$14.50, those dealers who had been inclined to waive the carrying charge are now more particular.

Steam sales have not improved, with companies still making use of their storage yards to a limited degree, and the other shippers selling some coal off grade.

BUFFALO

Demand is of course heavy, but it is not as insistent as it sometimes has been. Distributors still say they cannot keep up with the orders that come in from people who have no coal.

Canadian dealers despair of getting anything like a supply. One of them states that he usually sold eighty cars a year, but so far he had received only one and he thought he would do well to get twenty before moving.

Lake shipments for last week were 129,500 tons, of which 61,700 were for Duluth and Superior, 4,300 for Port Arthur and 4,000 for Marquette, on Lake Superior and 20,100 for Chicago, 14,800 for Milwaukee, 7,800 for Sheboygan and 2,700 for Racine on Lake Michigan.

BOSTON

While certain of the originating companies are making good deliveries by water, the all-rail route seems to be pretty well gummed up with the shortage of motive power. On the New Haven R.R. it is taking three and four weeks for cars to come through, and in parts of the anthracite region there is genuine alarm over car supply.

Most of the Boston retail dealers marked up prices on Oct. 24 from \$15 to \$16 per net ton delivered. A few of the larger distributors have not yet advanced.

BALTIMORE

Domestic supply is very short. Receipts average about 4,000 tons daily and dealers are unable to supply more than a portion of the demand.

Many householders are without fuel, as they have declined to purchase the soft-coal substitutes recommended by the Maryland Fuel Distribution Committee. The feeling has prevailed that last-minute supplies of anthracite would be available, but now that colder weather is at hand, a better distribution of these bituminous substitutes is anticipated.

NEW YORK

While the Metropolitan District may to all appearances be receiving its share of domestic sizes, it is rumored that appeals will be made to the Federal Fuel Administration in Washington to increase its allotment. Consumers, while not yet suffering from a lack of fuel are becoming anxious, especially those who so far have not been able to get even the 30 days supply allowed by the New York State Fuel Administrator.

Some of the independents and their sales agents are refusing to take orders unless it is understood that shipments cannot be expected inside of at least three weeks. Demand from the West and Lake ports, as well as New England, remains heavy and efforts are being made to get as much coal as possible into those sections before winter sets in.

Retail dealers are taking comparatively little of the high-priced individual coal. Some of the smaller operators are asking around \$12, but the larger independents are quoting \$9.25 @\$10.50.

The steam coal situation is easier. Storing continues but there is a heavier consumption because of the cool weather. A heavy tonnage is also being taken by retail dealers who in doing so are able to secure shipments of the larger coals.

British coal is being featured as a substitute for anthracite. The Consolidated Coal Importers, Inc., is offering "dry semi-anthracite Welsh coal" in the New York market at \$14.50 per net ton, delivered to consumers, and advertising for salesmen to handle this fuel at a "liberal commission."

Coke

UNIONTOWN

The coal market appears to have touched rock bottom with the \$3 figure which has been prevailing for several weeks. Demand continues uncertain but operators have successfully resisted any further price lowering.

A distinct development of the week was the I. C. C. order which closes the transportation lines to wagon mines. The order denies open-top cars to wagon mines until tipple mines have been given maximum placements.

The coke market continues a bit slippery but its softened condition has not yet reacted against production. There is, however, a firm resistance to prices.

Indications are that contracting for coke tonnage will be resumed again Jan. 1 after suspension of practically a year. At the opening of last year contracts generally were made for only three months owing to the contemplated strike April 1. There were no further contracts during the year when production was interrupted and recovery from the strike was too late to permit last quarter contracts.

CONNELLSVILLE

Connellsville furnace coke, after breaking from \$12 to \$8 in less than a fortnight, has merely weakened a trifle in the past week. The first sign of weakening naturally took buyers out of the market, while the sharp price decline seems to have brought them in again.

Odd lots can usually be picked up at \$7.50, but a good-sized tonnage, particularly if distributed over a week or two in point of shipment, would probably command \$8 without much difficulty. So far as concerns the views of operators, an important point is that with prompt coke at not over \$8 operators are quoting \$9 on contracts running to the end of the year. Their explanation is that there is likely to be a fresh and additional car shortage in December, which would advance the prompt market.

With the steadiness in increased production, it is plain that the future prices depend chiefly upon the position of consumers, whose outlook may not be poor, but is plainly uncertain. There is very fair production of merchant pig iron now, and while recently the whole situation appeared to be simply one of each furnace getting into blast as soon as it could secure coke, it is now not certain but that some of the furnaces may have occasion to blow out.

The *Courier* reports production during the week ended Oct. 21 at 101,310 tons by the furnace ovens and 45,410 tons by the merchant ovens, a total of 146,720 tons, an increase of 6,010 tons.

BUFFALO

Some of the local byproducts are crowding their ovens past the needs of their furnaces and selling the surplus for domestic use at about \$12 for furnace grade. Consumers feel that all coke is held too high, and so do not buy except as a necessity.

Chicago and Midwest

Market Weakness Spreads Into Bigger Sizes Also

Hold-Out of Steam Buyers Lowers Steam, Egg and Some Mine Run, with Screenings—Domestic Firmness Stays —Car Service Unimproved.

Continued summer weather during the past week in this region conspired shamelessly with the big steam buyers to keep the market in most centers of the Middle West low and uninteresting. Even domestic demand, while good, is not rushing, and the difficulty which many producers found in disposing of everything but lump drove them to lower quotations on steam egg and mine run as well as screenings, which have been sliding for weeks. Competition between fields of Illinois and Indiana for skimpy markets is having the inevitable effect and little coal from outside is getting into the Middle Western states.

Kentucky is less afflicted by these conditions because its own local markets are a bit stronger and the call from the Lakes continues good enough to absorb much of the slim production permitted by a 20 to 30 per cent car supply. Gas and by-product coals have dropped some, however. The railroad service of the whole Middle West is about what it was a week ago.

CHICAGO

"The world's greatest coal market" continues to drone along without much excitement. Almost all domestic sizes are in good demand with no noticeable softening in prices. The standard quotation on southern Illinois lump remains at $5.50 and at $4.75@$5.25 on lump from central and northern Illinois and the best districts of Indiana. There is no mad rush on, however. Small quantities of anthracite and smokeless dribble in, but here again there is no crush at the retail coal man's door. The smokeless even shows signs of weakening a little from $6@$7.

Steam buyers, having already lowered the levels of screenings week by week by staying out of the market, have effected further reductions from several fields so that the best southern Illinois screenings today are down to $2.50 and even to $2.25 in some instances. The same sizes from other Illinois fields remain below $2. Steam egg and mine run has weakened here and there also, for there is no class of consumers for these coals that is laying in supplies. Competition between Indiana and Illinois producers grows keener with reports of many price concessions on almost everything under 6-in. lump. Not much Kentucky coal reaches this far north for the market is saturated now and nearby fields have got prices down low enough to discourage outsiders.

The retail market is worried by the Pottinger-Flynn yards offering coal "at cost" through the medium of coupons in a local newspaper. This concern has been accused, before a grand jury, of selling coal unfairly to the city schools. The company is now busy staving off a jail sentence imposed upon its auditor for refusal to produce certain company books.

WESTERN KENTUCKY

While some of the operators are kicking about the buyers' strike, as a matter of fact production is as heavy as car supply will permit, but prices are not what the operators would like to see them. The Illinois Central is supplying about 34 per cent of the normal number of cars and the L. & N. 20 to 25 per cent.

Steam coal is a little stronger due to cooler weather and development of small steam plant demand for heating use along with better demand for mine run from domestic consumers. Screenings are $1.75@$2.25, including pea and slack as well as nut and slack. Mine run is stiffer at $2.75@$3, but is perhaps shaded a little under that price, although some houses are quoting as high as $3.25. Lump is quoted from $4.75 for poorer grades to $5.50, but not much coal moves at the top price.

ST. LOUIS

Warm weather has brought an easy market with everything in surplus. Even Carterville seems to be plentiful and the dealers are not buying for storage. The public seems to have a feeling that coal will soon come down and are buying only in small lots and this feeling is conveyed to the dealer, who is not putting much coal in storage.

The public seem to think that the retail price of $9.50 on Carterville as against the next lower grade, which is Mt. Olive, at $7.50, is too much and the demand is for Mt. Olive. Standard at $6.75 is not popular. A few cars of anthracite are moving in, but no smokeless and nothing from Arkansas. Country domestic is also quiet and the call is principally for the cheaper coals

Locally steam is easy. Large users are not buying beyond actual requirements, and this is true to a great extent of country business. Railroad tonnage is light on account of restrictions against certain roads which are practically embargoes and transportation west of the river is far from being good. Colder weather is the one hope for any improvement.

LOUISVILLE

While prices are a little stiffer on general steam coals this week demand for gas and byproduct has slumped somewhat, and gas coals are selling at about the non-gas price except on mine run straight steam coal which is quoted as low as $4 for eastern Kentucky, while the gas coal is quoted at $4.35@$4.50. Lump is firm at $6.50@$7, while screenings are commanding the mine run price, because of small production and steady demand from consumers who use automatic stokers.

It is reported that there is better buying from eastern Kentucky for railroads in Ohio and the North. While the market is firmer, it is not materially stronger. It is reported that there is not much coal on tracks, and with car supply between 20 and 30 per cent, production continues small. Some movement is going South, to the textile districts which are busy. Lake movement continues fair.

Western Kentucky prices are quite firm in the local market, at $4.75@$5.25 quoted, with some lump at $5.50; mine run is $2.75@$3, and screenings, $1.75 @$2.25. Most western Kentucky coal is moving either South or to Louisville, but production is low due to a car supply of from 20 to 34 per cent on the various lines.

Industrial lines are active and plants are busy, and apparently consuming fuel, but even with present small production there appears to be no shortage.

SOUTHERN ILLINOIS

The warm weather has put a crimp in business as far as smaller sizes of coal are concerned in the Carterville field. This has also affected the nut size, which is becoming almost as topheavy as screenings. There are no billed screenings and nut at many mines and screenings have dropped to $2 while nut is quoted as low as $4.

The average car supply throughout the field is three days at mines having two or more connections, while it runs from 1½ to 2 days at mines with only one connection. Railroad tonnage is light and the bulk of the movement seems to be North and Northwest. In the Duquoin and Jackson County field conditions are similar.

In the Mt. Olive district steam sizes are causing idleness. Railroad tonnage is good and up until the last few days domestic movement has been fair but the hopper-bottom equipment and the warm weather put a quietness on the movement of domestic, especially to the St. Louis market.

In the Standard district conditions are beginning to look bad. Steam sizes are heavy and many mines are carrying "no-bills." Embargoes on the lines west of the river have caused some trouble, but, generally speaking, there is no demand for steam coal and right now the domestic business is easing up. Railroad tonnage is fair. Car supply both in the Mt. Olive and Standard districts average 3 days a week.

INDIANAPOLIS

There has been little change in the Indiana market. Jobbers, operators and retailers all unite in the assertion that demand is light. From the retailer's viewpoint the warm weather is undesirable. The jobbers say there is no stocking demand for steam coal from industries. Prices show no change, but there has been a little weaker tendency in some of the grades.

There is a hue and cry from all sections of the state for cheaper coal. Many factory executives say they will further curtail production unless there is some concession made. Utilities are buying from hand to mouth and are beginning to demand permission to raise rates.

Eastern Inland

Meager Spot Offerings Absorbed at Firm Prices

Marketing Orderly, Dependent on Car Supply—Domestic Market Active—Steam Trade Improves—Conditions Mottled in Ohio—Lake Loading More Difficult.

Current production is being marketed in an orderly manner, regulated by the short car supply. Prices are firm, demand being sufficient to absorb the meager spot offerings. The domestic market is very active and there is a little more life to the steam trade.

Ohio's price-fixing regulations have caused a serious domestic situation in that state. Ohio-mined coals are seeking other markets and retailers thus are forced to buy coals produced in "foreign" states and at high prices. The longer rail haul involved is further taxing poor transportation conditions and shortening the car supply. Loadings at Lake ports were hampered by last week's weather conditions.

CLEVELAND

One direct consequence of the fuel control and price fixing in Ohio has been a steady flow of Ohio-mined coal out of the state. Retailers from other states declare they are buying quantities of Ohio coal at $5.50@$6. That explains why Ohio dealers can get little good Ohio coal at the rates of $5.50@$6.11 for prepared sizes, as fixed by the Ohio Fuel Administrator. As a result Ohio retailers are compelled to buy much of their fuel outside of the state.

Dealers are complaining that the margin of $2.75 a ton allowed in Cleveland is too low to enable them to do business. They assert that the cost of handling all grades of coal was $3.37 a ton during September, as compared with $2.56 in 1917, when labor was more plentiful.

Demand in this district is somewhat better. Householders are buying more and there is a somewhat better call from industrial users. The latter, however, are still buying on a hand-to-mouth basis.

The Lake movement continues around 1,000,000 tons weekly. Shipments for the season up to Oct. 27 were 12,852,130 tons compared with 20,197,169 tons for the same period of 1917 and 18,240,244 tons in 1916.

COLUMBUS

A tendency toward stronger prices on prepared sizes and a softening influence on mine run and screenings are the chief features of the Ohio coal trade. Hocking and Pomeroy grades are selling $5.50@$6. Practically none of the coal is coming to Ohio dealers because of the price fixing which is causing operators to seek a market outside of the state. Efforts on the part of the Ohio and federal fuel administrators to get together on Ohio prices have not been successful so far.

Steam grades are weakening because of a larger tonnage of mine run thrown on the market. Some of the commercial users are stocking up to a limited degree but most of the purchases are for current needs.

The Lake trade is going along fairly well and some few additional contracts have been made. A fair tonnage is being moved and it is believed there will be no fuel shortage in the Northwest especially in view of the all-rail shipments which will continue during the winter.

DETROIT

Although receipts are heavier neither the steam users nor retail dealers are displaying much interest in the matter of adding to their stocks. Orders are coming irregularly and the business handled is largely on a hand-to-mouth basis. Buyers apparently are persisting in the waiting policy which has been a strong characteristic of the local market since midsummer.

Most of the coal which is now being sent to Detroit comes from mines in Ohio. The supply of West Virginia and Kentucky coal is limited by the facilities of transportation lines serving those sections.

Hocking lump and egg is quoted at $5.50@$6; mine run is $3.75@$4; nut, pea and slack, $3.25@$3.50. Fairmont 2-in. is $5; mine run, $4.50@$4.75; slack, $4.50. Pittsburgh No. 8 2-in. is $5; mine run, $4@$4.25; slack, $3@$3.75. West Virginia and Kentucky lump and egg is $6@$6.25; mine run, $4.75; slack, $4.50@$4.75. Smokeless lump and egg is around $8, with mine run, $6@$6.75.

Receipts of anthracite continue far short of requirements. Retail dealers are refusing to make purchases from independents who quote $12 as the mine price.

EASTERN OHIO

Car shortage and transportation disability are again the prime factors preventing a more normal output. During the week ended Oct. 21 mines produced 318,000 tons or only 49 per cent of potential capacity. Statistics covering cumulative production since Jan. 1 indicate that this field has produced only 5,197,000 tons out of a potential capacity of 25,377,000 tons or 32.3 per cent. Efforts are being made by the Ohio Fuel Administration to increase the car supply and thereby avoid the possibility of an acute fuel shortage this winter.

Considerable anxiety and agitation have developed with respect to available supply of prepared sizes. Because of the low maximum prices fixed by the Ohio Fuel Administrator on coal sold within the state the major portion of such coal is being shipped out of the state where better prices are offered.

Retailers are compelled to purchase considerable quantities outside of the state to meet the requirements of their trade and the railroads are being called upon to perform unnecessary transportation service.

Inquiries have now reached the highest point of the year and such a widespread demand exists that it is impossible to fill at the present limited rate of operations.

Bituminous coal receipts at Cleveland during the week ended Oct. 26 amounted to 1,620 cars, an increase of 149 cars over the preceding week. Industries took 1,281 cars and 339 cars were consigned to retail yards.

In the Lake trade some time was lost during the week because of weather conditions and total dumpings were lower than they have been in some weeks.

BUFFALO

Consumers do not buy as shippers feel they should. The claim on one side is that cars are so short that anything worse in that direction would make it impossible to ship coal enough to keep the supply up, but the consumers affect to believe that the cry of shortage is merely to produce a market for the excess of coal that is coming out of the mines. It is to be hoped that neither party is quite right about it and that the trade will somehow manage to keep going till the movement of cars is more free.

Prices fluctuate. A few strictly Pittsburgh shippers manage to keep up to $5@$5.25 for Youghiogheny gas lump and $4.75@$5 for Pittsburgh and No. 8 steam lump, and sometimes even a little higher, but the bulk of this coal is selling a trifle below these figures. Allegheny Valley mine run is $3.60@$3.85, with all slack $3.25, adding $3.24 to Pittsburgh and $3.09 to Allegeheny Valley for freight.

PITTSBURGH

The local situation is quite devoid of important developments, as has been the case for several weeks past. Production is proceeding in an orderly manner, regulated by car supply, which technically is short but practically appears to permit of consumers' requirements being taken care of very well. The orderly character of the movement is indicated by the fact that demand for odd lots in the open market is relatively small, indicating that consumers are well supplied by their regular sources.

Prices are holding up very well indeed, considering the lightness of demand in the open market, and may not show any further change until the ending of the season for Lake shipments brings about new conditions.

Ordinary steam coal is $3@3.50, depending on quality and tonnage, by-product, $3.50@$3.75, good grade gas coal running up to $4, with still more paid for special qualities, making a general market range of $3.75@$4.25; domestic 1¼-in. lump, $4.75@$5.25.

NORTHERN PANHANDLE

Mines still find it a difficult matter to secure an outlet to Western markets and particularly the Lakes, owing to freight congestion. There is a somewhat better demand in the West. As in other fields, the car supply is none too good, a large part of the product loaded being for the railroads, with mines loading that class of coal securing a somewhat better supply than others.

Northwest

Docks Are Jamming and Buying Continues Slow

Lake Shippers Now Fear Trouble When Cold Weather Starts a Rush—Fewer Cargoes En Route—Temporary Slump in Bituminous Prices.

Markets are sluggish on bituminous coal with the result that the heavy cargo shipments of the past six weeks have piled the docks fairly high. This condition, which appeared about a week ago, is getting troublous. Prices in some cases have softened further, especially on a few large deals in steam sizes, and are expected to drop within a week or so on coals that cannot stand storage. This general situation is shutting off shipments from lower ports to an extent and is expected to cause trouble when the first stiff cold comes, as the fuel supply for this region can hardly be ample if shipping does not continue heavy until Dec. 1.

Considerable quantities of anthracite are reaching the docks. There is no such public apathy over hard coal. Instead, the scramble to obtain it has grown almost exciting. Prices generally remain firm with a slight upward tendency, though there is no skyrocketing.

DULUTH

More than 3,000,000 tons of coal now lie on the docks at Duluth-Superior harbor because consumers are slow and coal men are beginning to fear that the docks will be full before the close of navigation. The capacity of the harbor docks is but 7,500,000 tons. Shipments will slowly drop off. Last week forty-eight cargoes were received of which eight were of anthracite, but only eighteen are reported on the way of which two are hard coal. A week ago more than thirty cargoes were on the way here. Not enough coal has gone out to insure a plentiful supply, and coal men believe there may be a $2 increase in bituminous before Feb. 1. Consumers, of course, are waiting for a drop in prices, and base their hopes upon the jamming of the docks, which usually indicates plenty.

Despite the prediction of increased prices, at least one dock cut $1 a ton to move run of pile to two public utilities on an aggregate contract of about 15,000 tons. The run of prices for both bituminous and anthracite is firm, with the exception of quotations on Hocking screenings which are weakening, because of the danger of fire in large stock piles.

The anthracite market is chaotic. Those with orders placed are getting coal as best they can. It is thought, though, that the emergency will have passed in a week or two. Bituminous inquiries are beginning to leak in from independent iron mining companies on the Mesaba range that are slow to order. The steel corporation is receiving much coal indicating that the mining season will be active.

MINNEAPOLIS

The market here is sagging and weaker under the arrival of good stocks at the docks, and a lack of support from buyers. Another undermining factor is the showing from the all-rail trade, in placing a considerable tonnage here. As a result dock interests have begun to make concessions.

Indications are that the docks at Duluth and Superior will have perhaps 5,000,000 tons of coal in another five weeks. That quantity is not equal to any normal winter's needs. But this is not a normal winter in demand so far. The railroads cut down consumption during the late summer by taking off about seventy trains, some of which were out of service for three months. Industries have been running cautiously for some time, and have made their fuel last longer.

The car situation has cut down the movement from the mines or there would be a much larger movement, both from the docks and from the all-rail fields. But despite this handicap, there has been a large amount of all-rail coal moved into the Twin Cities from the Illinois fields. Around 100,000 tons of hard coal have been received on the docks so far, and the Northwest may count upon perhaps 40 per cent of a normal winter's needs of hard coal. Some of this may have to be moved all-rail.

MILWAUKEE

Mild weather seems to soften the popular clamor for coal, but dock men remain in an uneasy frame of mind. Fifteen cargoes of anthracite, aggregating 117,904 tons, reached port in October. This coal is being rationed out to retailers, who, in turn, are restricting deliveries so as to spread the supply. The price of anthracite continues unchanged.

There has been a slight check in the movement of soft coal, due to the fact that receivers have not been buying much during the past two weeks. The docks are fairly well filled.

October will show up well in coal receipts. Thus far fifteen cargoes of anthracite and sixty-three cargoes of soft coal have been unloaded, the soft coal tonnage aggregating 560,416 tons. Cargo receipts for the season thus far aggregate 118,614 tons of anthracite, and 1,831,371 tons of soft coal, against 842,550 tons of the former, and 2,273,902 tons of the latter during the same period last year.

The City of Milwaukee remitted a penalty of $2,700 imposed on the Callaway Fuel Co. for coal furnished which did not come up to the standard of thermal units. The company claims that the pooling system makes it impossible to guarantee the quality.

New England

Little Change in Market; Inquiry from Small Users

Certainty of Car Shortage Causes Many to Realize Prices Are Near Bottom—Receipts of British Coal Wane—Adverse Criticism Heard.

November shows little change in the current market. Inquiry is still scattered and confined generally to small users who figure that with possible car shortage present prices are about as low as can reasonably be expected, at least for the near future.

Receipts of British coal are steadily diminishing and by another fortnight, it is reported, the last cargoes will have been received. There is much complaint over some of the grades shipped; in fact delays on certain of the railroads out of Boston have been attributed to the character of the coal.

Apparently none of the corporations is buying spot coal, except in sparing amounts, and persistent canvass discloses very little prospect for comprehensive purchases the next thirty days. The number of steam colliers tied up at this end is one indication of the poor outlook for steam coal the balance of the season. A fair amount of coal is coming forward on contract, but almost none at all on current purchases.

There is a little buying of Pennsylvania grades all-rail, although prices are at what would have been considered a few weeks ago a very low point. A few quality grades are being moved at remunerative prices, but this means a range of $[illegible]@$4.75 per net ton f.o.b. mines. Among the medium coals there are some of very good reputation that are an easy purchase at $3.50@$3.75.

Pocahontas and New River still show large accumulations at Hampton Roads. Judging from the market here these will continue to be heavy throughout the month. There are reports of car shortage on the Southern roads, but not as yet has the lack of equipment in any sense affected the spot market in New England.

While Navy Standard at Newport News and Norfolk sold as low as $3.65 per gross ton f.o.b. vessel a week ago, there is a feeling in the trade that the market has strengthened a bit and that $7 is a fair average price for high-grade coal.

Cincinnati Gateway

Prices Spurt with Embargo To West on C. & O. Coal

Buying of Coal from Southeastern Kentucky and Off N. & W. Gains—Steel Mills, Utilities and Lake Buyers Evince Interest—Smokeless Has Odd Price Range.

Prices took a decided spurt when increased buying of southeastern Kentucky coal as well as that off the N. & W. resulted from the embargo placed on the western movement of coal originating on the C. & O. Immediately there was scurrying by steel mills, public utilities and large consumers that had been using C. & O. coal. Besides this Lake buyers showed added interest and the whole combination moved the price up a dollar a ton within the space of three days.

For the first time in weeks steam coal was selling within the range of the gas and byproduct. Smokeless, due to the Spens ruling, presented some additions in the price range. L. & N. reports show that the motive power on this line is still in bad shape and the movement is slow.

CINCINNATI

Although there has been an ever-increasing offering of domestic coals the demand still exceeds the supply and there has been little price recession. However, the quotations have narrowed closer to 3-in. coal than for some time past. Only the smokeless prepared is out of line and this through the fact that there is little in the hands of the shippers and those with car numbers are holding it at a fancy figure.

There is little or no congestion in the yards of the connecting lines in Cincinnati nor at Portsmouth as it all depends upon the ability of the C. & O. to clear its lines on that there will be a clear western movement once more.

River business has again pulled up the total tonnage being delivered between Ashland and Louisville to a good figure. One Cincinnati firm with river connections is delivering splint lump at $3.75 in the city and $3 on the hill lines. Others are asking $3.50 for all-rail coal. Pocahontas lump quotations have been discontinued by one of the largest users while others are still quoting $4.50@$5.

LOW-VOLATILE FIELDS

New River and the Gulf

Matters have reached a point in the New River field where coal is being diverted from Western markets by frequent embargoes on all tonnage originating east of Handley. This has led the operators to go before the I. C. C. to obtain relief. Their position is that they are entitled to an equal proportion of Western shipments as compared with other districts on the C. & O. Embargoes have worked a hardship at a time when the Eastern market, particularly Tidewater, is overstocked.

Although there has been a slight improvement in transportation conditions in the Winding Gulf region production increases have been limited, with the mines producing less than 100,000 tons a week. The open market is rather flat as mines in this region are unable to ship to the West, where coal originates on the Virginian at least, owing to lack of interchange. For Tidewater, producers are not getting more than $3.50@$3.75.

Pocahontas and Tug River

Although Pocahontas production is being gradually increased, railroad disability losses alone are costing nearly 250,000 tons weekly. However, mines are able to divide their tonnage between Eastern and Western markets to a greater extent than some other low-volatile fields, at a time when the Eastern market is soft and when the piers are overstocked.

Although there has been a partial recovery from the slump in the Tug River field caused by almost a complete car famine, the mines are loading far less tonnage than was the case during either the coal or the rail strike. Production hinges entirely upon transportation conditions. Where it is possible, producers are shipping to Western markets because of a better price prevailing in that section.

HIGH-VOLATILE FIELDS

Kanawha

Kanawha mines are working just about one-fifth of the time and there does not appear to be any improvement in sight. Railroad fuel mines, in many instances, are being given preference. The car shortage with its resulting idleness is creating much dissatisfaction among the miners. Prices in the West for high-volatile exceed the Eastern market. Congestion has been making it difficult, however, to get coal through.

Northeastern Kentucky

With more cars available, the improvement has not been pronounced, and mines in the aggregate are not producing as much as 40 per cent of potential capacity which is scarcely sufficient to handle all contract orders. The railroads and public utilities are buying on a larger scale and there also appears to be a disposition among industrial customers in the West to loosen up a little.

Logan and Thacker

Less than a third of the normal output is being produced in the Logan region. Curtailed car supply has forced many mines into almost complete idleness. Western markets were somewhat better, with the result that there was a higher level of prices. Steam mine run averaged $3.75, with gas coals somewhat higher.

Owing to the car shortage the Kenova-Thacker mines are not producing more than 40 per cent of potential capacity or little over 100,000 tons a week. There has been a slight improvement in the situation, however, within the last two weeks. The limited production is not sufficient to meet the market requirements, for Western demand has increased. Most producers are able to handle contract orders only. So far as spot sales are concerned the ruling prices during the week ended Oct. 21 were $3.75@$4.

South

BIRMINGHAM

The situation in regard to car supply has grown more acute within the last week and is reflected in a slump in production. It is likely that the output will not go over 325,000 tons, a gradual decline having been noted for several weeks. Mines on the L. & N. and the Frisco have suffered, especially for lack of equipment.

Despite the difficult movement and the fact that there is little surplus supply for the spot trade, demand is not at all urgent and the amount of business being taken on is comparatively small. Consumers appear to be little interested beyond current requirements where contracts do not exist, but where fuel agreements are in effect there is an effort to expedite shipments and secure fuller compliance with contract deliveries.

The situation as regards domestic coal is one of much concern, as the output, measured to a great extent as it is by the demand for steam fuel, is far below the needs of the trade. The cool weather has rejuvenated to some extent the retail end of the market.

There has been no change in prices the past week, the minimum quotations on steam running 25c.@50c. under the fixed schedule, while maximum prices prevail for all domestic grades.

VIRGINIA

The output in southwest Virginia is ranging from 62 to 66 per cent and in some parts of the field, notably on the Southern, the output is as high as 84 per cent. Coke production too is on a larger scale. Contract orders are sufficient to absorb the greater part of the output so that there is really little spot coal available.

Canada

TORONTO

Cool weather has brought a rush of orders for anthracite which are being filled as far as possible from the limited supplies received, deliveries being restricted to one ton.

The demand for bituminous coal continues light and prices are variable, with quotations for 3-in. lump in carload lots f.o.b. destination, $8.75@$10.25. Pennsylvania smokeless is about $9 wholesale and $12 retail. The city has received further supplies of Welsh coal which is being distributed in small lots.

News Items From Field and Trade

ALABAMA

The Black Creek & Valley Coal Co. is the name of a new company organized in Jefferson County for the purpose of engaging in the mining and sale of coal. The officers are, E. C. Creel, president, O. J. Lynn and S. A. Latham, vice-presidents and J. M. Jerrell, Jr., secretary-treasurer. The capital stock is given at $100,000.

Properties known as the **Pawnee Land & Mineral Co.'s holdings**, situated in Blount County on and near the L. & N. comprising approximately 2,800 acres of timber and coal lands, are scheduled to be sold at Oneonta, Blount County, Nov. 15, 1922.

Under the direction of the federal fuel distributor, Lieut. E. P. Eldredge, of the United States Navy, has opened offices in Birmingham and is receiving from coal producers in Alabama daily reports of coal shipments on blanks which are provided. An effort will be made to induce operators to make shipments to nearby territory only or within the territory normally supplied from this field in order that equipment may be unloaded and returned for reloading as quickly as possible and thus relieve to some extent the acute car shortage now existing.

The suit of the state against the **Montevallo Mining Co.**, growing out of the bankruptcy proceedings of the early part of the year, which resulted from the breaking of the contract for the hire of state convicts, has been withdrawn by the state, as the coal company has paid up the amount due for hire of the convicts and is continuing the use of the state yards under a new agreement.

COLORADO

Development of the largest known continuous body of coal in the United States is the forecast to be inferred from the announcement that surveys have been completed for a railroad spur leading from Paonia to the properties of the **Gunnison Mountain Coal & Coke Co.**, on Minnesota Creek. A branch railroad of nine miles has been found feasible at a grade of 2.3 per cent. The line is to leave the North Fork branch of the D. & R. G. near the crossing over Minnesota Creek in the corner of the Paonia yards, and will follow that line to Lick Creek, where the coal will be mined and the new mining town established.

IDAHO

Towns around the Teton basin in this state have been suffering from the high price of coal to such a degree that they have turned their eyes upon the Teton mines as their immediate source of fuel. Many consumers in upper Snake river towns, such as Blackfoot, St. Anthony, Idaho Falls, Ferth, Shelley, Rexburg, Rigby, Tetonia, Driggs and Squirrel are making contracts with trucking concerns to haul their coal from the mines. Nearby consumers are doing it in their own wagons and trucks. This is giving the Teton basin a considerable coal boom.

ILLINOIS

Announcement has been made of the recent organizing of a new coal company which expects to sink a shaft near Dorrisville, Williamson County. The concern has incorporated under the name of the **Rhonnda Coal Co., Inc.**, with headquarters at Dorrisville. The following officers have been elected: President, Joe Pierson; vice-president, O. L. Turner; secretary, C. L. Rew, and treasurer, James Gray.

The O'Gara Coal Co., of Chicago, has reopened its No. 12 mine at Harrisburg. The mine was closed last April when the miners struck and has not been operated since that time. The mine is one of a dozen or more operated by the company in that district.

The mine of the **Kuhn Colliery Co.**, at Du Bois, Washington County, is now running full blast. The mine is now being operated for the first time in about 18 months.

A. P. Titus, general manager of the Chicago & Alton R.R., Bloomington, has resigned to accept the vice-presidency of the **Mason Coal Co.**, of Springfield and Chicago. Mr. Titus went to the C. & A. in 1912 as general superintendent. Since the road passed into the hands of receivers, he had been chief operating officer.

Three new mines were recently opened in Henry County. Now comes the report that experiment tests taken at the John Root farm, one mile northwest of Galva, disclosed a vein at a depth of 20 ft. Equipment will be installed at once.

The Rex Coal Co. has begun construction work on a 600-acre tract of land half a mile east of Warner, near the Orion and Coal Valley districts. The company has incorporated for $20,000. The first vein of coal was discovered at a depth of 28 ft. with a thickness of 26 ft.

The Central Illinois Public Service Co. has started the construction of the $6,000,000 power plant to furnish power to the mines in Jackson, Franklin, Perry, Williamson and Saline counties. Power distribution will begin in October, 1923. The main line will be to West Frankfort and will carry 133,000 volts. It will be a steam power plant, although on the Mississippi where future power may be secured from dams. Coal will come in via rail and river. This plant will displace several small ones in southern Illinois.

J. W. Byrne, formerly with the Sunnyside Coal Co., has been appointed on the sales force of the Brofer Coal & Mining Co., Chicago.

W. E. Rutledge, president of the Security Coal & Mining Co., Chicago, recently spent several days on a hunting expedition in Louisiana.

Coal mining companies in Cambria County have filed appeals with the county commissioners from the tri-ennial assessment on the grounds that the real estate was not assessed at the actual value thereof, being assessed without due regard to the valuation and assessment made of other similar properties in the country, but was assessed in excess of the value and assessment of such other properties. The following companies filed appeals: Holding of the **Wilmore Coal Co.**, Richland and Adams townships and Scalp Level borough and Conemaugh, Croyle and Stonycreek townships; **Berwind-White Coal Co.**, Richland and Adams townships and Scalp Level borough; **Maryland Coal Co.**, Richland, Croyle and Adams townships.

The Indiana & Illinois Coal Corporation has installed a generator at the mine at Kortkamp, which will furnish power for the operation. The estimated cost is $35,000.

The Service Fuel Co., of Kentucky, has filed incorporation papers in Springfield and will establish headquarters in Chicago. The capitalization is $100,000. J. I. Rodgers is president and J. B. Torbart, secretary.

INDIANA

A special judge in the Gibson Circuit Court at Princeton recently fined the **Oakland Coal Co.** $500 and costs for failing to obey a court order of May 22 restraining the coal company from pumping water from its wells on the land of Heber D. Wilson. The judge censured the coal company for its disregard of the court's instructions and said he was sorry the officers of the company had not been made defendants in the suit out of which the restraining order grew.

A codification of the mining laws of Indiana to be presented for passage at the next session of the general assembly, received tentative approval by the mineral codification commission at a recent meeting in the office of Clay Lattimore, state inspector of the state industrial board and chairman of the commission. The codification to be presented will arrange the mining laws of the state under several important headings, making all laws bearing on the same general subject embodied under the principal classification. The members of the commission at the meeting were John Hessler, president of District No. 11; William Mitch, secretary-treasurer of the district; William Johnson, Indianapolis, and Henry Adamson, Terre Haute, operators; Samuel Wilson and F. J. Wilton, deputy state mine inspectors.

The Deep Vein Coal Co. has purchased a plot of ground northwest of Princeton near the Evansville-Princeton traction line. On this ground the operating company intends sinking a shaft to open the old entries of the Princeton mine. The chief purpose of such a shaft, it is said, would be to recover valuable mining machinery which has been there since the cave-in last spring. The new shaft of the company, two and one-half miles south of Princeton, is down about 100 ft. and will be completed about Jan. 1.

IOWA

The Eldora Coal Co., of Eldora, has been incorporated with capital of $50,000. Herbert A. Huff is the president, H. J. Rees, vice-president, and W. E. Rathbone secretary-treasurer.

KENTUCKY

For perhaps the first time in coal history in Kentucky **western Kentucky operators invaded the eastern Kentucky selling field** when they secured [illegible] contracts at Lexington and Frankfort on coals of $1.75 for western Kentucky screenings. The freight rate from western Kentucky was about 40c. a ton higher, but the price is around $1.75 a ton lower than eastern Kentucky mine quotations.

It is reported that [illegible] in a sufficient rise in the Ohio River to permit a number of coal tows that were tied up or aground in the upper Ohio to move forward toward Cincinnati. These tows endeavored to get out on an artificial rise created by manipulation of locks and dams by federal engineers, but the rise failed.

Some real pressure upon Congress to get the **Ohio River navigation projects** put through will be exerted this winter by the **Ohio Valley Improvement Association**. It is calling attention to the fact that a decade ago the promise was made at Washington to start extensive work up and down the Ohio and it now asks that $20,000,000 be appropriated to complete the 9-ft. stage project that has been waiting for so long. The association at its October meeting in Louisville, re-elected Oscar F. Hatch president, W. P. Culkins secretary and George Puchta treasurer. They are all Cincinnati men. The executive committee is Edward Gibbs, chairman, Morris G. Freiberg, James A. Butler, A. K. Stites, Mr. Culkins, George F. Verkamp, Julian Tallack, Mr. Puchta and J. F. Hatfield. All of these men are from Cincinnati except Mr. Hatfield, who lives at Covington.

MICHIGAN

Under supervision of Charles F. Davis, fuel administrator for Wayne County, the **Detroit Coal Exchange** has sent out to coal dealers in the county the application blanks which they are required to fill out and sign preliminary to receiving the license provided for under the new fuel control law. The applications [illegible] to elicit information concerning the amount of fuel handled by the dealer last year, the proportion of it sold for domestic use, the quantity of [illegible] contracted to make sold for this year and the amount of each of these fuels that the dealer now has on hand. Some representatives of the coal trade in Detroit are predicting that the law will have the effect of preventing much of the state considerable coal that would otherwise have been sold there. Others, it is said, will anticipate their coal requirements where they do not need coal for heating or of other developments following the completion of mines.

H. H. Bloch Coal & Supply Co. has been incorporated at Muskegon, capital $[illegible].

MISSOURI

Evan Jones has been appointed superintendent of the Missouri mines at Moberly and has taken up that city his new duties.

Elmer W. Johnson, living near Quitman, has discovered a vein of coal on his farm and shafts will be taken at once to mine it. It is the largest and best vein of coal that has been found in this section.

Thomas L. Casey [illegible] **Quaker Ash Coal Co.** [illegible]

Sidney A. Capps has nearly [illegible] **Capital Coal & Coke Co.** [illegible]

M. E. Fight has been appointed [illegible] on the Hazard coal [illegible] **M. D. Jones** [illegible]

The St. Louis Coal Co. has filed articles [illegible] $15,000. The [illegible] Michael Joyce, Martin [illegible] Daniel T. Joyce.

NEW YORK

Director of Alfred D. Flinn as director of the Engineering Foundation, which is [illegible] industrial research [illegible] Charles F. Kettering, [illegible] Thomas A. Edison, chairman of the [illegible] Gano Dunn, president of the [illegible] Foundation is governed [illegible] Engineering Council, of [illegible] Societies which [illegible] Engineering Council, a committee which [illegible] Engineering Council [illegible] Flinn has been secretary [illegible] Foundation's activities [illegible] Engineering Foundation Board [illegible] Engineering Council [illegible] Flinn has been secretary [illegible] January 1914, and is widely known [illegible] engineering [illegible] The Engineering Foundation Board [illegible] Engineering Council [illegible] Engineering Foundation [illegible]

George W. Fleming, of New York, president of the Chicago Coal Corporation, [illegible] Kentucky, underwent a serious operation at the Veterans' Hospital in New York City on Oct. 21. Mrs. Fleming was notified [illegible] Fleming was operated upon, [illegible] pronounced out of danger [illegible]

The Seiler Coal Co., New York, is now selling the output of the **Pine Hill Coal Co.**, which recently purchased the property of the **Oak Hill Coal Co.**, serving it is mentioned with [illegible] of anthracite [illegible] Oak Hill Coal Co. [illegible] Seiler is now president of the Seiler Coal Co., Clarence D. Seiler, president of the Pine Hill Coal Co., vice-president, and H. E. Hilton, treasurer. H. E. Gibbs, who was with the Pine Hill Coal Co. and C. D. Seiler for [illegible] years, is now in charge of sales [illegible] the Seiler Coal Co. H. C. Lawrence has charge of Delaware sales; G. W. Yorio, Hudson and Wilton Corp. of Honesdale and Scranton [illegible]

Stockholders of the **Pennsylvania Coal and Coke Corporation** at a special meeting called for Dec. 14 will vote on a proposal [illegible] the outstanding capital stock from $1,000,000, consisting of 5[illegible] shares of [illegible] par value, to $17,000,000. Thomas H. Watkins, president, in a letter to stockholders, says that the proposed increase is recommended to make available additional funds [illegible] permanent [illegible] of the other companies [illegible] the action has been taken by the board [illegible] a stock dividend.

OHIO

Through a deal that has been [illegible] **Jewett, Bigelow & Brooks**, of Cleveland [illegible] the **Hulman Coal Co.** of Terre Haute, Ind., [illegible] by various mining properties in Knox County and Evansville, Ind. [illegible] Knox County [illegible] Jewett, Bigelow & Brooks [illegible] Hulman Coal Co. [illegible] Terre Haute, Ind., [illegible] Evansville, Ind.

TEXAS

A new wage scale, subject to ratification by miners and operators in Texas, has been negotiated and drafted at a joint meeting in Fort Worth. The agreement, if it is accepted by both sides, will continue operative until March 31, 1923. By that time it is expected the new national basic scale will have been agreed upon. Only 300 miners are affected by the agreement, it is said, most of them being at the mines of the **Bridgeport Coal Co.**

Henry Zweifel, United States attorney for the Western District of Texas, with headquarters at Fort Worth, has been conducting an investigation into the **alleged misconduct of Texas State Rangers toward striking coal miners** in the Mingus and Thurber mining districts of west Texas. Recently complaints alleging misconduct on the part of the state officers toward the miners were filed by John Wilkinson, district president of the U. M. W. An investigation was made by state officials, who reported that the charges were unfounded. Mr. Wilkinson then renewed his demand for federal investigation, and Mr. Zweifel was directed to make a full investigation. He is not yet ready to disclose the result of this investigation.

Distribution of coal supplies in Texas during the coming winter months will likely be taken in charge by the **Texas Railroad Commission,** as even a moderately severe winter will be certain to bring about a serious shortage, according to C. R. Goldman, of Dallas, secretary of the Retail Coal Dealers' Association of Texas. The members of the association, individually and as a unit, have offered their services to the railroad commission in the fuel situation, and have been accepted.

The Consumers' Coal Co. of San Antonio has recently been organized with a capital stock of $250,000. The company will conduct a general wholesale and retail coal dealers' business in San Antonio. Incorporators are: Joe Flory, J. T. Hall and A. L. Moon.

UTAH

The Democratic party declares it will repeal the Public Utilities Commission Act if its slate is elected this fall. The party suggests no legislation to take the place of the Act.

The state land office has denied the coal land lease application of **A. J. Mayes** at 10c. a ton royalty and offered the involved land—nearly 700 acres—at 12½c. royalty.

The coal deposit to be opened by the **Columbia Steel Co.** in Carbon County is being tested for its coking possibilities. The plans for building the new town are ready and various contracts are being let.

VIRGINIA

The Chesapeake & Ohio Ry.'s new steel coal pier at Newport News will be under construction next spring, according to plans at present. The structure will cost $2,604,000, and will be one unit of a development which will cost $16,000,000 on the entire system of this road. The construction of this pier will increase the dumping capacity of the Newport News terminals by from 500,000 to 750,000 tons per month. **The Virginian Railway** is expected to begin about the same time on the construction of a $3,000,000 steel coal pier to **supplement its Sewall's Point facilities,** while the **Norfolk & Western** is **electrifying its Piers 2 and 3,** and will be ready for operation, with 120-ton dumpers, in the spring. These improvements are expected to make Hampton Roads one of the largest coaling stations in the world.

WEST VIRGINIA

The J. L. Beury Estate, of Charleston, has been incorporated with an authorized capital stock of $225,000. This estate has large coal holdings in the New River field where the late J. L. Beury was one of the pioneer operators. Under the terms of the articles of incorporation the estate is permitted to mine coal and to hold real estate, mineral lands, etc. The incorporators are R. T. Hubbard, F. N. Bacon, B. E. Baker, A. B. Abbott and T. H. Mahood, all of Fayetteville.

Further development of Monongalia County coal lands is presaged by the organization of the **Two States Coal Co.,** with headquarters at Morgantown. This enterprise is capitalized at $50,000 and the leading figures in the new concern are John E. Blaker, A. C. Lee, M. E. Lee, of Morgantown; C. S. Riggs and L. A. Riggs of Fairmont.

Owing to the fact that **William Barrick** has been appointed manager of several coal operations in Logan County, he has withdrawn as one of the Republican candidates for the legislature of West Virginia from McDowell County.

John M. Wolfe, formerly general superintendent of the Jamison Coal & Coke Co., in West Virginia, but now representative of the Operators' Fuel Agency, in Philadelphia, was a recent visitor in the Fairmont region.

George B. Taylor, general manager of the Jamison Coal & Coke Co., with headquarters at Greensburg, Pa., was a recent visitor in Fairmont inspecting the Marion County plants of the company.

Major W. P. Tams, of Tams, and **George Wolfe,** secretary of the Winding Gulf Operators' Association, are two members of a committee named by smokeless operators to present the details connected with the operation of smokeless mines to the new fact-finding commission recently created by Congress. **W. D. Ord,** of Landgraf, president of the Empire Coal & Coke Co., is chairman of the committee.

At the opening of the trial of C. Frank Keeney, president of District 17, U. M. W., in Charles Town on Oct. 23, under an indictment charging him with being an accessory before the fact in the killing of Deputy Sheriff George Munsey, of Logan County, during the armed march of 1921, T. C. Townsend, chief counsel for the president of the district mine workers' organization, entered a demand to know who was representing the state and at the same time made the charge that previous prosecutions had been financed by the Logan operators' association. He contended that a conspiracy existed to crush unionism in the state. Replying to Mr. Townsend, Colonel F. W. Brown told the court that he and three other attorneys in addition to Lon Challin, prosecuting attorney of Logan County, represented the state.

The trial of George Barrett, international board member of District 29, U. M. W., indicted about six weeks ago along with Lawrence "Peggy" Dwyer, also a board member of District 29, and Davis Robb, an international organizer for the union, by a grand jury in Fayette County, on the charge of "counseling, hiring and commanding parties to steal and conceal a machine gun taken from the railroad station at Pax, in August, 1920, and counseling and aiding in the disorders prevailing at Willis Branch," was begun in the circuit court of Pocahontas County before Judge S. H. Sharp on Oct 17. The disorders at Willis Branch grew out of the refusal of William McKell and associates, owners of the property, to sign an agreement with the union. The place was literally shot off the map by union miners.

It is generally reported in the New River field that **Henry Ford,** who recently abandoned his **Nuttallburg mine,** is willing to part with that property, and that the **Maryland New River Co.,** which has several operations in the same section, is negotiating for a lease on the Nuttallburg property, having in mind the operation of the mine from the Keeney's Creek opening.

In view of the fact that there were **11 fatal mine accidents in the state during September,** R. M. Lambie, chief of the department of mines of West Virginia, in an effort to minimize the danger attendant upon the mining of coal and reduce the number of accidents has called attention of operators, mine officials and employees to the large number of accidents and has said: "I want you to carefully read the accident report; analyze it carefully and you will note that the majority of these accidents could have been prevented had the proper precautions been taken. The killing of so many men in and about the mines and the crippling of many more is a most lamentable thing as preventable accidents are not only a liability to the mining industry but are also an appalling loss to the state. The mine officials must see that every precaution is taken to prevent accidents. The most rigid discipline must be enforced and employees, officials and operators are asked to co-operate with us in getting rid of the chance taker, as he not only endangers his own life but also the lives of his fellow workmen."

C. C. Beury, head of the Beechwood and other coal companies operating in the New River field, has returned from a trip to Atlantic City.

W. D. Ord, head of the Empire Coal & Coke Co., with headquarters at Landgraf, was a recent visitor in Washington, D. C.

The Baltimore & Ohio has acquired the **Indian Run & Northern Railroad** from the **New England Fuel & Transportation Co.,** paying $[illegible] and giving its obligations for the balance of $[illegible]. This road is the Logan tract of 11 miles which was severed from the Elkins system a few years ago.

The West Virginia Gas Coal Co. has perfected its organization with the election of Daniel Howard of Clarksburg as president; P. J. Reid as vice-president, J. B. Wyatt as secretary, D. T. Quinn as treasurer and J. Howard Henderson as general manager. The company is capitalized at $700,000. The company controls about 3,300 acres of high grade Pittsburg coal and about 50 acres of land in fee in Cedar Creek in Otter District, Braxton County. Development work will be begun within a few weeks.

WISCONSIN

The first car of coal for the Brotherhood of Locomotive Engineers at Baraboo arrived at that place recently and was distributed among the membership of that order. The brotherhood owns extensive coal fields in Virginia, from which it will be able to supply its members with coal. All surplus will be sold to friends of engineers at cost.

CANADA

BRITISH COLUMBIA COAL OUTPUT DURING SEPTEMBER, 1922

Vancouver Island District

Mine	Net Tons
Western Fuel Corp., Nanaimo	67,122
Canadian Collieries, Comox	39,495
Canadian Collieries, Extension	15,823
Canadian Collieries, South Wellington	6,406
Granby Cons. M.S.&P. Co., Cassidy	21,135
Nanoose Wellington Collieries, Wellington	9,821
Old Wellington Nanaimo	1,319
Total	165,884

Nicola-Princeton District

Middlesboro Collieries, Middlesboro	7,135
Fleming Coal Co., Merritt	3,894
Coalmont Collieries, Coalmont	14,699
Princeton Coal & Land Co., Princeton	2,715
Total	28,443

Crow's Nest Pass District

Crow's Nest Pass Coal Co., Coal Creek	36,897
Crow's Nest Pass Coal Co., Michel	31,224
Corbin Coal & Coke Co., Corbin	6,796
Total	74,924
Total, all districts	267,350

Operations at the **Dominion Coal Co.'s** coal pocket at St. John, N. B., were [illegible] heavier than at present. The force of employees has been doubled in the past few weeks. One steamer per week is arriving with bituminous coal.

The city council of St. John, N. B., has let off the purchase of coal for the city hall, water and sewerage building, police station and court building, etc., during the summer and now finds itself in the plight of being unable to get hard coal at all.

Colwell Coal Co. of St. John, N. B., is preparing for an active winter and spring. The winter port steamers to St. John and Halifax will start about the middle of November when navigation on the St. Lawrence ceases and extends until the middle of April and first of May, when navigation reopens.

It is estimated that the **coal resources of British Columbia** [illegible] This includes actual reserves containing 23,831,242,000 metric tons and a probable reserve of approximately [illegible] metric tons. These figures were compiled recently with a view to arriving at some conception of the value of the natural resources of the province. The Nanaimo district is a new [illegible] opened on Gulf Navigation Co. and which made its first shipments last August. It is anticipated [illegible] product for two mines in the Kootenay Valley by Williams Coast [illegible] tions. Vancouver City [illegible]

WASHINGTON, D. C.

The personnel of the committee of anthracite operators who met the U. S. Coal Commission [illegible] week is as follows: [illegible] Committee of Anthracite Operators: E. H. Williams, W. J. Williams & Peters, New York City; W. J. Richards, president Pennsylvania & Reading Coal & Iron Co., Philadelphia; E. H. Williams, member executive committee of the Hudson Coal Co., New York City; W. J. Richards, president Lackawanna & Lehigh Coal & Iron Co., Scranton; A. B. Wenzell, Coal Exchange, New York City; A. B. Jessup, vice-president Jessup-Moorehead Coal Co., Philadelphia; C. Harrison Conyngham, Lehigh Coal & Navigation Co., Philadelphia.

Traffic News

Arrangements [illegible] **federal fuel** [illegible] **general headway to assign** [illegible] **cars in the reciprocal** [illegible] **of commerce** [illegible]

[illegible] **require the Virginian and the Chesapeake & Ohio railroads to** [illegible] **separate freight rates** [illegible]

[illegible] **appeal of the railroads from the decision of the Ohio Utilities Commission** [illegible]

Coal operators in southern Indiana [illegible]

[illegible] **Coal Mines at Washington** [illegible]

[illegible] **Major W. P. Tams** [illegible]

[illegible] **Standard System of Electrical Railways** [illegible]

[illegible] **Virginian R.R. to Waynesburg** [illegible] **Pittsburgh & West Virginia R.R.** [illegible] **Blackville and Dunkard Run section** [illegible] **M. & W. Dock are nearly** [illegible] **production of around** [illegible]

Federal Fuel Control Notes

H. C. Belt, former freight traffic manager of the [illegible], recently designated as an assistant to the federal fuel distributor, will give [illegible] to the matter of coal supplies for the public utility companies. Information [illegible] as to lack of coal, lack of cars and lack of transportation service will be given consideration by Mr. Belt, who will also keep in close touch with [illegible] embargoes and recommendations issued by the Car Service Division of the American Railway Association to suppress [illegible] interchange or movement of equipment.

Federal Fuel Distributor Spens was in [illegible] for a **conference with the operators of central Pennsylvania** and made it plain that the domestic consumer of coal must receive his fuel supply at reasonable prices commensurate with [illegible] conditions. Among the operators present were: William Wetter, Philipsburg; Charles Maxwell, Morrisdale; J. S. Somerville, Cedarsdale; Thomas Kelly, Irvona, and Harry Scott, of Philipsburg. Secretary Charles O'Neill and W. A. Jones, statistician of the association, were also present.

Mr. Spens pointed out that because of the [illegible] of prices in the central Pennsylvania field, there is little need for specific attention in that respect at this time. In the exercise of his authority, Mr. Spens pointed out that he may direct a re-routing of cars so that if there is a congestion on one route, the coal may be sent over another road. In this way and by other means within the scope of the act he will aid in the providing of cars where they are most needed.

At a conference held with the Federal Fuel Distributor in Washington, members of **a committee of the National Coal Association**, of which J. C. Brydon, of Baltimore, is chairman, outlined the present transportation needs of the different bituminous-coal producing districts of the country. Fuel Distributor Spens assured the committee that remedial measures would be given the earliest consideration.

A. L. Humphrey, president of the Westinghouse Air Brake Co., Pittsburgh, has been appointed as a member of the advisory committee named by the federal fuel distributor to represent American industries in the present fuel emergency.

Lieutenant Commander E. A. Cobey, U.S.N., has jurisdiction over the district representatives of the federal fuel distributor stationed in the different bituminous coal fields. **C. J. Hepburn**, of Philadelphia, recently appointed general counsel, will give consideration to all legal matters. **Wayne P. Ellis** in addition to general statistical work, will give attention to the movement of coal in the upper Great Lakes region.

Recent Patents

Process of Collecting and Purifying Minerals. Walter F. Trent, Washington, D. C., assignor to Trent Process Corp., Washington, D. C. [illegible] July 4, 1922. Filed [illegible]

Pulverized Fuel Furnace. Lars H. Bergstrom, Chicago, Ill. [illegible] July 4, 1922. Filed [illegible]

Apparatus for Washing Coal and Separating It From Its Impurities. Henry P. Hood, Fairhaven, England. [illegible] June 6, 1922. Filed [illegible]

Differential Flotation Separator. Walter H. Peek, Los Angeles, Cal. 1,420,139. June 20, 1922. Filed July 20, 1921; serial No. 486,288.

Method of Cleaning Coal. Walter E. Trent, Washington, D. C., assignor to Trent Process Corp., Washington, D. C. 1,420,163. June 20, 1922. Filed July 2, 1919; serial No. 307,015.

Process of Purifying Materials. Walter E. Trent, Washington, D. C., assignor to Trent Process Corp., Washington, D. C. 1,420,164. June 20, 1922. Filed March 6, 1920; serial No. 363,797.

Process of Purifying Materials. Walter E. Trent, Washington, D. C., assignor to Trent Process Corp., Washington, D. C. 1,420,165. June 20, 1922. Filed Feb. 25, 1920; serial No. 361,230.

Rock Refit. Wm. A. Smith, Denver, Colo., assignor to the Denver Rock Drill Mfg. Co., Denver, Colo. 1,424,148. Aug. 1, 1922. Filed Oct. 18, 1917; serial No. 197,261.

Apparatus for Drying Coal or Other Material. Thomas A. Gorkar, Swansea, Wales. 1,424,567. Aug. 1, 1922. Filed Oct. 29, 1921; serial No. 511,389.

Automatic Revolving Dump. Edwin J. Best, Woodward, Ala., 1,424,871. Aug. 8, 1922. Filed July 11, 1919; serial No. 310,810.

Automatic Circuit Breaker. Herbert E. Kissinger, Lock Haven, Pa. 1,424,921. Aug. 8, 1922. Filed Nov. 27, 1920; serial No. 426,861.

Automatic Rolling Dump. Erskine Ramsay, Birmingham, Ala., 1,425,051. Aug. 8, 1922. Filed Feb. 17, 1921; serial No. 445,646.

Mining Machine. Harry A. Kuhn, Pittsburgh, Pa. 1,425,103. Aug. 8, 1922. Filed May 18, 1914, serial No. 839,325.

Safety Device for Mine Cages. George M. Johnson, Jeannette, Pa., 1,425,203. Aug. 8, 1922. Filed Feb. 24, 1921; serial No. 447,593.

Surveying Instrument. Paul O. Harding, Carlton, Ore., 1,425,589. Aug. 15, 1922. Filed Dec. 14, 1920; serial No. 430,778.

Coal-Handling System. Franklin E. Arndt, Galion, Ohio, assignor to The Galion Iron Works & Mfg. Co., Galion, Ohio. 1,425,822. Aug. 15, 1922. Filed March 26, 1921; serial No. 455,901.

Mining Machine. H. R. Straight, Adel, Iowa, 1,425,913. Aug. 15, 1922. Filed March 31, 1919; serial No. 286,564.

Art of Treating Coal. Frank J. Root, Chicago, Ill., 1,426,012. Aug. 15, 1922. Filed April 7, 1919; serial No. 287,957.

Rotary Car Tipple. A. H. Wood, Kildav, Ky., assignor to Wood Equipment Co., Chicago, Ill., 1,426,027. Aug. 15, 1922. Filed June 15, 1917; serial No. 174,969.

Coming Meetings

The Illinois Mining Institute will hold its next meeting Dec. 1 and 2 at Urbana, Ill. Secretary, Martin Bolt, Springfield, Ill.

Pittsburgh Wholesale Coal Association will hold its annual meeting Nov. 14, at Pittsburgh, Pa. Secretary, W. R. Crowthers, Pittsburgh.

West Virginia Coal Mining Institute's annual meeting will be held Dec. 5 and 6 at Huntington, W. Va. Secretary, R. E. Sherwood, Kanawha Bank Bldg., Charleston, W. Va.

Harlan County Coal Operator's Association will meet Nov. 15, at Harlan, Ky. Secretary, E. R. Clayton, Harlan, Ky.

The National Industrial Traffic League will hold its annual meeting Nov. 15 and 16 at the Hotel Commodore, New York City. Secretary, J. H. Beek, Chicago, Ill.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

Canadian Institute of Mining and Metallurgy, annual Western meeting Nov. 15-17, at Vancouver, B. C. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Can.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, *Editor*

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Car Shortage and Costs

IRREGULAR operation of coal mines, from whatever cause, increases costs of production. Lack of orders at times is the main cause for irregular daily operation; today it is lack of railroad cars in which to load the coal. Proper distribution of cars will do much to lessen the cost of operation even on short turns.

In the East it is the general practice of the railroads to seek a daily distribution of a short car supply equally among the mines served. If the cars available on a given division are sufficient to satisfy but half of the orders for cars, then the car distributor seeks to give to each mine one-half its rating. Quite often the supply of empties comes in small lots; a few may have been shunted in late the night before and throughout the morning additional cars be spotted. The mine superintendent seldom knows when he starts with the few cars whether or not more will be forthcoming. He must keep his men on the job if there is any expectation that more cars will come, for if he shuts down and fails to load such cars as are put in later in the day, these cars are counted against his allotment twice—once for the day delivered and again the next day.

This daily uncertainty plays hob with costs. During the waits for cars the main haulageways become choked with loaded trips. The tipple men stand around with nothing to do. The whole force draws pay with no work to do.

In some of the Middle Western fields the operators and railroad officials long ago got together to remove this irritating and unnecessary trouble. They agreed that the best interests of both parties were served when a mine was supplied with cars for a full day's operation. Accordingly when the car supply was sufficient for but, say, two days per week, the mines would be served in turn with a full run of cars for two days each week, and would stand idle the other four days. The superintendent thus is able to tell the men in advance when the mine will run and the men know that when they turn out they will get a full day's work. Inequalities arising in the distribution are equalized each month, so that each mine knows that it got its full share of the cars supplied the district. When the mine is going all are busy, not sitting around part of the time wondering whether more cars will appear.

The compelling reason for this development in parts of Illinois and Indiana, for instance, is not present in the East. In this Western territory the mine workers for the most part live in towns at a distance from the mines and ride to work on trains. They long ago rebelled at the early rising and trip from town to mine only to find no work or but part of a day's employment. In the East the mine workers for the most part live in close proximity to the mine and suffer only the early rising should there be no cars and easily make their way home when the supply fails. But the operator has relatively higher payroll cost in the East than in the West because of the difference in practice. Why can't the Eastern operators get together with their railroads on such a basis for car distribution and save themselves money and their mine organizations much trouble?

The Value of Time

IN ANCIENT Rome no paid or voluntary fire force kept guard over the city. Every man waited till he had a fire; then he organized his own force—himself, his wife, his family, his slaves (if he had any), the passing mechanic or the expectant beggar. Now it happened that Crassus noted this defect and sought to make money from the remedying of it. Note this from the historical author Charles Oman:

> Still more astonishing was his amateur fire brigade and the way in which he used it. He got together a body of five hundred workmen—carpenters, masons and the like—provided them with ropes, buckets, ladders and tools. Whenever there was a fire (and fires were as common as they were dangerous in the crowded city) he went down at the head of his gang and called on householders whose property was in the immediate neighborhood of the conflagration. He then offered to buy their houses as they stood at a very low figure. If the terrified owner consented the fire brigade was turned on and the mansion generally preserved. If he refused, Crassus went away with his men and let the fire do its worst.

A bad bargain when every minute meant immense loss, yet is it not true that many a bargain is made today under a like stress even where it is not felt, especially by the purchasing agent who is making it? Many a mine foreman in a large company, seeing a clear profit in a new piece of machinery, is obliged to wait while the requisition is held up by the indifference of the chiefs above him and then finds that the purchasing agent delays the placing of the order in the hope that by shopping around he may be able to show a saving of a few dollars. Meanwhile the cost is mounting around the mines, archaic methods are demanding their toll of unnecessary expense, the output is being restricted and the uncompleted work is jeopardizing life. The change proposed must be made, and the sooner the better—the sooner the machinery is installed, the more loss will be avoided. The old Roman who disputed coin with Crassus when his house was burning was little more foolish than the modern American who disputes dollars while the losses from inefficient labor, reduced output and danger are piling up.

Prudence in buying, a little shopping around, if done diligently, may be excused, but due care should be taken lest the loss by delay exceed many times the gain to be attained by circumspection and even many times the whole investment to be made. A tendency among purchasing agents is to hurry orders for replacements, rightly believing that such re-establishment materials are indispensable, but often a new piece of machinery that will afford economies in operation is of equal or even greater importance.

Are Income Tax Returns Significant in Company Profit?

Commission and the engineers' committee of the Fuel Administration found considerable difficulty with the two accounts mentioned and it is understood that an arbitrary allowance of several cents per ton was made by the latter for contingencies.

The form of report adopted for 1918 took maintenance and repairs of structures and equipment out of the detailed operating classification and set up separate figures for them. Miscellaneous profits or losses incident to operation of the mines also were taken out of the schedule of miscellaneous income and made debits or credits to cost. With these exceptions the results obtained were, generally speaking, comparable with the 1917 figures.

The Federal Trade Commission attempted a very elaborate form for 1919 costs in which it was sought to make separation as between operation and maintenance throughout the operating schedules. The commission was never able to put this form into effect because of lack of appropriation and lack of support of the Fuel Administration.

They revamped their scheme of cost forms for 1920 and sought to provide for inclusion in labor cost under maintenance and repairs of the repairs on miners' houses, which had theretofore been carried as a debit to the rent account and the net result shown as a miscellaneous profit or loss. Supplies were handled in the same manner. They also contended that the value of the coal produced at the operation and used under the boilers should be excluded from power costs.

The tendency of the Trade Commission thus has been away from the general policy of the Treasury. The differences were pronounced and eventually caused the split between the National Coal Association and the commission. The Treasury permits such charges as do not materially increase the production to be deducted as expense. The Trade Commission, where the items could be identified, is understood to have eliminated them or to have spread the charges over a period sufficiently long as to not distort the general average. Doubtless many such items were of necessity passed without change, because of the impossibility of positive identification.

The Treasury Department permits the depletion charge to be based on March 1, 1913, valuation. The Federal Trade Commission provided that such charges must be made on the basis of cost. The same rule would naturally apply to the amortization of the value of leases.

In the case of depreciation, the same differences of application would necessarily follow. The instructions of the Trade Commission were to the effect that plant and equipment were to be depreciated at a rate per cent, and did not countenance deduction on the basis of depletion or a rate per ton, while the Treasury Department allows either method at the option of the taxpayer, and in addition the deduction of composite depletion and depreciation, if the taxpayer so elects. The cost of fuel is permitted by the Treasury Department. The later forms of the Trade Commission do not permit its inclusion in cost.

The 1920 forms of the commission instructed that the cost to the present owner of development of the main tunnel, shaft, slope or drift plus the estimated future cost of such work should be amortized pro rata with the exhaustion of the coal recoverable through such development. The Treasury Department does not permit the deduction of *prospective costs.*

Work Longwall by Machine Loaders as Long as Roof Will Stand, Then Shift to More Costly Room-and-Pillar Plan



Speedy Extraction of Coal Will Increase Safe Working Span—Goaf Is Not Expected to Fall Till Weakened Further by Room-and-Pillar Mining—Loader Works Its Way Under Shot Coal Face

By M. R. Martin*
Huntington, W. Va.

BECAUSE room-and-pillar mining is the form of operation most in use in America, the thought and efforts of designers of underground-loading machinery have been directed toward perfecting a machine that will operate successfully and economically in a mine thus laid out. Experience has proved that the success of, and economy in, machine loading hinges directly on the car supply to the loader, and unless a machine is given many more than a miner's turn of cars, it cannot and will not be a success.

In room work, unless the face is turned on an angle of, say, 45 deg. (the degree of the angle may, of course, be greater or less), only one car at a time can be supplied to the loader, which means that while the load is being taken away and an empty is being supplied the machine must be shut down. The manner in which this is accomplished, whether by motor, mule or man power, would be an item of expense that would detract considerably from the saving made by machine loading. Another item of expense involved is the time lost in "flitting" the machine from one narrow place to another.

Why Longwall Has Often Been a Failure

To obviate these and other objections inherent in the loading of cars at one end some method must be adopted that will provide a long working face, so that the machine can be supplied uninterruptedly with cars. Longwall, where it has been attempted in this country over any large area, has not been successful for the reason that we cannot bring ourselves to the painstaking and, as we view it, expensive methods of building packwalls behind the working face to protect the overlying strata. The use of posts or timber chocks does not serve the purpose sufficiently well, and the result is that longwall working in the regular sense has proved unsuccessful. It might be added that uncertain labor conditions have had as much to do with the failure as any other one cause. Machinery, of course, will reduce that difficulty considerably.

Longwall, or block mining, in the United States, where packwalls or gob stowage are not used, has followed two general lines. One method is to form blocks and commence the mining either inward or outward on one side of the block, proceeding until from 10 to 25 per cent of the block remains. This much is left for protection, because if it were mined out in its entirety



FIG. 1—VIEW FROM COAL-FACE END OF LOADER

*Vice-president and general manager Atkinson Car Loading Machine Corporation.

Note—Headpiece shows side view of Atkinson car loader with the loading bar on the left. The conveyor has disappeared. When the loading bar revolves the bits on its periphery lift the coal onto the conveyor.

and the work continued to the next block, the distance between the two supports of the beam would be so great that the weight of the roof would break it down.

Once broken it would be impossible to regain the face or side without driving another entry through the solid coal providing a pillar large enough to support the overlying strata at one end of another beam. The other method is to mine on the end of blocks that lie parallel with the entry, proceeding to a definite point, stopping, and picking up the mining on another end, leaving a block of coal to support the end of the beam away from which the mining is being carried on. Lack of recognition of these principles has been the cause of many failures in block or modified longwall mining. Either of the two methods just mentioned may and should be criticised severely because with them much coal is lost.

In certain sections of West Virginia the method of mining adopted must be such as will convince the lessor of the coal land that as much coal as possible will be recovered. And when such land-owning companies can show that from 90 to 95 per cent of their workable seams are being recovered by their approved room-and-pillar methods, it is not likely that they will consent to a change in the system of mining until convinced that the same high percentage of recovery can be obtained by the system replacing it. It also is true that where the lessee is exacting in his requirements as to the

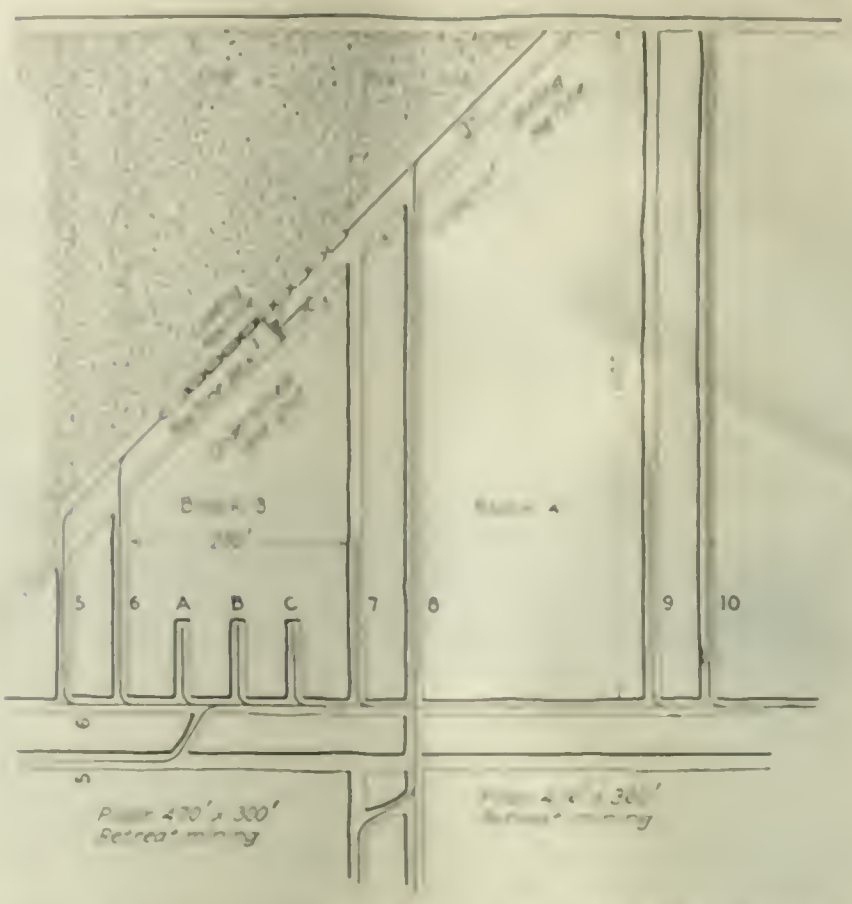


FIG. 2—DETAIL OF LONGWALL AND ROOM WORKING

As the triangular area gets to have a span which, with the particular roof and overburden, may be regarded as approaching a limit, the longwall face is abandoned and the work of drawing the blocks is pursued from rooms where there is less opportunity for rapid, cheap and effective operation.

method followed, the result is better and more economical mining.

The plan† of mining outlined in Fig. 3 is believed such as will assure as high a recovery as, if not higher than, can be obtained by room-and-pillar methods. Vary-

†This plan of mining was designed and description given me by P. A. Grady, general superintendent of the A. J. King group of mines, Huntington, W. Va.

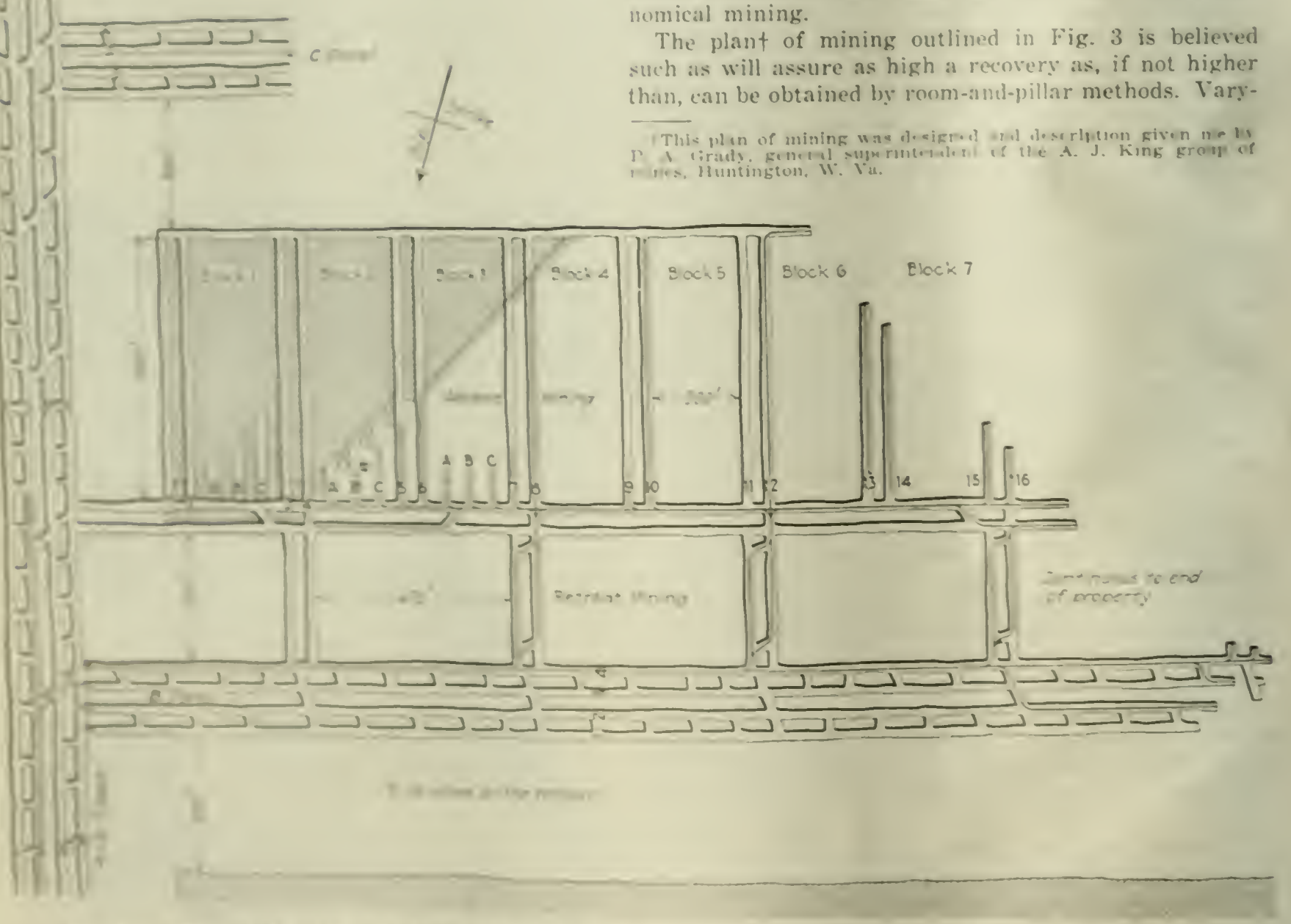


FIG. 3—METHOD OF WORKING WHOSE ROOF IS GOOD AND LARGE AREAS CAN BE MINED WITHOUT CAVING

As fast as the room ends reach limits of the property, coal is taken out by retreating longwall and without packwalling or the building of chutes. Speed in operating is called for to increase distance over which this can be done. As room ends reach limits of the property, coal may be extracted. But longwall is abandoned and rooms are driven in the old fields, and coal is recovered by room-and-pillar methods.

ing conditions may determine the length and width of the blocks as well as the pillars, though the greater the length, the larger the production and degree of concentration attainable.

For explanatory purposes the driving of entries and rooms to form the blocks will be called the first mining. Just as soon as the first block is formed mining can be started to draw it back. This will be termed the second mining. The angle at which this mining is done is a matter of choice and conditions. An angle of 30 deg. will provide a much longer working face than will an angle of 45 deg., as shown in Figs. 2 and 3.

The distance that mining can be carried on the end of the blocks is unknown. However, mining men who have had much experience mining a longwall face away from a barrier pillar, as is done in this instance, where the roof becomes a supported beam with one end resting on a barrier pillar, the other on the end of the adjoining block, know that it is possible to draw the block a long distance before the first great fall takes place. It is a well-known fact that if a large number of men are put to work on a face of this length, the retreat will be quite rapid and the work can proceed a great distance before the roof makes its first break. By reason of this fact we know that through the use of mechanical loaders it is entirely possible to extract the whole block so rapidly that the roof does not have time to break down until it is entirely worked out. To accomplish this some timbering must be done, though, for obvious reasons, this is not shown in the drawings. If after taking the face back a certain distance it is found that the roof will break, making it difficult to maintain the long face, the remaining coal can be obtained by driving rooms as indicated by dotted lines, drawing the pillars as in ordinary room-and-pillar work advancing. This is called the third mining and it need be used only where the longwall face can be maintained for only a limited distance away from the barrier pillar.

The track arrangement as shown provides for a continuous advance of the block sections. The room switches have to be reversed before the second mining of any block. At the mouths of rooms Nos. 9 and 10 the switches are already turned and are waiting for the longwall to reach them. From room No. 12 is shown the track layout for the first mining of rooms and entries. Much sidetrack is shown in the haulway rooms from the main entry or *B*-panel entry, and at no great distance from the producing faces. This *B*-panel entry, once started, is continuous to the end of the property, and once the development has reached the point shown the maximum production can be maintained during the entire life of the mine, as only one-half of the coal is taken out on the advance, the other half to be recovered by the same method on the retreat. In laying out a new mine on this plan, it would be well to have the main entries removed far enough to the right of the property to permit a certain quantity of coal on the left to be recovered by room-and-pillar methods, until the coal

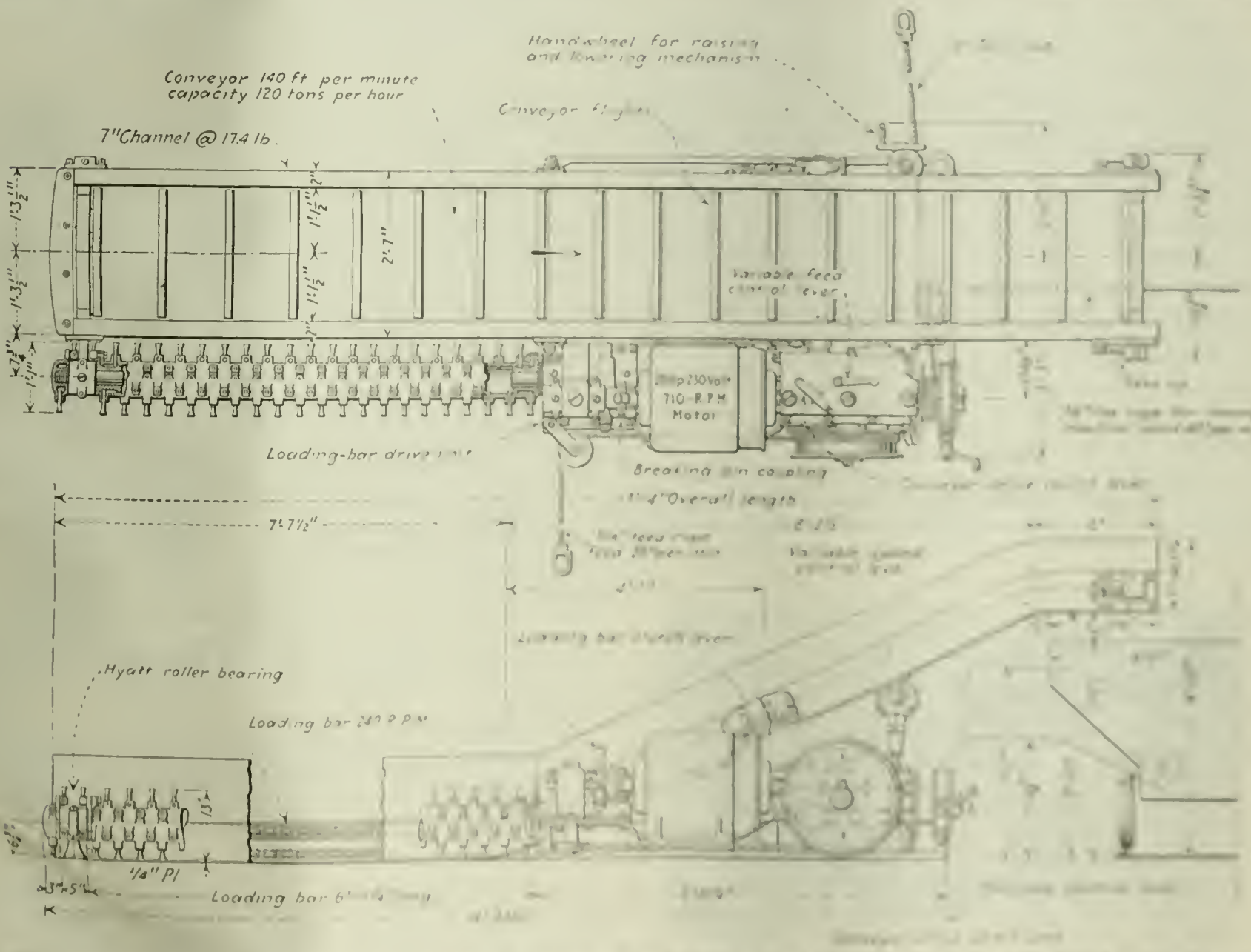


FIG. 4—PLAN AND ELEVATION OF LOADER AT WORK AT BUFFALO EAGLE COLLIERY

On the right can be seen the position the machine would assume in loading another conveyor extending along the face, the upper surface of the machine conveyor being at its highest point 29½ in. above the floor of the mine.



on the right has been sufficiently provided with entries and rooms for its development in accordance with the outlined plan.

Reference to Fig. 2 shows an enlargement of blocks Nos. 3 and 4 and the method by which a loading machine is being worked on this plan. This drawing also shows the intense concentration possible under this plan of working. This machine is shown in the headpiece and Figs. 1, 4 and 6.

It operates on the principle of a shortwall mining machine, being propelled along the face in the same manner. It is equipped with a drum, which winds a wire rope the loose end of which is secured by a machine jack set against the floor and roof of the mine.

Coal Is Lifted by Bar Onto Conveyor

Instead of the flat cutter bar used on an undercutting machine a round bar 7½ ft. long has been substituted. Chisel-point mining-machine bits have been set in the periphery of the bar, and this bar, rotating at a speed of 200 r.p.m., lifts the coal onto the conveyor, which runs parallel to it. The bar also does the bottom scraping, which ordinarily must be done by hand. One who has not seen the machine operate probably would assume that this bar, revolving as it does at a high speed, would grind and break up the coal, but the only real tearing action is in bottom scraping, for in reality the bar comes in contact with only a small portion of the coal loaded, most of it falling onto the conveyor, by virtue of the fact that the machine undermines the coal.

The best way of shooting the coal for loading by this machine is to use only half of the normal charge. This leaves the coal in a tight or standing shot, saving in the cost of shooting and increasing the percentage of lump coal. This machine will deliver coal to suit the height of the mine car. Where face conveyors are used the height of the motor on the machine will be the determining factor. A drop-front truck is provided, the machine loading and unloading under its own power. The truck is not self-propelled, however, but has to be drawn by a locomotive whenever it is necessary to move it from one place to another. Such transfers do not often have to be made when a system such as the one just described is used. The conveyor has a rated capacity of 120 tons per hour. The actual capacity, of course, is determined by the speed at which the machine is fed into the coal, the height of the seam, and the depth of the undercut.



FIG. 6.—OBLIQUE VIEW FROM UNDERSIDE SHOWING

An actual stop-watch test made by disinterested parties at the mine of the Buffalo Eagle Colliery Co., Braeholm, W. Va., gave the following results:

Test of Loading Machine at Braeholm, W. Va.

Number of cars loaded in test	20
Level full capacity of cars, tons	2.75
Height of coal, feet	6½
Depth of undercut, feet	6
Time required to load 20 cars	31 min. 40 sec.
Time out setting jack	1 min. 40 sec.
Average time per car	1 min. 30 sec.

Conditions for this test were much the same as shown in Fig. 5; a motor was in constant attendance pulling the cars past the loading machine. Three men operated it, one man controlling the movement of the machine, another breaking down any coal that adhered to the roof (caused by small binder in the coal), and the third man topping off the cars. This machine is manufactured by the American Coal Loading Machine Corporation, of Huntington, W. Va.

Mine Officials Should Keep Abreast of Up-to-Date Safety Practices.—The safety of coal mines and miners cannot be assured if the men in charge are not familiar with safe methods. The following recommendations, therefore, are offered by the U. S. Bureau of Mines:

(1) All persons in responsible charge of the direct operation of coal mines—including superintendents, foremen, firebosses and shotfirers—should be required to have certificates of competency issued by the state, showing that the applicant has passed an examination clearly establishing his knowledge of what constitutes up-to-date safe practices in the branch or branches of mine operations under his jurisdiction. All such certificates should be revocable by the state for cause, should expire after five years, and should be renewed only upon taking another examination. The latter requirement would compel all operating mining men to keep conversant with progressive safety practices.

(2) Mining companies should require superintendents, foremen, firebosses and shotfirers to keep thoroughly familiar with requirements of state laws, as well as with up-to-date practices in regard to ventilation, dust, electricity in mines and explosives. If possible, this information should be conveyed by lecturers or specialists conversant with the best current practices, otherwise the companies should provide for sending current mining literature to its mine officials.

(3) Each mine should make a special study of its gas and dust condition. It might be advisable to enlist the services of the U. S. Bureau of Mines, whose coal-mining division has made and is making extensive studies as to the prevention of explosions in coal mines.

At the Pittsburgh (Pa.) experiment station of the U. S. Bureau of Mines a complete study is being made of the Burrell gas indicator as applied to the analysis of air mixed with methane, hydrogen and gasoline vapors. Both the theory on which its operation is based and its practical uses are being considered and a few improvements will be recommended.

Power Used at Twelve Collieries and Its Distribution For Eight Separate Operating Purposes

Company Uses Watt-Hour Meters to Determine Power Consumed for Each Purpose at All Collieries—Haulage Is Largest Item—Breaker and Compressed-Air Machinery Where Installed, Are Leading Current Cosumers

By G. M. Kennedy*
Lansford, Pa.

As HAS often been stated, it is rather difficult to take the total steam-power cost and distribute it with any degree of accuracy among the various engines in the plant, whereas by means of the watt-hour meter an accurate record can be kept of the electrical power consumed by each motor or group of motors.

Realizing some years ago that many advantages were to be obtained by the use of watt-hour meters one of the engineers of a large anthracite company decided to order them as part of the electric equipment to be installed at the several mines. In consequence all the electrical installations of the company are well equipped with watt-hour meters. It must not be assumed from this that each unit of electrical apparatus was purchased with a watt-hour meter as if it were an integral part of the unit, but the various groups of electrical equipment, as will be defined later, were supplied with this integrating device. The cost of a watt-hour meter is insignificant as compared with the cost of the equipment with which it is to be used, and its purchase is, therefore, entirely justifiable.

The method of grouping the apparatus for power measurement is quite flexible and depends much on the method of accounting adopted as well as on the individual opinion of the person in charge of the equipment.

However, one satisfactory method for dividing the power consumed into groups, and it is that which has been introduced at the twelve plants described in this article, is as follows:

(1) Transportation, or Haulage	(5) Lighting
(2) Breaker Machinery	(6) Hoisting
(3) Ventilation	(7) Compressed-Air
(4) Drainage	(8) Charging Stations

The order in which they are arranged is immaterial.

For the past twelve years records have been kept of the tons prepared per month, here marked "tonnage," and the kilowatt-hours consumed per month arranged according to the headings given above. These records cover ten collieries designated in the following tabulations as *A*, *B*, *C*, *D*, *E*, *F*, *G*, *H*, *J* and *K*, also two washeries as *L* and *M*. The tabulations are taken from an average month in the year just past.

Item I shows the power used in the haulage of ten collieries and, of course, all hauling done during the month is recorded, including all work on which the electrical locomotives were used. The variations in the kilowatt-hours consumed per ton at the various collieries is accounted for in the differences in the gradients, in the lengths of haul, in the yields per car, etc.

Item II shows the power used in the preparation of the coal and includes the power consumed at night time, on Sundays and holidays in making repairs to machinery. The washery designated as *M* in this table shows a high number of kilowatt-hours per ton because much

*Electrical engineer, Lehigh Coal & Navigation Co.

CONSUMPTION OF POWER AT TEN COLLIERIES AND TWO WASHERIES DISTRIBUTED BY EIGHT PURPOSES FOR WHICH IT IS USED

Item I—Haulage

Colliery	Tonnage	Kw.-Hr.	Kw.-Hr. Per Ton
A	51,232.15	174,100	3.3982
B	39,600.01	60,040	1.5161
C	17,050.02	58,900	3.4546
D	20,456.12	68,000	3.3241
E	24,689.12	41,020	1.6614
F	36,475.05	62,780	1.7211
G	35,301.16	77,300	2.1897
H	31,851.11	49,190	1.5443
J	38,805.00	61,700	1.5900
K	6,424.13	11,990	1.8679
	301,887.07	665,020	2.2022

Item II—Breaker Machinery

Colliery	Tonnage	Kw.-Hr.	Kw.-Hr. Per Ton
A	51,232.15	133,000	2.5960
D	20,456.12	14,000	0.8211
L	24,082.16	35,000	1.4533
M	20,499.02	143,300	6.9911
G	35,301.16	29,140	0.8254
J	38,805.00	29,100	0.7743
	190,378.01	383,540	2.01

Item III—Ventilation

Colliery	Tonnage	Kw.-Hr.	Kw.-Hr. Per Ton
B	39,600.01	78,645	1.9859
C	17,050.02	57,395	3.3662
G	35,301.16	63,360	1.7948
J	38,805.00	36,840	0.9493
K	6,424.13	11,190	1.7418
F	36,475.05	6,900	0.1891
	173,656.17	254,330	1.4643

Item II—Drainage

Colliery	Tonnage	Kw.-Hr.	Kw.-Hr. Per Ton
B	39,600.01	25,100	0.6338
C	17,050.02	25,100	1.4715
D	20,456.12	9,200	0.4497
G	35,301.16	38,170	1.0812
J	38,805.00	123,100	3.1722
	151,213.11	220,670	1.4593

Item VII—Compressed-Air

Colliery	Tonnage	Kw.-Hr.	Kw.-Hr. Per Ton
B	39,600.01	87,100	2.2000
C	17,050.02	87,100	5.1091
G	35,301.16	168,200	4.7651
	91,951.19	342,400	3.7242

pumping is necessary and many long conveyor lines have to be operated under the conditions prevailing at that particular plant.

Item III shows the power used in mine ventilation. This item varies considerably owing to the variation from mine to mine in the number and lengths of the gangways, travels, breasts, etc., which need ventilation.

Item IV shows the power used in removing the water from the mines. The mines designated as *A* have a flowing tunnel and therefore need no pumping. *B*, *C*, *D*, *G* and *J* are the only mines equipped with electrically operated pumps and consequently all the others fail to appear in this table.

Item V shows the power used in lighting the outside buildings around the mines. This also is not a constant quantity per ton mined, for it depends on the number and size of the buildings lighted.

Item VI shows the power used in hoisting and lowering the men and material to the surface and includes all the hoisting of men, timber, rails, supplies in general, rock, etc., whether done at one or more shafts.

Item VII shows the power used in compressing air, which is conducted by pipes into the mines and used for drilling coal and rock.

Item VIII shows the power consumed in stations for charging the small portable storage batteries used by the underground employees for their electric cap lamps.

Meters Reveal Wasteful Night Consumption

Item IX is a summary of the other tables. These tabulations are only for a month their value largely consisting in comparing costs from month to month at the same mine. After making such a comparison it is easy to find out where power is being wasted and to bring about a saving. Watt-hour meters also make it possible to separate the power used at night from that used during the day, and as a result in many cases the waste of power during the night can be eliminated.

The saving in power made possible by using watt-hour meters pays liberally for the installation of the meter and its upkeep, for it tells the operator just where power is being used, and when it is excessive steps are invariably taken to reduce it to a minimum.

The kilowatt-hours per ton based on the whole production and power used is shown in Table IX as 5.2056. Since this method of tabulation was introduced the figure has been growing steadily less and less and has not reached its minimum yet.

Experiments on the effects of breathing carbon dioxide have been conducted at the Pittsburgh (Pa.) station of the U. S. Bureau of Mines under the direction of Dr R. R. Sayers, chief surgeon of the bureau, and A. C. Fieldner, supervising chemist. About 2 per cent of carbon dioxide in oxygen produced a slight increase in lung ventilation, but no subjective symptoms; 5 per cent in oxygen caused an increase in lung ventilation of about 100 per cent, but no other signs or symptoms; 7.2 per cent produced about 200 per cent increase in lung ventilation, and moderate perspiration and a slight fulness in the head were experienced after breathing the mixture for 10 minutes; 9 to 10 per cent produced about 300 per cent increase in lung ventilation, and the subject complained of frontal headache and was dizzy and perspiring at the end of 10 minutes. About 8 per cent of carbon dioxide in oxygen was breathed by some of the subjects for as long as 45 minutes, but the breathing was very laborious, and dizziness, headache and perspiration were marked. In fact, to have done any work while breathing this mixture would have been extremely difficult.

Blows or Sucks Dust from Electric Motors. Preventing Short-Circuits

MANY mining plants have no compressed air with which to remove the dust from motors and generators and in other cases there are substations where compressed air is not available. Consequently need is felt for equipment in portable form that will blow away the dust that collects on the various parts of electrical machinery and switches. The Premier Handy, manufactured by the Electric Vacuum Cleaner Co., Inc., of Cleveland, Ohio, is such an appliance. It has the further advantage that it can be used as a vacuum cleaner when that is desired.

The illustration shows how the apparatus is used to draw dust from the generator or motor. By detaching the dust bag and the hose and by attaching the latter to the orifice from which the bag has been removed, the vacuum cleaner is changed into a cleaner operating by compressed air. The machine as designed for mine service has an air-cooled motor and weighs 6 lb. The motor is universal and will operate on either alternating or direct current. The mouth of the cleaning tool is made of soft rubber that cannot mar or scratch anything and will not be broken if struck by a moving object.

In many cases where compressed air is readily available it does not pay to pipe it to every motor. The vacuum cleaner can readily be attached to an electric lamp socket and in this way will be made available without wiring, piping or preliminary expense. Then too, when using it as a blower, dry air is furnished. The air from compressors often is wet and the moisture not only rusts the machinery but short-circuits it.



Taking Dust from Commutator

By using an electric motor it is unnecessary to pipe compressed air to machines for dusting purposes. Furthermore the dust is not blown off, to settle elsewhere, but can be sucked into a bag.

By Washing Only a Part of the Coal Mined, Lowest Ash and Sulphur and Largest Yield Are Attained*

Standardized Screening Methods Make Comparisons Possible—How Coal Was Screened in Practice—Only Coal Passing Over Four-Mesh Screen Will Be Washed—Finer Coal Will Be Added to It Untreated

By G. R. Delamater
Harrisburg, Pa.

THE washery at which the tests described in this article were made was originally intended to deal with the coal coming entirely from certain mines in Pennsylvania all operating in the same bed. At that time 92 per cent of the coal fed to the washery appeared in the cleaned product, and the ash content in the refuse was always above 50 per cent. Even then a certain quantity of fine material found its way into the refuse.

During the late war, when coal was confiscated by the government and replaced by other coal from all over the states of West Virginia and Pennsylvania, we found ourselves facing a difficult problem, for there were never two consecutive days during which the coal mixture would be alike. In fact, each day's mixture usually contained coal from six to ten mines and the product of as many as 129 mines was represented in the washery feed during a single thirty-day period. To adjust the plant to such a variable feed so as to attain maximum efficiency naturally was difficult, but, all circumstances considered, it was regarded as fortunate that results as good as those attained were obtained.

Tests from which the data here presented were obtained represent a plant operation covering three months during the year 1919. Samples of the raw coal, washed coal and refuse were carefully taken daily, and screen tests made of each, the data herein given representing the composite results of this work.

Test Screen Gives Coal Standard Treatment

In making these screen tests it was desirable that great accuracy be obtained, and, realizing that in order to be comparative such tests should be conducted as nearly as possible under identical conditions, it was decided to use a Ro-Tap shaker screen set manufactured by the W. S. Taylor Co., of Cleveland, Ohio. Fig. 1 shows this apparatus, which is one in which the sieve pans at all times are given identically the same rotary movement, the same number of revolutions and taps per minute and, by means of an automatic clock-controlled electric switch, each test is carried on for exactly the same length of time.

As will be noted from the charts and tables, eighteen screens were used and they ranged from 1.05-in. clear opening down to 200 mesh. After studying the various screens used for work of this nature it was decided to adopt the Tyler standard screen set, which has as its base a 200-mesh sieve made from 0.0021-in. wire having a clear opening of 0.0029 in., which is that adopted as standard by the U. S. Bureau of Standards. The 100-mesh and the 20-mesh sieves in this screen scale also meet the specifications adopted by that bureau, so three of the sieves are in accord with its standards.

The ratio between the different sizes of this screen scale has been taken as 1.414, or the square root of 2, as recommended by Ritinger. Thus the width of opening in each successive sieve is exactly 1.414 times that of the preceding sieve, making the area of opening in each successive sieve just double that of its predecessor. When desirable, every other sieve may be skipped or taken out. This results in half the screens being used, but the ratio of width of opening will be 2 to 1.

By skipping two sizes a ratio of 3 to 1 will result and by skipping three sizes a ratio of 4 to 1 will be obtained. At the time these tests were started it was my belief that the results probably would show that nothing coarser than 16-mesh coal could be bypassed around the washery except possibly in the low-sulphur coals such as those of the Rocky Mountain district, where high ash is the only undesirable feature and in which it was probable that 8-mesh would be the limiting size. I was, therefore, much surprised in finding plus 8-mesh to be the permissible size and that a screen with about ¼ in. of clear opening could be used in actual plant operation.

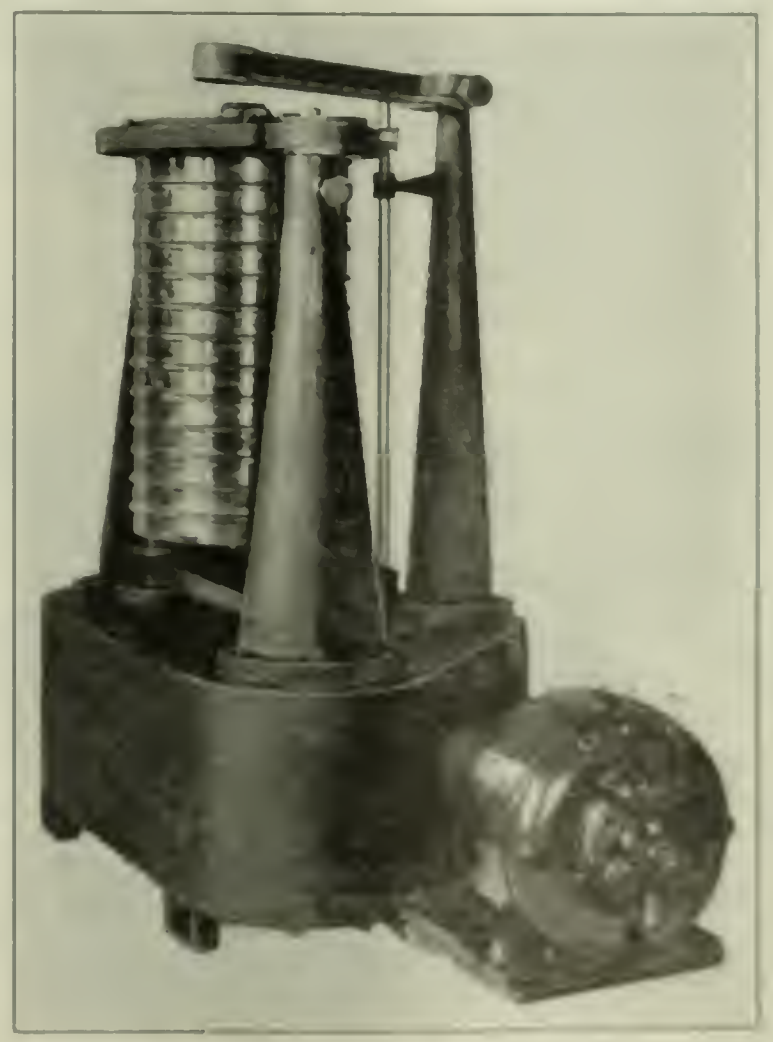


FIG. 1—A SHAKER SCREEN MAKING THIRTY SIZES

Apparatus gives uniform movement, equal conditions and number of taps, equal time control and therefore comparable results. In the tests described in this article seventeen coal screens and one pan of blind screen were used. A time switch stops the current when the specified duration of the test is completed

*Second of two articles by G. R. Delamater. The first appeared in *Coal Age* Oct. 26 and was entitled "Problems of Illuminating Coal Washing and Measures Now Being Taken for Their Solution."



FIG. 2—SCREEN VIEW OF SCREEN FOR WASHER USE

Heavy load especially that expects to transmit to screen to prevent the escape of fine dust. The vibrating mechanism is on top, free from contact with the material being screened. It is enclosed in a metal dustproof housing.

In addition to this I realized that the cost of screening out such coal in the tonnages it would be necessary to handle would be a serious matter, as no screening equipment then known seemed well adapted to such service. Fortunately, about the time this work was completed the W. S. Tyler Co. placed the Hum-mer electrically vibrated screen on the market and a 6-ft. machine of this type was purchased and placed in the washery in such manner that the method proposed could not only be tested under real operating conditions but the feed to the screen could be altered to any desired tonnage so that its efficient capacity could be determined.

This screen was kept in constant daily operation for one year, careful record being made of the results obtained under all weather conditions. The principal effect of these was to modify the moisture content of the coal. It should be noted that the data represented a full year's test and so enabled us to study all the many coal mixtures which were delivered to the washery. The result of this one year's demonstration was so gratifying that the entire plant was finally equipped with screens of this type, not, however, without careful consideration of all the other available screening equipment.

It was found that this machine, which had a total screen area of 30 sq.ft., would efficiently handle from 80 to 110 tons of coal per hour, depending, of course, upon the moisture content, the maximum of which slightly exceeded 10 per cent. The power consumption was 1 hp. The screen cloth was such as to give the equivalent of a ¼-in. clear square opening.

Figs. 2 and 3 show the type of screen used. Simplicity, accessibility, high capacity, low power consumption and ability to operate without lubrication are its chief advantages.

The vibrator is a simple solenoid magnet operating on a 15-cycle alternating current. A small motor-generator set converts the available power (which in our case was 25-cycle) to that required by the machine. All the screens used in this plant combined required 4 hp. of electric energy.

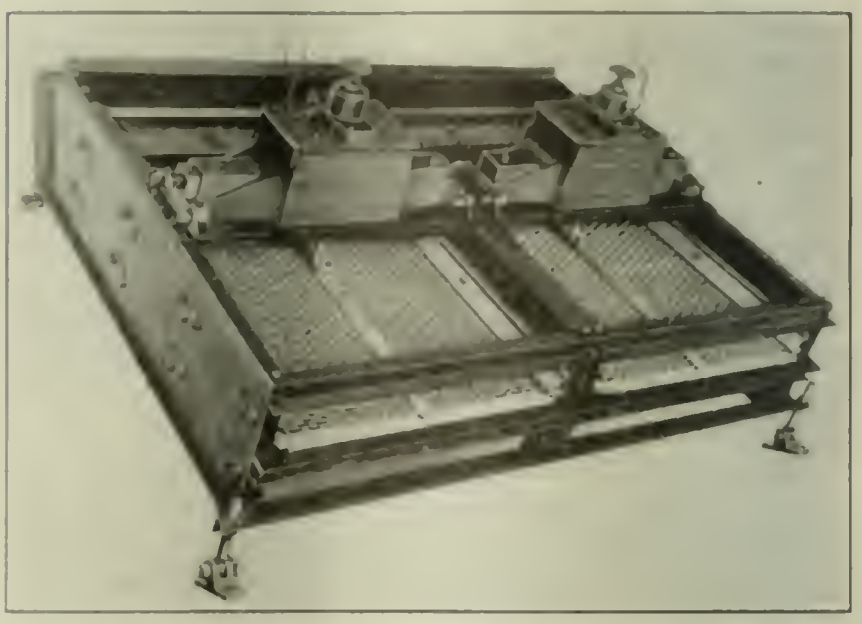


FIG. 1—SCREEN WITH DUSTPROOF HOUSING OMITTED

The screens are vibrated by the electric vibrators on the bridge above them. The handwheel regulates the intensity. Fifteen-cycle current is used. The vibration is not subdued by the presence of a heavy load. There is no make and break; the alternations of the current pull up and release the armature at high speed.



FIG. 3—LIFTING OUT A SCREEN FOR REPLACEMENT

The frame is cast so that right-hand side is a small shaft in which a wrench may be inserted. By turning this shaft the tension of the screen can be adjusted to suit the moisture content of the load. One man can readily make this adjustment.

No movement whatever is imparted to the frame of this machine, only the screen cloth being moved and this at the rate of 1,800 vibrations per minute. This cloth is normally stretched up at drum-head tension yet is quickly adjustable. Also by means of the small hand wheel on the top of the vibrator the strength of vibration may be instantly adjusted while the screen is in operation.

Though the rapid vibration of the cloth would alone result in effective screening, another feature of this machine undoubtedly has much to do with its high capacity. In hand screening simply shaking the sieve pans is a slow process. Anyone who has performed this work well knows the result of shaking the sieves over a table where they may be frequently bumped meanwhile. The result is much greater rapidity of screening. The armature of the machine here illustrated at each upward stroke strikes suitably arranged blocks, thus imparting to the screen cloth an effective impact.

Prior to the installation of these screens, when all the

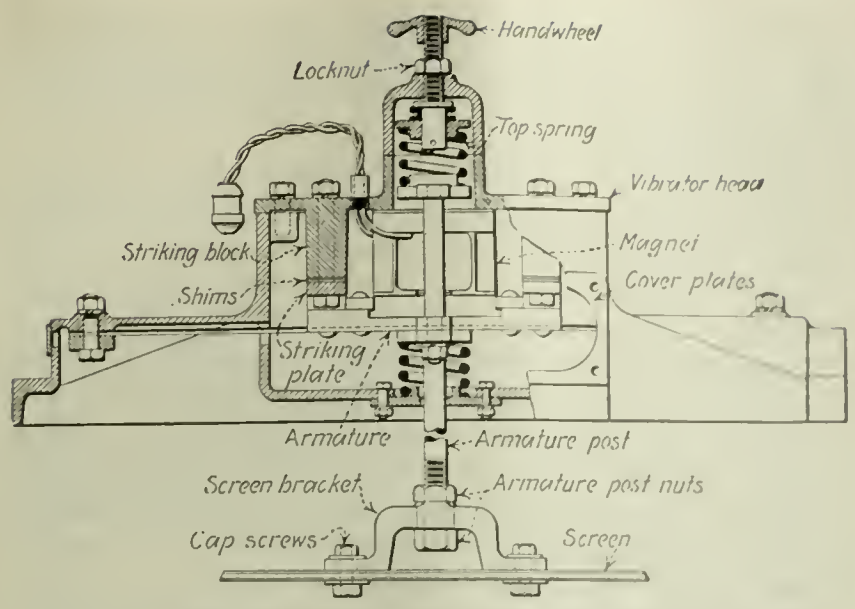


FIG. 5—ELECTRIC VIBRATOR WITH SCREEN ATTACHED

The strength of the vibration is regulated by the handwheel. The low-frequency current is generated by a small alternator operated by a high-frequency circuit. The piece across the poles of the magnet—"the armature," as it is termed—goes back and forth as the strength of the magnet increases or declines.

coal was washed, twelve jigs, three settling tanks with Luhrig dewatering elevators and three Elmore centrifugal coal driers were employed. The washed coal yield ranged from 86.12 per cent to 89 per cent when good grades of coal constituted the mixture. The moisture content of the finished washed-coal product was 8 per cent whereas the ash and sulphur contents were 6.73 per cent and 1.15 per cent respectively. The washery operation was such at all times as to maintain these figures with but slight variation.

After installation of the screens only six jigs, one settling tank with dewatering elevator and one Elmore drier were used. The ash and sulphur content of the finished product remained the same, or 6.73 and 1.15 per cent respectively, and the moisture content was reduced to 5 per cent or less. The yield ranged from 92.5 per cent to 95 per cent, there being three straight months during which the higher figure was obtained. This, of course, was because of improvement in the quality of the raw coal coming to the washery.

The accompanying charts are designated by letter and the tables by number. The tables are somewhat

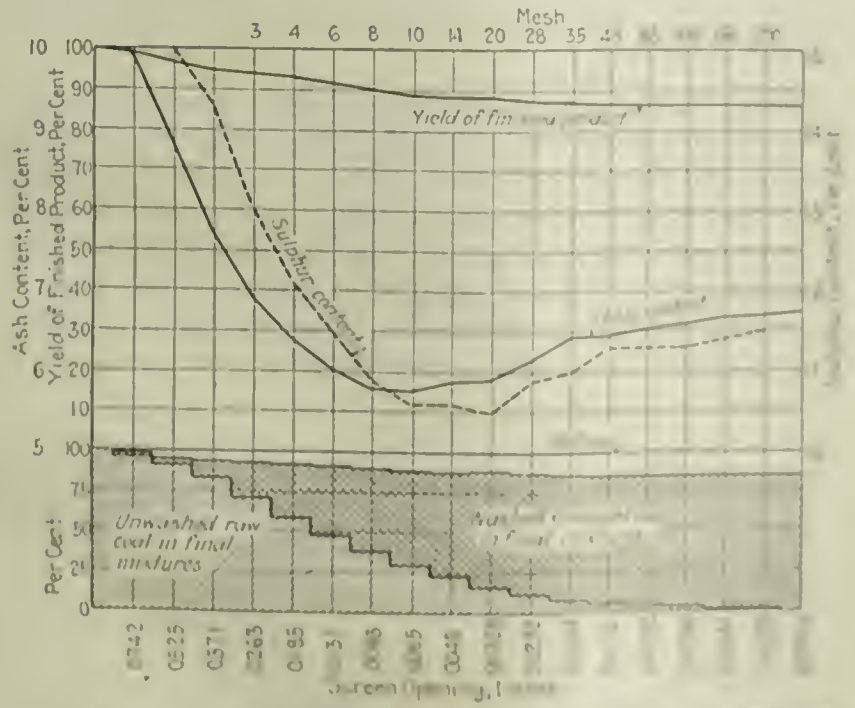


CHART A—MIXING WASHED COAL ABOVE A CERTAIN SIZE WITH UNWASHED COAL BELOW THAT SIZE

Taking coal that would go through a screen opening of 1.66 in. as basis for examination, the ash and sulphur content and yield of finished product are given that would result from washing all the coal larger than a certain size and adding to it unwashed all the coal below that size. Note how much more successful is part washing than entire, or even almost entire, washing.

lengthy but are submitted so that those desiring to make a more detailed study of this problem may have all necessary data available. The charts are, of course, a more convenient form for the same data, bringing out with greater clearness, if with less accuracy, the results obtained.

In making screen tests as well as analyses of the raw coal, washed coal and refuse, it has always been my experience that it is impossible to obtain results throughout which will check to exact figures. I mean by this that, theoretically, the ash and sulphur content of the washed coal and refuse when combined should equal the amounts of the ash and sulphur in the raw coal. The best safeguard against unreasonable variations from the theoretically correct figures is to take large samples with great care. This procedure was followed in this work.

The raw coal was—rightly, I think—taken as the base of all calculations in making corrections, and for this



CHART B—SULPHUR IN EACH SIZE OF RAW COAL, WASHED COAL AND REFUSE

Note that this chart gives the sulphur in each size and the sulphur in all sizes above the size given to be all sizes below that size but merely sulphur in the coal which passes through the next larger screen and is held on the screen of which the opening is given.

reason the tonnage of this raw coal and its ash and sulphur contents are charged against the washery and must be accounted for. Likewise, the washed coal is the resulting plant product which is invariably carefully sampled and weighed, and the samples analyzed. It was, therefore, considered in this work that the figures resulting from the screen tests and analyses of the washed coal must be accepted at their face value and be left uncorrected.

Some Coal Always Is Broken

Because some of the coal is sure to be broken as it passes through the washery the percentages of sizes in the washed coal and refuse when combined cannot be expected to equal exactly the percentages of the same sizes in the raw material. For an entirely different reason the ash and sulphur content as determined by an analysis of the washed coal may rightfully be accepted as binding and not subject to correction as are those of the refuse, for whatever is not found in the refuse that calculations of the content of the washed coal would show should be there is nevertheless properly chargeable to the refuse or waste product of the plant. It is

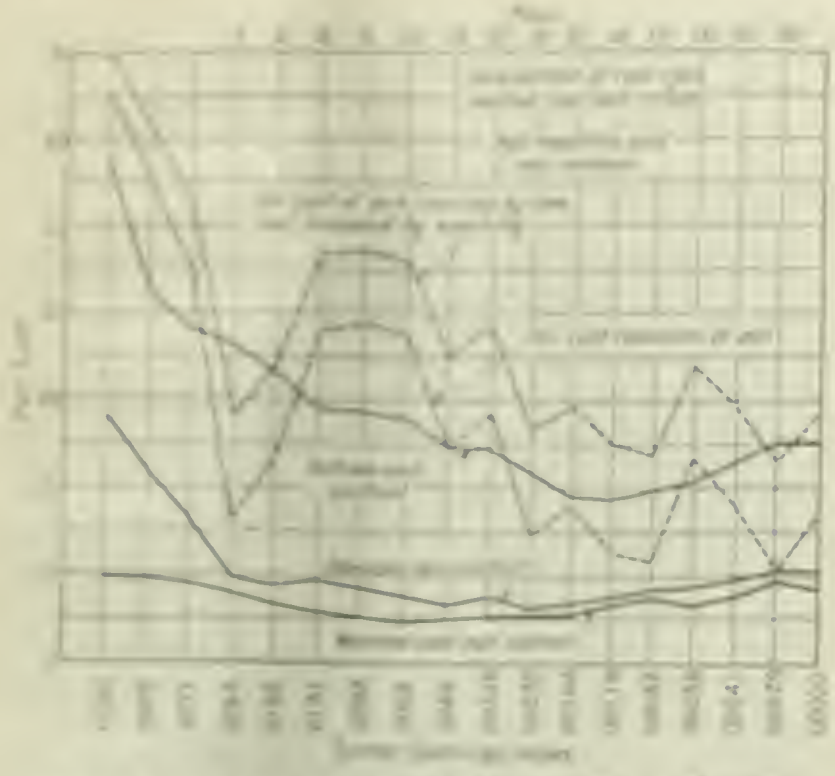


CHART C—SIZE IN RAW COAL, WASHED COAL, AND REFUSE

This chart, size is based on the mesh held by the screen that is rejected as an oversize and passed by the next larger screen. It shows the degree to which the particular size recorded fails to be rejected of the ash.

almost from the washed coal no matter where it has gone.

Under that assumption the percentage of washed coal yield as determined by actual weighing at the coke ovens (all weights being, of course, converted to a dry basis) was accepted as correct and used as the base for corrective calculations.

It was found that the theoretical calculations based on the percentages of the various sizes of the raw coal and their percentages of ash and sulphur content resulted in a total ash and sulphur content of the raw coal which checked closely with the actual analysis made of the original raw-coal samples. The total resulting from these calculations for ash and sulphur therefore was accepted as the correct figure in order that these figures might be used for the corrective calculations to follow.

Analyses for the ash and sulphur content of the various sizes in the washed coal also were accepted as correct. Using the washed-coal yield as a base, the correct figures for the percentage of each size in the washed coal were calculated. Then, using the raw-coal data and the corrected washed-coal figures, the percentages of sizes in the refuse and their ash and sulphur contents were calculated.

This method, of course, resulted in corrections to nearly all the percentages of sizes in both the washed coal and refuse as well as to some of the analyses for ash and sulphur content of the various sizes in the refuse. However, none of these was radical.

Referring now to the diagrams, chart *A* sets forth quite clearly the unexpected result disclosed by this work. It was found that both a lower ash and sulphur content will be found in the finished product if only a portion of the coal be washed, the remainder being by-passed around the washery and mixed with the washed product from the other portion.

On this chart each vertical line represents an individual scheme of washing, being entirely independent of each of the others set forth by the other lines. This chart arrangement will hereafter be called class *X*,

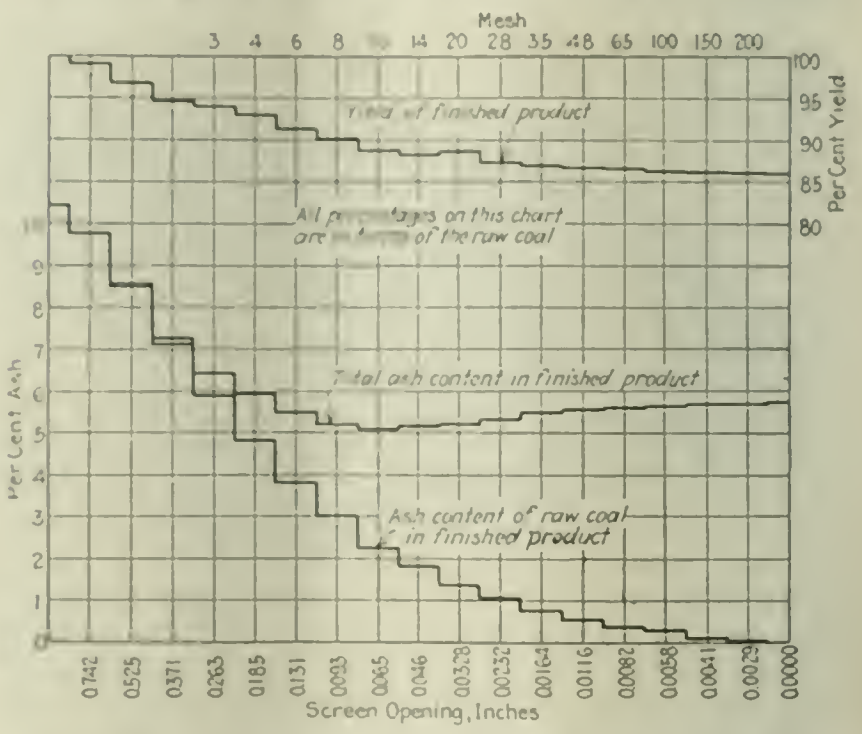


CHART E—ASH CONTENT WHEN ANY ONE SCREEN IS USED TO SELECT COAL FOR WASHING FROM REST OF COAL

Chart shows percentage of the ash in the raw coal appearing in the finished product, the total ash content and the yield of that product.

whereas those wherein each vertical line represents an individual screen size will be called class *Y*. For example, the fourth line from the left on chart *A* represents the 3-mesh screen with 0.263 sq.in. clear opening. The curves intersecting this line designate the percentages in each instance that will result if all the coal retained on that screen be washed and the washed product resulting be mixed with the unwashed raw coal passing through this screen.

The lower portion of this chart depicts the proportions of raw and washed coal in the final mixture. It will be noted that the yield curve for the finished product declines steadily as the percentage of coal washed is increased.

It will be seen that with the 20-mesh screen the lowest sulphur percentage was obtained whereas it was with the 10-mesh screen that the percentage of ash in the product reached its minimum. The 14-mesh would therefore be the ideal size for the screen if a balance were struck between maximum ash and sulphur reductions. However, in our instance (and I think the same will apply to most of the washeries where the coal is



CHART D—EFFECT ON REDUCTIONS OF SULPHUR AND ASH WITH YIELD ON EACH SIZE

The two extremes of the commonly used sizes were here taken in being accumulated by the screens in reducing the ash and sulphur to their limits and their losses. The diameter of these is small and the degree to which they can be reduced is also small, as it is found further on in many cases.

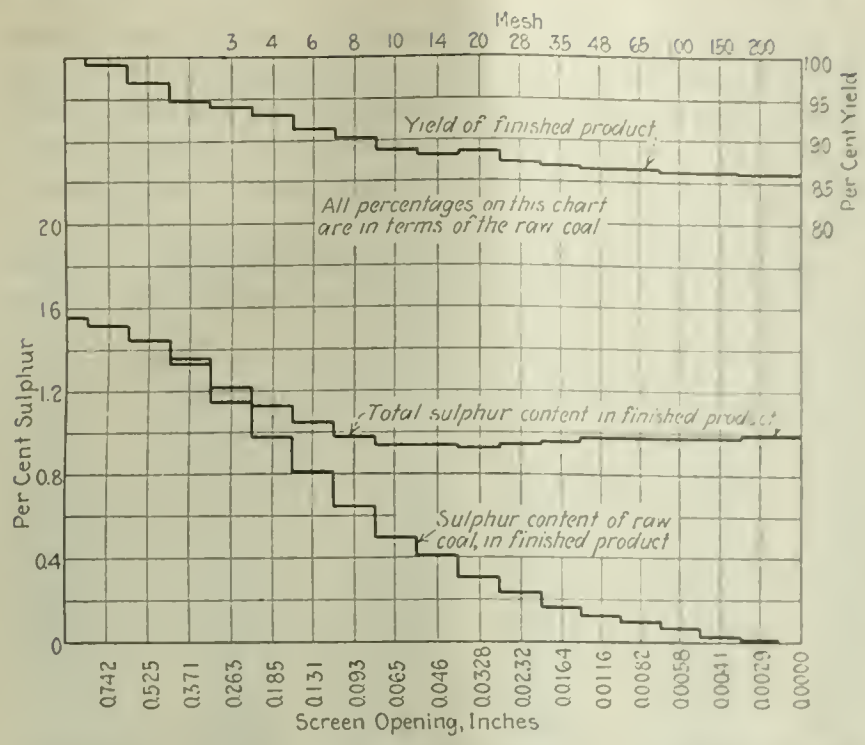


CHART F—SULPHUR CONTENT WHEN ANY ONE SCREEN IS USED TO SELECT COAL FOR WASHING FROM REST OF COAL

Each ordinate shows the result that would be obtained if all the coal that would be held on such a screen were washed and all the coal that would be passed by that screen were mixed with the former to form the final product.

cleaned for the manufacture of metallurgical coke) the washery received no premium for producing a coal product having a sulphur content such as would result in the manufacture of a coke of less than, say, 0.95 per cent sulphur. One per cent of sulphur in the coke was the maximum allowable at this plant, the blast-furnace department claiming no advantages for any lesser content, yet making strenuous objection to anything higher. As a washed coal that contained 1.25 per cent of sulphur gave a coke with a flat 1 per cent of that injurious ele-

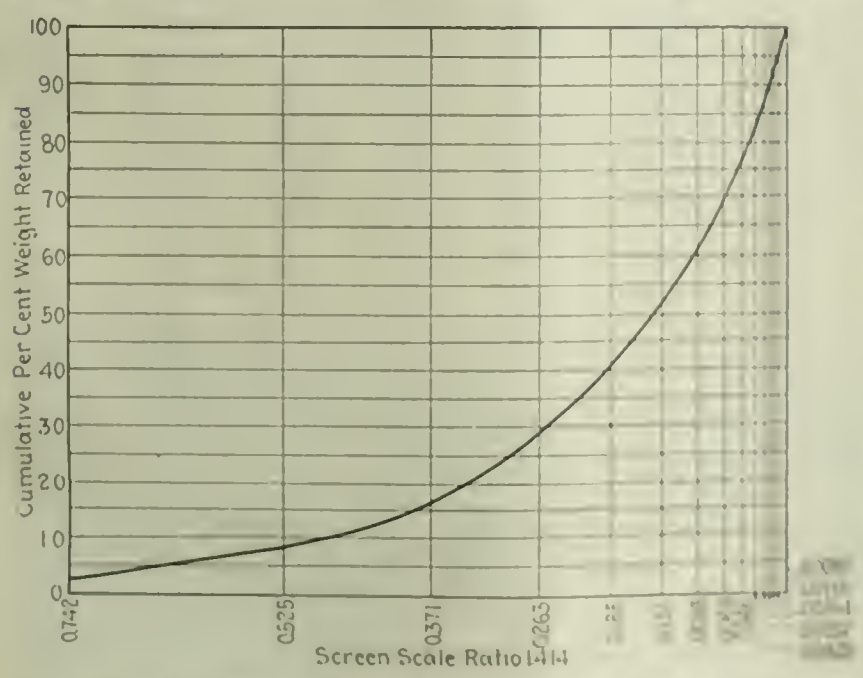


CHART G—RAW COAL RETAINED ON SCREENS

This is a cumulative diagram, the quantities plotted on the ordinates (which represent the screen openings) being those of all the coal that would refuse to pass through that particular screen opening. Consequently the quantities gradually increase until with the blind screen at the end 100 per cent is reached

ment, it was always our custom to operate the washery so that the sulphur content of the washed coal would remain as constant as possible at 1.15 per cent. This assured us of always maintaining a reasonable margin of safety.

For this reason no advantage would accrue from using the 14-mesh screen, which would result in a washed-coal yield of 88.42 per cent. Instead we adopted the 6-mesh screen having a clear opening of 0.131 in. This resulted in a washed-coal yield of 91.5 per cent with a sulphur content of 1.15 per cent. After making a complete screen installation at this plant, because of some improvement in the quality of the raw coal and of a feeling that we could operate with reasonable safety when aiming at a finished product containing 1.20 per cent of sulphur the 4-mesh screen with 0.185 in. clear opening was adopted. This resulted in a normal washed-coal yield of 93.13 per cent, but, as previously stated, at times a yield of 95 per cent was actually obtained.

In explanation of this rather unexpected result atten-

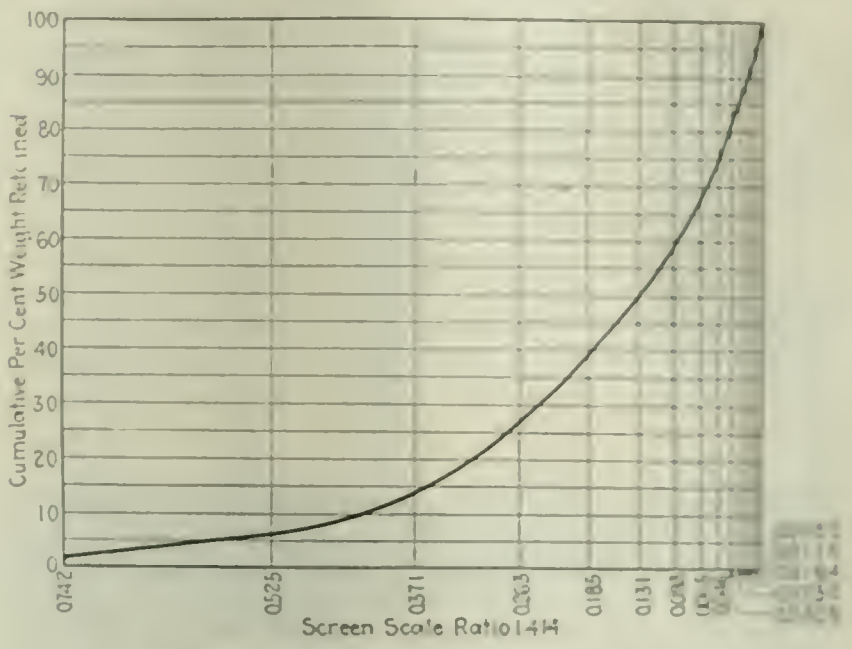


CHART H—WASHED COAL RETAINED ON SCREENS

This is also a cumulative diagram and shows at each point in the curve what any one screen would do if it were the only screen by which the coal was sized. That is, the ordinates represent the entire oversize of that particular screen, beginning however, with coal that passes a 1.05 opening, that being the size of coal exclusively considered in all these tests.

tion is called to the other illustrations. In Charts *B* and *C* (class *Y*) the raw and washed coal, ash and sulphur curves show quite clearly the sizes in which the maximum reductions may be accomplished as well as the sizes that are but little affected by washing. Chart *D* (class *Y*) is of interest in that reduction and yield curves travel exactly opposite one another although the general trend of the reduction curve is more rapidly downward than is the yield curve upward. The breaks, however, in each are quite uniform.

Charts *E* and *F* (class *X*) are of interest in that they

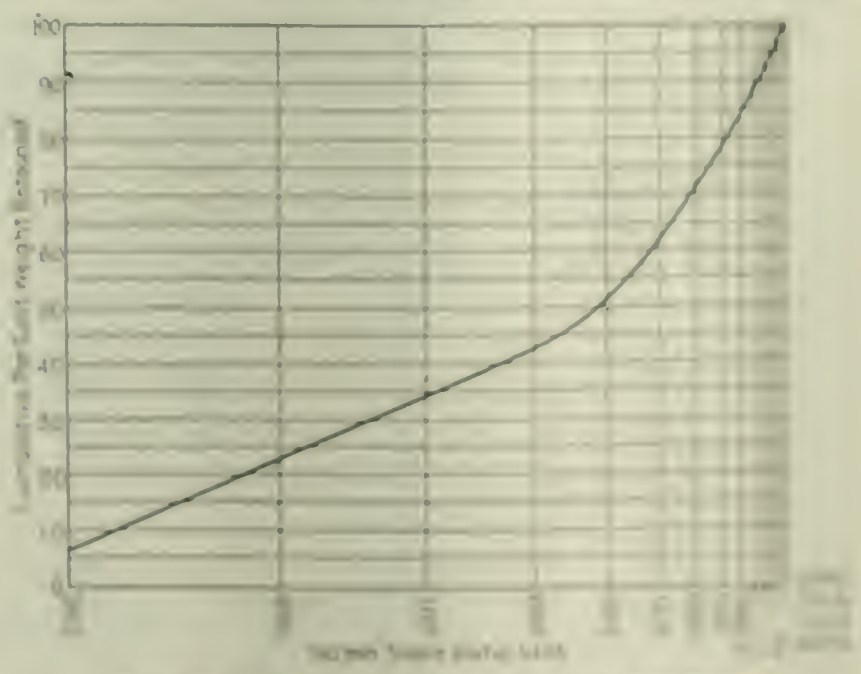


CHART I—REFUSE RETAINED ON SCREENS

Also a cumulative diagram like charts G and H. As in them also the screen sizes are not plotted at even distances but on a logarithmic scale. The lines being drawn at distances proportional to the screen openings

per factor than the others in showing the cause of the phenomena presented herein. The percentages all being in terms of the raw coal disclose the relation between the total ash and sulphur content of the finished product and its yield.

Referring to chart C (class Y), the ash curve for refuse indicates clearly the presence of free coal in this material in the sizes wherein but slight ash reduction is possible. This is particularly true of the sizes from the 20-mesh screen up to and including the 65-mesh. The radical break in the reduction curve for the 3- and 4-mesh screens while the refuse ash curve remains more regular proves the higher efficiency possible in the washing of the larger sizes.

Another consideration that must be borne in mind is that most of the coal treated falls within the larger

TABLE I.—PERCENTAGES OF VARIOUS SIZES AND ASH AND SULPHUR CONTENT IN EACH SIZE—FOR RAW COAL

Screen Openings In.	Screen Openings Mesh	Diameter Wire In.	Percentages of Each Size	Cumulation of Preceding Column*	Ash Content Per Cent As of Each Size	Ash Content Per Cent As of Total Raw Coal	Ash Content Per Cent Cumulation Of Preceding Column*	Sulphur Content Per Cent As of Each Size	Sulphur Content Per Cent As of Total Raw Coal	Sulphur Content Per Cent Cumulation Of Preceding Column*
1.050	0.883	0.148								
0.742	0.624	0.135								
0.525	0.441	0.120								
0.371	0.312	0.105								
0.263	0.221	0.092								
0.185	0.156	0.080	2 49	2 49	25 40	0 0068	0 0068	1 66	0 0004	0 0004
0.131	0.110	0.072	5 40	8 28	21 90	0 0127	0 0195	1 28	0 0007	0 0011
0.093	0.078	0.063	8 32	16 52	16 60	0 0138	0 0333	1 32	0 0011	0 0022
0.065	0.055	0.054	12 43	28 95	9 71	0 0121	0 0454	1 50	0 0019	0 0041
0.046	0.039	0.047	11 94	40 89	9 00	0 0108	0 0562	1 44	0 0017	0 0058
0.033	0.028	0.041	10 34	51 23	9 62	0 0099	0 0661	1 60	0 0017	0 0075
0.023	0.020	0.035	8 55	59 78	8 86	0 0085	0 0746	1 72	0 0016	0 0091
0.016	0.014	0.032	9 16	69 94	7 88	0 0072	0 0818	1 66	0 0015	0 0106
0.011	0.010	0.028	6 23	76 17	6 77	0 0042	0 0860	1 50	0 0009	0 0115
0.008	0.007	0.025	6 00	82 17	7 79	0 0047	0 0907	1 72	0 0010	0 0125
0.006	0.005	0.023	4 72	86 89	6 50	0 0031	0 0938	1 47	0 0007	0 0132
0.004	0.003	0.020	4 28	91 15	7 00	0 0030	0 0968	1 66	0 0007	0 0139
0.003	0.002	0.018	2 56	93 71	7 82	0 0020	0 0988	1 54	0 0004	0 0143
0.002	0.0015	0.017	1 59	95 30	8 59	0 0014	0 1002	1 66	0 0003	0 0146
0.0015	0.0010	0.016	1 43	96 73	8 91	0 0013	0 1015	1 84	0 0003	0 0149
0.0010	0.0007	0.015	2 16	98 89	9 60	0 0021	0 1036	1 75	0 0004	0 0153
0.0007	0.0005	0.014	0 28	99 17	10 71	0 0003	0 1039	1 79	0 0001	0 0154
Bottom	Bottom	Bottom	0 83	100 00	10 60	0 0009	0 1048	1 75	0 0002	0.0156
Totals			100 00		10 48	0 1048		1 56	0 0156	

* A tabulation of the percentages of left over which are retained on this and all screens of larger opening. The figure, therefore, represents the percentage of coal which the particular screen would reject if all the coal delivered were presented to it.

TABLE II.—PERCENTAGE OF VARIOUS SIZES AND ASH AND SULPHUR CONTENT IN EACH SIZE—FOR WASHED COAL

Screen Openings In.	Screen Openings Mesh	Diameter Wire In.	Ash Content Per Cent As of Each Size	Ash Content Per Cent As of Total Washed Coal	Ash Content Per Cent Cumulation of Preceding Column	Ash Content Per Cent Preceding Column Converted to Per Cent of Raw Coal	Sulphur Content Per Cent As of Each Size	Sulphur Content Per Cent As of Total Washed Coal	Sulphur Content Per Cent Cumulation of Preceding Column	Sulphur Content Per Cent Preceding Column Converted to Per Cent of Raw Coal	Reduction Per Cent Ash	Reduction Per Cent Sulphur	Removed* Per Cent Ash	Removed* Per Cent Sulphur
1.050	0.883	0.148												
0.742	0.624	0.135												
0.525	0.441	0.120												
0.371	0.312	0.105												
0.263	0.221	0.092												
0.185	0.156	0.080	1 19	0 0017	0 0017	0 0000	1 19	0 0002	0 0002	0 0000	65 5	28 3	70 3	38 0
0.131	0.110	0.072	1 03	0 0059	0 0076	0 0003	1 03	0 0004	0 0006	0 0000	55 0	19 5	61 3	30 5
0.093	0.078	0.063	1 22	0 0125	0 0201	0 0014	1 23	0 0009	0 0015	0 0002	44 5	6 8	52 2	20 5
0.065	0.055	0.054	1 10	0 0236	0 0437	0 0054	1 10	0 0015	0 0030	0 0007	16 4	26.7	28 0	36 7
0.046	0.039	0.047	1 12	0 0124	0 0561	0 0110	1 12	0 0014	0 0044	0 0015	23 7	22 2	34 2	32 6
0.033	0.028	0.041	1 12	0 0384	0 0945	0 0164	1 12	0 0011	0 0055	0 0024	38 1	30 0	46 8	39 4
0.023	0.020	0.035	1 08	0 0435	0 1380	0 0221	1 08	0 0010	0 0065	0 0033	38 8	37 2	47 3	46 0
0.016	0.014	0.032	1 04	0 0461	0 1841	0 0283	1 04	0 0010	0 0075	0 0044	37 7	37.3	46 3	45.8
0.011	0.010	0.028	1 08	0 0515	0 2356	0 0333	1 08	0 0007	0 0082	0 0053	24 7	28 0	35 2	38 0
0.008	0.007	0.025	1 09	0 0549	0 2905	0 0384	1 09	0 0007	0 0089	0 0062	28 9	36.6	38 8	45 3
0.006	0.005	0.023	1 13	0 0577	0 3482	0 0429	1 13	0 0006	0 0095	0 0071	14 9	23 1	26 8	34 0
0.004	0.003	0.020	1 29	0 0603	0 4085	0 0472	1 29	0 0006	0 0101	0 0079	18 3	22 3	29 6	33 2
0.003	0.002	0.018	1 40	0 0622	0 4707	0 0501	1 40	0 0004	0 0105	0 0085	13 0	9.2	25 1	21 4
0.002	0.0015	0.017	1 26	0 0635	0 5342	0 0521	1 26	0 0002	0 0107	0 0088	11 8	24 1	24 0	34 3
0.0015	0.0010	0.016	1 49	0 0645	0 5987	0 0537	1 49	0.0002	0 0109	0 0091	23 7	19 0	34 2	30 4
0.0010	0.0007	0.015	1 51	0 0662	0 6649	0 0564	1 51	0 0003	0 0112	0 0095	18 3	13 7	29 7	25 7
0.0007	0.0005	0.014	1 66	0 0665	0 7314	0 0568	1 66	0 0002	0 0114	0 0097	10 7	7 3	23 2	20 1
Bottom	Bottom	Bottom	1 65	0 0673	0 7987	0 0580	1 65	0 0001	0 0115	0 0099	17 2	5 7	28 7	18 9
Totals			1 15	0 0115							35.8	26.3	44 7	36 5

* Three-figure percentage representing the proportion of the total ash or sulphur carried by the raw coal which has been removed by washing.

TABLE III.—DATA FOR THE DETERMINATION OF FINAL COAL MIXTURES

Screen Openings In.	Screen Openings Mesh	Yield of Washed Coal Which Individual Sizes Are Capable of Producing Per Cent: for Each Size	Yield of Washed Coal Which Individual Sizes Are Capable of Producing Per Cent: as of Total Washed Coal	Cumulations of Preceding Columns	Percentages of Raw Coal Retained on Final Coal Making	Percentages of Raw Coal (In Terms of Raw Coal): Ash Content of Part Coal in Mixture	Percentages of Raw Coal (In Terms of Raw Coal): Sulphur Content of Raw Coal in Mixture	Resulting Coal Mixture (In Terms of Raw Coal): Yield of Finished Product	Resulting Coal Mixture (In Terms of Raw Coal): Ash Content in Terms of Raw Coal	Resulting Coal Mixture (In Terms of Raw Coal): Sulphur Content in Terms of Raw Coal	Final Product Resulting From Mixing Washed Oversize With Unwashed Through Size for Each of Screen Sizes Shown,* Per Cent: Yield	Ash Content	Sulphur Content
1.050	0.883												
0.742	0.624												
0.525	0.441												
0.371	0.312												
0.263	0.221												
0.185	0.156												
0.131	0.110												
0.093	0.078												
0.065	0.055												
0.046	0.039												
0.033	0.028												
0.023	0.020												
0.016	0.014												
0.011	0.010												
0.008	0.007												
0.006	0.005												
0.004	0.003												
0.003	0.002												
0.002	0.0015												
0.0015	0.0010												
0.0010	0.0007												
0.0007	0.0005												
Bottom	Bottom												
Totals							0 0152	0 9907	0 0980	0 0152	99 07	9 89	1 53
							0 0145	0 9692	0 0856	0 0145	96 92	8 83	1 50
							0 0134	0 9480	0 0729	0 0136	94 80	7 69	1 43
							0 0115	0 9410	0 0648	0 0122	94 10	6 89	1 30
							0 0099	0 9313	0 0596	0 0113	93 13	6 40	1 21
							0 0081	0 9150	0 0551	0 0105	91 50	6 02	1 15
								0 9011	0 0523	0 0098	90 11	5 80	1 09
								0 8895	0 0513	0 0094	88 95	5 77	1 06
								0 8842	0 0521	0 0094	88 42	5 89	1 06
								0 8772	0 0525	0 0093	88 72	5 92	1 05
								0 8744	0 0539	0 0095	87 44	6 16	1 09
								0 8704	0 0552	0 0096	87 04	6 45	1 10
								0 8683	0 0561	0 0098	86 83	6 46	1 13
								0 8670	0 0567	0 0098	86 70	6 54	1 13
								0 8648	0 0570	0 0098	86 48	6 60	1 13
								0 8623	0 0576	0 0098	86 23	6 68	1 14
								0 8621	0 0577	0 0099	86 21	6 69	1 15
								0 8612	0 0580	0 0099	86 12	6 73	1 15

* Final coal which would pass over that screen is washed and the resulting

TABLE IV—PERCENTAGE OF SIZES AND ASH AND SULPHUR CONTENT IN EACH SIZE—FOR REFUSE

Retained on Openings In.	Mm.	Mesh	Diameter Wire, In	Percentage of Each Size	Cumulation of Preceding Column	Ash Content Per Cent: As of Each Size	As of Total Refuse	Cumulation of Preceding Column	Sulphur Content Per Cent: As of Each Size	As of Total Refuse	Cumulation of Preceding Column	Yield of Refuse Each Individual Size: As of Each Size	As of Raw Coal	Cumulation of Preceding Column
1.050	26.670	...	0.1490											
0.742	18.850	...	0 1350	6.70	6 70	57 90	0 0388	0 0388	2 40	0 0016	0 0016	38 67	0 [illegible]	[illegible]
0.525	13.330	...	0.1050	15.40	22 10	42 30	0 0651	0 1039	1 70	0 0026	0 0042	37 13	0 0214	[illegible]
0.371	9.423	...	0.0920	15.20	37 30	38 20	0 0581	0 1620	1 57	0 0024	0 0066	25 47	0 0211	[illegible]
0 263	6.680	3	0.0700	5.05	42 35	36 50	0 0184	0 1804	8 21	0 0042	0 0108	5 60	0 [illegible]	[illegible]
0.185	4 699	4	0.0650	7 21	49 56	33 20	0 0239	0 2043	5 07	0 0037	0 0145	5 09	[illegible]	[illegible]
0.131	3.327	6	0.0360	11.74	61 30	29 20	0 0343	0 2386	4 18	0 0049	0 0194	15 78	[illegible]	[illegible]
0.093	2.362	8	0.0320	9.94	71 24	29 00	0 0288	0 2674	5 48	0 0055	0 0249	14 59	[illegible]	[illegible]
0.065	1.651	10	0 0350	8.36	79 60	28 40	0 0237	0 2911	5 93	0 0050	0 0299	12 64	[illegible]	[illegible]
0 046	1.168	14	0 0250	3.82	83 42	24 88	0 0095	0 3006	6 04	0 0023	0 0322	3 44	0 [illegible]	[illegible]
0.0328	0.833	20	0.0172	5 05	88 47	24 80	0 0125	0 3131	6 51	0 0033	0 0355	11 68	[illegible]	[illegible]
0.0232	0.589	28	0.0125	2 02	90 49	22 00	0 0044	0 3175	6 96	0 0014	0 0369	5 [illegible]	[illegible]	[illegible]
0.0164	0.417	35	0.0122	2.88	93 37	19 40	0 0056	0 3231	5 24	0 0015	0 0384	9 36	[illegible]	[illegible]
0.0116	0 295	48	0.0092	1.51	94 88	19 00	0 0029	0 3260	3 11	0 0005	0 0389	8 [illegible]	[illegible]	[illegible]
0.0082	0.208	65	0 0072	0.94	95 82	20 00	0 0019	0 3279	6 15	0 0006	0 0395	8 [illegible]	[illegible]	[illegible]
0.0058	0.147	100	0.0042	1.59	97 41	20 80	0 0033	0 3312	3 78	0 0006	0 0401	15 [illegible]	[illegible]	[illegible]
0.0041	0.104	150	0.0026	1.80	99 21	23 20	0 0042	0 3354	3 58	0 0006	0 0407	11 46	[illegible]	[illegible]
0.0029	0.074	200	0.0021	0 14	99 35	25 20	0 0004	0 3358	3 40	0 0001	0 [illegible]	7 [illegible]	[illegible]	[illegible]
Solid	Solid	Solid	0 0021	0 65	100 00	25 32	0 0016	0 3374	2 55	0 0002	0 0410	11 [illegible]	[illegible]	[illegible]
Total				100.00		33 74	0 3374		4 10	0 0410		13 [illegible]	[illegible]	

sizes. Thus any reduction of ash or sulphur accomplished in these sizes has a marked effect in decreasing the quantity of these substances in the total product. Note that the last four small grades, which carry the highest sulphur of any of the sizes separated, amount to only 4.7 per cent of the total raw coal.

Safe Handling of Railroad Cars at Mines*

BRAKES on railroad cars often are in poor condition, making it necessary for the car dropper to use extreme care to keep the cars from getting out of control and being wrecked. Sometimes the brake sticks and it is necessary for the car dropper to kick it off in order to start the car. Many accidents have been caused by the car dropper leaving the brakestick in the wheel and going below to kick off the brake. Often it releases its hold suddenly and in turning throws out the brakestick, hitting the car dropper on the head. A brakestick should be made with a hook on the end to prevent it from slipping off the brake staff and also to permit its being hung on the ladder, as shown in Fig. 1. In this way the brakestick will not fall on the car dropper and will be convenient for him when he climbs up to set the brake again. There are many cases on record where car droppers have been seriously injured by being hit on the head with the falling brakestick, which, made of iron, may easily knock a man senseless.



FIG. 2—EMPTY-CAR WALKING, ANOTHER UNSAFE STUNT

The trimmer who balances on the edge of a railroad car would take risk enough if he tried his acrobatics where on rails and exposed the ends made landing hazardous and where there were no cars moving on other tracks to distract and imperil him. In the railroad yard around a tipple is no place for gymnastics

Another common source of danger is the practice

*From an article in the *National Safety News*, the publication of the National Safety Council.



FIG. 1

Brakestick Accident

Instead of carrying his brakestick on the brake staff when about to kick off the brake at close to the coal [illegible] a trimmer [illegible] from the [illegible] carries it at arm's length. Only in this way can the [illegible] of the car [illegible] when the brake is released



FIG. 3.—NO CLEARANCE BETWEEN CARS AT SWITCHES

Accidents frequently occur from this cause, especially where the switch stand provided is insufficiently long. A signal device and method so as to be readily visible may be used to notify the engineer when he has lowered the car far enough to provide adequate clearance.

of standing on the brake platform to set the brake in the manner shown in the right half of Fig. 4. Men standing in this position have no way to save themselves in case the brakestick should slip; quite frequently have men fallen from the car and been run over as a result of this practice. The safe way is to apply the brake as shown in the left half of Fig. 4—with one hand on the brake of the wheel and the other applying the pressure to the brakestick. Then if it should slip or break, the man will not lose his balance, as he has a

Another danger, which is so apparent that it may seem almost foolish to point out, is shown in Fig. 3. Here the car is not moved far enough on the switch to clear, and a moved car coming down on the other track is about to bump into the corner of the first car. A fatality resulted recently when a man riding on the brake platform was caught and crushed between the corner of his own car and a moved car which did not clear on the switch.

Car droppers become so expert, and sometimes gain so much confidence in themselves, that they often walk along the edge of the car in going from one end to the other. There are a number of accidents recorded caused by men falling and sustaining serious injuries (see Fig. 2).





FIG. 4.—BEWARE OF RELYING ON THE BRAKESTICK

In the position shown in the left illustration no harm would result from the brakestick slipping. If the trainman, however, were in the position shown in the right illustration and the brake should slip, he would lose his balance and might be seriously injured or killed.

Scene from Colliery on Brownies Creek

TO Ivor Livingston, of Paint Creek, Ky., we are indebted for the illustration of a mine car and its colliery surroundings at Brownies Creek, Bell County, Kentucky, about twelve miles from the railroad station which is located at the mouth of the creek. No railroad runs up the valley. The mine is operated by farmers for their own coal supply. The gage of the car track is 24 in. Every part of the car is of wood except for the few nails in the bed. The rails also are of that material.



Specifications Proposed for Tool Steel

A TENTATIVE specification for carbon tool steel has been prepared by the American Society for Testing Materials and has just been submitted to industry. The specification requires that the steel shall be made by either or both the crucible and electric processes, with the exception of class *C*, which may also be made by open-hearth methods. It shall conform to the following requirements as to chemical composition:

CHEMICAL SPECIFICATIONS FOR CARBON TOOL STEEL

Elements Considered	Class *A* Per Cent	Class *B* Per Cent	Class *C* Per Cent
Carbon	varying	varying	varying
Manganese, maximum	0 400	0 450	0 600
Phosphorus, maximum	0 020	0 025	0 035
Sulphur, maximum	0 025	0 035	0 040
Silicon, maximum	0 350	0 350	0 250

The carbon percentage shall be as ordered, the specifications varying by ranges of 0.1 per cent, with rejection limits plus or minus 0.025 per cent. As an illustration, tool steel may be ordered with a carbon range from 0.60 to 0.70 per cent, with rejection limits of 0.575 and 0.725 per cent, or from 0.75 to 0.85 per cent, with rejection limits of 0.725 and 0.875 per cent. The permissible variations in the size of the material ordered shall be determined by agreement between contractor and purchaser. The material shall be free from injurious defects and have a workmanlike finish. The analysis shall be made in accordance with methods for testing carbon tool steel contained in the Book of the American Society for Testing Materials, Standards of 1921. Criticism of these specifications should be addressed to G. H. Woodroffe, secretary of Committee A-1 on Steel, Parkesburg Iron Co., Parkesburg, Pa.

IN THE STEEL GALLERY used at the Pittsburgh (Pa.) station of the U. S. Bureau of Mines in conducting experiments regarding the explosibility of coal dust, the following determinations have recently been made: (1) The explosibility of standard Pittsburgh coal dust in atmospheres of methane varying from 1 per cent to 8 per cent; (2) the explosibility of standard Pittsburgh coal dust in atmospheres of carbon dioxide varying from 1 per cent to 33⅓ per cent; (3) the effect of varying percentages of moisture upon the explosibility of standard Pittsburgh coal dust.



Problems of Operating Men

Edited by James T. Beard



Practical Advantages Gained in Use of Double-Conductor Cables

Room Tracks Seldom Well Bonded—Single-Conductor Cables of Little Use Under Certain Conditions—Possible Short-Circuit in a Double Conductor Offset by Its Many Advantages

KINDLY permit me to offer a few suggestions in regard to the use of single and double cables for electric gathering locomotives. This question was asked by an Ohio electrician, *Coal Age*, Oct. 12, p. 594. In the excellent reply given to this inquiry, the several types of cables used by gathering locomotives have been described, and the conditions explained under which single and double conductors should be used.

The fact is well known that the use of a poorly bonded return rail, not only causes a great loss of time by reason of burned-out armatures, but also results in a loss of power, making the locomotive unable to pull its load.

Practically, this condition is most frequent in rooms and cross-entries where the same attention is not given to keeping up the roads, as on the main headings. In many cases, corroded fish-plates have been used and these have not been securely bonded to the rails. It is easy to see that there is every chance for an armature to be burned out, or for the locomotive to be short of power when a single-conductor cable, which is dependent on a rail return, is used.

Advantages and Disadvantages of Different Types of Cables

Another great disadvantage, in the use of a single-conductor cable, occurs when a locomotive is badly derailed, which will happen at times. Much time is then lost in trying to get a sufficient return to enable the motor to operate and assist in putting the locomotive back on the rails.

Although there is a considerable disadvantage in a two-conductor cable, by reason of a possible short-circuit occurring within the cable, I believe that the saving of armature burn-outs and delays caused by insufficient power, due to poor bonding of the rails when using a single conductor, will more than offset any liability to possible short-circuiting of the wires in a double-conductor.

Also, it is my opinion that the advantages gained in the use of a double-conductor largely outweigh the difficulties of splicing this conductor, in the event a splice has to be made. We must not forget, also, that where a change of track is necessary, the use of a double-conductor cable obviates the necessity for securing good bonding on the rails in making such changes.

These advantages give me a decided preference in favor of double-conductor cables, which should be of the concentric type mentioned in the reply to the inquiry.

Linton, Ind. JOHN R. LUXTON.

Eliminating Expense of Packwalls, Longwall-Panel System

Face headings replace the gateways maintained by building packwalls—Single face headings, however, provide no means of ventilating when drawing back pillars.

IN AN effort to eliminate the expense of building packwalls for the maintenance of roads or gateways to reach the working face, in the longwall-advancing system of mining, M. L. O'Neale described a method of driving face headings, keeping them a little in advance of the longwall face. (*Coal Age*, Vol. 21, p. 877.)

These headings were to be driven three abreast and, while affording an easy means of reaching the longwall face, also provided for maintaining good ventilation when drawing back the pillars after the headings had reached the limit of the panel. In reviewing this improved method of longwall work, W. H. Luxton, in his letter, Sept. 21, p. 455, suggests driving a single, face heading instead of employing the triple-entry system proposed by Mr. O'Neale.

Proposed Plan to Avoid Paying Entry Yardage

Mr. Luxton expresses the opinion that the proposed system can be simplified and the cost of its execution much decreased, by avoiding the large expense for yardage due to driving three face headings where but one is required. Evidently, he has not stopped to think how his plan of driving single headings would work out when drawing back the pillars flanking the heading.

No doubt, it would save yardage to drive a single heading, and the plan would work all right in the advancing stage; but how would it serve when it became necessary to draw back the pillars. If I am not mistaken, the goaf would then have closed tight against the pillars on the sides where the coal had been taken out.

It has been my experience that, in work of this kind, it is impossible to provide the necessary circulation of air to permit the pillars to be withdrawn. I believe that, if the pillars are to be taken out, at least one air course must parallel the face heading. While this air-course would be of no particular advantage in the advancing stage, it is essential for circulation, in the work of robbing out the pillars.

It is possible, of course, to maintain a fair circulation of air along the worked-out side of the face-heading pillars, by building good packwalls a few feet from the solid coal forming the pillars. However, if I understand rightly, the purpose of the proposed plan was to eliminate the necessity of building and maintaining these packwalls. In my opinion, the cost of maintaining such airways would exceed the cost of driving an extra heading in the coal.

Original Plan of Flanking Places Increases Tonnage

Referring, now, to the original proposition presented by Mr. O'Neale, I see no objection to his idea of flanking his face headings, on each side, with a place running parallel to it. I believe these places would be driven wide and would involve no yardage expense. Driving such flanking places would have the immediate advantage of increasing the tonnage obtainable from each face-heading system, which would have a tendency to decrease the general cost of production.

One practical advantage gained by keeping these flanking places a yard or so ahead of the longwall face is that they provide convenient places for the machine to start and finish a cut along the face. Also, these places provide needed room for the machine where it will be out of the way when loading out a cut.

The advantage of these flanking places is even greater when chain machines of the so-called longwall type are employed. I was recently in several Belgian mines where they are using these machines, manufactured by a well known American firm. The results obtained are surprisingly good. In these mines, it was found not only advisable but necessary to provide all longwall faces with flanking places of the kind suggested and for the reasons I have mentioned. F. C. CHENEY,

Consulting Engineer.

New York City.

Occurrence and Causes of "Bumps" in Coal Mines

Meaning of the term "bumps"—Nature and instances of their occurrence—Probable causes of the phenomena—Methods suggested to prevent such happenings

IN THE REPLY to an inquiry regarding a method of working that would permit the danger from sudden outbursts of gas, COAL AGE, Aug. 24, p. 296, reference was made, incidentally, to the opinion prevailing that earthquakes take place in the strata and which the miners term "bumps."

The term has recently come to have much significance in this locality and, as I am rightly informed, the same is true in a number of other coal-mining districts in the Northwest. Most of our miners have learned by experience and fully realize the danger that is imminent when they hear those ominous sounds, as of the working of tremendous forces hidden in the strata around and about them.

It is well to explain, in the start, the meaning of the term "bumps" in its application to coal mining. Thomas Graham, former chief inspector of mines for the Province of British Columbia, in a paper read at the Joplin meeting of the Mine Inspectors' Institute of America, June 13, 1916, makes the following statement:

MEANING OF THE TERM "BUMPS"

"The term 'bumps' is a somewhat local expression used to describe the various sounds that betoken the movement of the strata overlying the several coal seams operated in the Crows Nest Pass coal field. These bumps, although usually accompanied by more or less heavy discharging of gas, are not in the nature of the outburst of gas and coal I have just described.

"The Coal Creek Colliery has been the seat of most of the bumps, which were sufficiently severe to shake the houses in the village and, at times, cars and other movable materials were displaced in the mine."

It was but six months after the reading of Mr. Graham's paper (November, 1916), another series of bumps occurred in the No. 3 East mine, at Fernie, B. C., more severe than any that had preceded them. A description of this mine and the effect of the November bumps will be found commencing on page 144 of the report of the Minister of Mines, British Columbia, for the year 1917.

INVESTIGATIONS AND REPORT BY FEDERAL BUREAU OF MINES

George S. Rice, engineer, Federal Bureau of Mines, who investigated the phenomena, by request of the minister of mines, describes these bumps as manifestations of pressure occurring only in mines at great depth, usually exceeding 1,000 ft. In his report, Mr. Rice states:

"If the measures overlying the mine are soft and pliable, such as shale, bumps will not occur, although coal squeezes may take place. Bumps, therefore, occur only when there are massive and rigid beds above, such as sandstone, conglomerate and limestone.

"Mine squeezes originate where the pressure thrown on the mine pillars is sufficient to crush them, or the immediately overlying roof or underlying floor is too weak to withstand the load put on it through removal of part of the natural support by the excavations; but such squeezes will only result in bumps, as stated previously, when there are rigid rocks of great thickness above."

INSTANCES OF THE PHENOMENA OCCURRING ELSEWHERE

The same report describes the phenomena as not being confined to any single district, similar occurrences having been manifest in coal mines working under the Book Cliff mountain, in Utah, and in the Carbonado mines, in the State of Washington, where the workings were under the foothills of Mt. Rainier. In both of these two latter cases, the cover exceeded 2,000 ft. in depth.

The phenomenon has also proved a serious menace, the report states, to a South Staffordshire coal mine, in Great Britain. This mine was working the ten-yard seam, averaging from 24 to 30 ft. in thickness and lying at a depth of 1,500 ft. below the surface.

To my mind, this entire subject of the causes and means of preventing bumps is of peculiar interest and importance. Not a few mining men, in localities where the phenomena have been manifest, regard them as something mysterious. It is in the hope of enlightening the minds of any who hold to such ideas, that I have offered these remarks. It is my earnest hope that the subject will be discussed from an intelligent standpoint and that methods of working will be outlined that will afford a maximum degree of security against these dread occurrences.

CONCLUSIONS REACHED BY THE INVESTIGATORS

The investigation made by the Federal Bureau of Mines was undertaken at the request of the Minister of Mines, Province of British Columbia. The conclusions reached by Mr. Rice, in conference with W. F. Robertson, provincial mineralogist, Thomas Graham, then chief inspector of mines, and district inspectors T. H. Williams and George O'Brien, should prove of great interest and value, wherever the mining of coal is being prosecuted under deep cover and the overburden consists of rigid strata that refuse to break when the extraction of coal has caused a general subsidence of the mine roof over a large area. On this point, the investigators conclude as follows:

"That bumps occur only when there is deep cover over the mine and where there has been a subsidence of the roof over an extraction or squeezed area; the rigid strata above has not flexed downward, but spans the sunken area. When the span, through continued mining and widespread subsidence, becomes too great for the rock strata to bridge over, enormous masses may fall and while the distance may be only a few feet or even a few inches, the sudden arrest of rock masses weighing possibly thousands of tons will cause a shock wave in the underlying stratum, which gives the effect of a local earthquake.

"After one rigid stratum has given way in the interior of the measures, there is opportunity for similar giving way of successively higher strata; but, it is thought, with less and less effect on the mine workings, as the spaces become more or less filled with broken rock and the blow is cushioned; also, as the vertical distance above the workings becomes greater with each successive fall."

May we not hope to hear from others on this important matter?

MINE FOREMAN.

———, B. C., Canada.

Testing a Safety Lamp With a Carbide Lamp

Method used by one fireboss to test his safety lamp—After cleaning and putting lamp together, it is exposed to acetylene gas from a carbide lamp—Discussion wanted.

REGARDING the question of testing a safety lamp before taking it into the mine, allow me to say for the benefit of other firebosses that, in all my experience in firebossing, I have never yet tested my lamp by blowing into it.

It has always been my practice, and I consider it a safe one, to test the safety lamp by exposing it to acelylene gas generated in a carbide lamp. It is my belief that any lamp that passes this test is safe to be taken into the mine and exposed to a body of firedamp.

After the lamp has been thoroughly cleaned, put together and lighted, it has been my custom to take a carbide lamp and put it near the gauze of the safety lamp, allowing the gas generated in the former to pass into the combustion chamber of the safety, where it fires and burns.

My claim is that if there is any imperfection in the gauze, or if there is any leakage below the glass, because of imperfect washers, the flame of the gas burning within the safety lamp will pass out and ignite the gas surrounding the lamp. I have used this method of testing my lamp a long time and have never known it to fail. It is my habit to apply the same test to the lamps of the miners in my charge.

Shickshinny, Pa. FIREBOSS.

Need of Closer Supervision in All Underground Work

Visits to many mines show need of good foremen—Mines suffer when foremen are employed for a short time only.

HAVING made a number of visits recently to different mines, I have been impressed with the thought that the employment of an efficient, private

mine or safety inspector, where a company is operating several mines, appears almost a necessity.

A recent writer in *Coal Age* has drawn attention to the lack of interest displayed by foremen who drift from place to place, such men seldom remaining in one place longer than they are able to get out cheap coal by robbing the mine. In every such case, the loss to the company is hardly realized until the damage to the mine has been done.

My observation, in going from place to place, has showed me more clearly than ever before, the need of employing good foremen. In several instances, I have observed where the employment of a supervising inspector would easily save his wages in many ways.

By preventing waste, improving the ventilation and drainage of the mine and increasing the daily tonnage by systematizing the haulage and hoisting of coal, he would reduce the cost of production and make his services valuable to his employers.

These remarks are offered only by way of suggestion, fully realizing as I do that there are many good mine foremen whose work requires no checking up or supervision. At the same time, it cannot be denied there are numbers of indifferent and careless foremen and others who are unpractical, and that a large saving can be effected by closer supervision of their work on the part of the mine foreman and assistant foreman.

Chambersville, Pa. JOHN BUGGY.

Inquiries Of General Interest

Locking Car on Self-Dumping Cage

Self-Dumping Cage Equipped with Sidehoops and Lugs to Hold Car in Place—Trouble Caused by the Lugs Failing to Work at Times When Needed—Some Form of Additional Lock Desired

WE HAVE a problem that we are minded to present to *Coal Age* and its practical readers, hoping that they will be able to offer suggestions that will solve our difficulty. The proposition is as follows:

At one of our mines, we are using what is known as the Bond cage, manufactured by the William Ellison Machinery Co., St. Louis, Mo. This cage is equipped with two steel loops or hoops that fit over the wheels of the car, on each side of the cage. Their purpose is to hold the car on the rails when the cage is dumping. Besides these loops at the sides of the car, there are also two upright lugs that catch the wheels in front and prevent the car from running across the cage.

Now, our trouble is that these lugs, at times, fail to work, with the result that the car is free to run across the cage far enough to be caught between the cage floor and the curbing of the shaft. When this happens, there is sure to be a wreck that tears out the guides, before the engineer is aware that anything is wrong. We have tried to figure out some way of putting in an additional lug on the platform or some other place on the cage, for the purpose of giving additional security against accident. We shall very much appreciate any suggestions that will accomplish the desired result.

————, Ill. SUPERINTENDENT.

The correspondent has not stated the precise position of the upright lugs, or given other information that would make clear the exact situation in hand. If cars are to be caged from both sides of the mine, at the shaft bottom, the upright lugs mentioned would have to be movable to permit cars to enter the cage from either side. On the other hand, if cars are caged from one side of the shaft only, these upright lugs would be permanent or fixed in position at the back of the cage. The statement that these lugs, at times, fail to work suggests that they are movable; but how their movement is actuated is not explained.

Different forms of devices are used to lock cars on a self-dumping cage. The most common and probably the most serviceable device consists of two movable steel hoops, one on each side of the cage, and actuated by a lever that automatically engages a projecting lug in the shaft, as the cage rises to the point where it is dumped. Instead of a hoop reaching over the tops of both wheels, four movable hooks are sometimes employed, two on each side of the cage, one hook holding each wheel firmly in place as the cage is dumped.

We have seen a fixed hoop or strap so arranged as to project over the tops of both wheels. These are fixed in a position not to interfere with the car running on and off the cage, while holding the car on the rails as the cage is dumped. In this case, however, the car is locked on the cage automatically by a carriage spring fixed firmly to the floor of the cage beneath the car. This spring is made to engage a lug on the bottom of the car.

At other times, a heavy iron rod is attached to the floor of the cage, the end of the rod being bent at right angles so that it can be turned upward in a position that will prevent the car from running forward when the cage is dumped. This arrangement, however, is not recommended. Many readers will probably have other forms and methods to suggest for securing the car to the cage when dumping, and we shall be glad to learn of the most satisfactory means employed.

Three-Brothers Problem

Problem to find radius of circle circumscribing a triangle—Solving a triangle when the three sides only are given.

KINDLY permit me to ask for the solution of a problem over which I have puzzled vainly, for some time. The problem has a practical bearing, as it relates to the central location of a well, for three brothers whose homes form the vertices of a triangle, the sides of which are 10, 11 and 12 chains, respectively. The problem is to locate the well at an equal distance from each brother's house.

Evidently, this is a question of finding the radius of the circumscribing circle of this triangle. I have endeavored to



solve the problem graphically, by erecting perpendiculars at the middle point of each side of the triangle. The intersection of these perpendiculars should give the center of the circumscribing circle. But, I have been unable to calculate the length of the radius of this circle, which is the distance of the well from each brother's house.

Carrolltown, Pa. T. J. McCUE.

The correspondent has stated his problem correctly. The location of the well is at the center of the circle circumscribing the triangle formed by the lines joining the three houses. Referring to the accompanying figure, this location is at *O*, which is the intersection of the three perpendiculars *Ox*, *Oy*, *Oz*, erected at the middle point of each respective side of the triangle *ABC*.

The problem involves the solution of a triangle having its three sides given. The first step is to calculate the angle at *A*, using the formula

$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

In this formula, the sides lying opposite the respective angles *A*, *B*, *C* are indicated by the corresponding small

Finally, in the right triangle AOx, the hypotenuse AO, which is the required radius of the circumscribing circle, is equal to the square root of the sum of the squares of the two sides;

$$AO = \sqrt{Ox^2 + Ax^2}$$

$$= \sqrt{2.24^2 + 6^2} = 6.4 \text{ chains}$$

Therefore, the desired central location of the well is 6.4 chains from each of the three houses.

Examination Questions Answered

Mine Managers' Examination Nova Scotia. 1922

(Selected Questions)

QUESTION—*The total rubbing surface of a square airway being* 180,000 *sq.ft., the length of the airway* 5,000 *ft., and the quantity of air passing* 88,000 *cu.ft. per min., what is the velocity of the air current, in feet per minute?*

ANSWER—Since the rubbing surface, in an airway, is the product of the perimeter and length of the airway, the perimeter in this case is 180,000 ÷ 5,000 = 36 ft. The airway being square, each side is one-quarter of the perimeter, or 36 ÷ 4 = 9 ft. The sectional area of this airway is, therefore, 9 x 9 = 81 sq.ft. Finally, the velocity of the air current is 88,000 ÷ 81 = 1,086 ft. per min.

QUESTION—*If it becomes necessary to stop a fan for repairs, how will you keep the same class of gas in the workings? What precautions should be taken before stopping the fan?*

ANSWER—A mine generating a considerable quantity of gas should be provided with duplicate fans, each fan having a capacity sufficient, when running alone, to keep the mine free from gas. A mine thus equipped is in no danger should the necessity arise for shutting one of the fans temporarily, for repairs.

In the absence of such equipment at a gaseous mine, it may not be possible to keep the mine in a safe condition, for any length of time, after shutting down the fan. In that case, the men should be notified and withdrawn promptly from the mine. It is not safe to take any chance by permitting the men to work when the customary means of ventilation is temporarily disabled.

It may happen that, under favorable conditions, there is sufficient natural ventilation to keep the main airways clear, which will greatly assist the safe withdrawal of the men. Such natural ventilation, however, cannot be expected to keep the working places safe and clear of gas, while the fan is not working.

QUESTION—*If* 10 *hp. produces* 20,000 *cu.ft of air per min., in a mine, what horsepower will be required to produce* 35,000 *cu.ft. per min., under the same conditions?*

ANSWER—In mine ventilation, the horsepower producing circulation in a given mine, under like conditions, varies as the cube of the quantity of air produced. In other words, the horsepower ratio is equal to the cube of the quantity ratio. Then, calling x the horsepower required to produce 35,000 cu.ft. per min., where 10 hp. produces 20,000 cu.ft. per min., we have

$$\frac{x}{10} = \left(\frac{35{,}000}{20{,}000}\right)^3 = \left(\frac{7}{4}\right)^3 = \frac{343}{64}$$

$$x = \frac{10 \times 343}{64} = 53.6 \text{ hp.}$$

QUESTION—*Many explosions have been caused by blownout shots. Describe fully the precautions that a manager should enforce to prevent explosions occurring from this cause.*

ANSWER—Blownout shots are chiefly caused by overcharging a hole; insufficient tamping; locating the charge too deep in the solid; or failing to properly ream or sludge out a shot before firing the charge. A blownout shot is sure to result when the line of least resistance extending from the charge to the free surface of the coal, corresponds more or less closely with the axis of the hole. This is called a deadhole. Blownout shots may result from using too quick a powder or different grades of powder in the same hole.

In order to prevent these occurrences, the mine manager should make and enforce strict regulations, in regard to the blasting of coal and the use of explosives. Only permissible explosives should be used and all shots should be examined, charged and fired by competent persons, authorized to perform this work.

QUESTION—*In a mine ventilated by three splits of air, A, B and C: A is* 500 *yd. long and* 5 *x* 6 *ft., in section; B is* 600 *yd. long and* 5 *x* 4 *ft., in section; C is* 700 *yd. long and* 7 *x* 3 *ft. in section; all starting and rejoining at the same point. If the quantity of air in A is* 35,000 *cu.ft. per min., how much air will B and C each take if subject to the same pressure as A.*

ANSWER—Assuming natural splitting in which no regulators are used in any of the airways, the quantity of air passing in each split is proportional to the split potential. Therefore, calculating the relative pressure potential, for each of the given splits, we have the following:

A, 5 x 6 ft., 1,500 ft.; a = 30 sq.ft.; s = 33,000 sq.ft.

B, 5 x 4 ft., 2,400 ft.; a = 20 sq.ft.; s = 43,200 sq.ft.

C, 7 x 3 ft., 2,100 ft.; a = 21 sq.ft.; s = 42,000 sq.ft.

To shorten the calculation, we take the lowest relative values, which are for the areas, 30, 20, 21; and, for the rubbing surfaces, 330, 432, 420. Using these values, we find the several split potentials as follows:

$$\text{A, } X_a = a\sqrt{\frac{a}{s}} = 30\sqrt{\frac{30}{330}} = 9.045$$

$$B, X_b = \quad = 20\sqrt{\frac{20}{432}} = 4.303$$

$$\text{C, } X_c \quad = 21\sqrt{\frac{21}{420}} = 3.240$$

Finally, assuming Split A passes 35,000 cu.ft. per min., the quantities in each split being proportional to their relative potentials, we have

B, 9.045 : 4.303 :: 35,000 : x = 16,650 c.p.m.

C, 9.045 : 3.240 :: 35,000 : x = 12,540 c.p.m.

QUESTION—*Supposing* 9,000 *cu.ft. of air per minute circulates through a regulator* 30 *x* 20 *in.; it is desired to find how much air will circulate if the opening is made* 30 *x* 30 *in.*

ANSWER—If it is assumed, which is the probable meaning of the question, that this regulator is placed in an airway and the opening of 30 x 20 in. is increased to 30 x 30 in., it is not possible to calculate the increase in the quantity of air passing through the regulator, without knowing the equivalent orifice of the mine or airway. Enlarging the opening in the regulator increases its orifice, without increasing the orifice of the mine or airway, and there is a lack of proportion due to this change.

On the other hand, considering the regulator by itself and assuming a constant pressure, under which the air flows through the opening, the increase in quantity would then be proportional to the increase in area, giving 30/20 × 9,000 = 13,500 cu.ft. per min.

This, however, is not the case with a regulator placed in an airway. Assuming a constant power producing the circulation in the airway, when the regulator opening is enlarged, the pressure due to the regulator falls and the quantity of air in circulation is increased, which increases the pressure due to the frictional resistance of the airway. The increase in quantity will then depend on the relative resisting powers of the airway and the regulator.

Commission's Fact-Finding Machinery Taking Form; Technical Experts Drafted to Assist

By Paul Wooton
Washington Correspondent of *Coal Age*

The fact-finding machinery being set up by the President's coal commission is now taking definite form. While the commissioners expect to obtain much of their information from the broad conclusions of outstanding men engaged in coal production, distribution, wholesaling and retailing, a vast amount of data must be collected by a technical staff. That portion of the work which deals with costs of production will be under the immediate direction of David L. Wing, whose title is to be expert investigator. As the work progresses Mr. Wing will gather other statistical facts. C. E. Lesher, editor of *Coal Age*, has been drafted to direct the engineering investigations which the commission will conduct. Coal specialists from various bureaus will be transferred to the commission.

Assurances of co-operation have been given by each national association connected with the coal business. A statistical program is being worked out which it is believed will cause little dissension. It is being arranged so that those engaged in the business can furnish the information in the way it is carried on their books. Roderick Stephens, president of the Retail Coal Merchants' Association, has conferred at length with members of the commission, as has a committee representing the public utilities. More formal conferences are in contemplation. The one with the retailers is to be held the latter part of November. There is every evidence that the commission will have the wholehearted co-operation of the whole coal business.

Where statistical and other information is furnished by one branch of the industry, arrangements are being made whereby the other branches concerned and the commission itself can check the figures as they are being compiled. In this way it is hoped to compile statistical data the correctness of which will be admitted by each branch of the industry.

Since the government's law officers decided that Dr. George Otis Smith may not lead a double official life, it became necessary for him to resign his position as director of the United States Geological Survey. After having discussed the matter personally with the President, Dr. Smith presented a formal resignation in which he, among other things, said: "Some plans I have had in mind for the betterment of the Geological Survey's contributions to the public are unfinished, even after my fifteen and one-half years as director. I, therefore, regret this break in my work, yet, while I hope I may have an opportunity for further service with the Geological Survey, I appreciate so keenly the importance to the nation of the task you have entrusted to the coal commission that I am willing to make any sacrifice needed to enable me to devote all my energies to that special work for the next eleven months."

In his reply and in a statement issued at the White House the President explained that Dr. Smith's resignation is of a temporary character and that he will be reappointed as director of the Survey when his duties with the coal commission shall have been concluded.

The same provision of law bars Judge Alschuler from serving in two official positions. The President will ask Congress to make an exception in this case, but until such a law is passed Judge Alschuler will not qualify as a member of the commission. He will work with the commission, however, in an informal capacity.

The Geological Survey came in for praise in a recent editorial in the *Philadelphia Public Ledger*. In discussing the coal commission the editorial says that "the appointment of George Otis Smith was an act for which Mr. Harding cannot be commended too highly. The Geological Survey is purely scientific, non-political, magnificently efficient and brilliantly administered."

The coal commission has been endeavoring since its organization to arrange for the appearance before it of both Secretary Hoover and Secretary Davis. Other duties of these secretaries, however, have made this impossible.

Coal Commission Unable to Undertake Work Outside of Main Investigation

Although the mandate from Congress to the United States Coal Commission was to procure information on all problems connected with the coal industry, the purpose of the commission's investigations as set forth in the law is to aid, assist and advise Congress in its efforts to help the industries of the country and the people generally and to maintain the uninterrupted flow of commerce among the states. To these general instructions Congress attached specific orders for reports and recommendations, the first of which is required not later than Jan. 15 next. The scope of the task laid upon the commission recently appointed by President Harding is plain as well as its urgency, so that it is evident that no work outside the main investigation can be undertaken.

Already the commission has received complaints regarding insufficient local supplies of coal, exorbitant prices demanded by dealers and other evidences of unsatisfactory functioning in the coal business. A telegram just received from an Oklahoma citizen, for example, calls for immediate investigation of a mine-labor dispute, undoubtedly a distressing local condition which affects consumers as well as producers of needed coal, yet the requested action by the coal commission is not possible. The commission could easily dissipate its energies in following up such complaints, and without results, for the law gives it no executive functions, and the commission therefore would be without authority to act in relief of these individual instances, which after all are but localized symptoms of the disorder affecting the whole industry.

Nine-Tenths of Coal Industry's Troubles Laid to Inadequate Transportation

If adequate transportation could be had for coal it would remedy nine-tenths of the trouble within the industry. A statement to that effect is being accentuated in official circles in Washington. Unless some step is taken to provide more transportation for coal, the difficulties of the industry will increase, especially those which pertain to labor, until strikes become annual occurrences. A production to that effect has been made by a high administration official. Intermittency, he contends, may be charged almost entirely to lack of transportation, while overexpansion may be attributed largely to the same cause. In the opinion of this official, unnecessary mines would be eliminated if the highly efficient properties could rely upon a constant car supply. As it is, the well-equipped and efficient mine is penalized each time there is a car shortage. Each serious emergency costs the public a greater sum than the entire cost of the new cars that are needed to straighten out the situation.

In that connection it is pointed out that the country has come through this emergency at much less cost than was the case during the emergency period which preceded it. The average price of coal during the emergency growing out of this year's strike is figured as having been $3.77, compared with $6.30 during the preceding emergency. Thus far this year, it is asserted, there has been no single case in which a public utility has been forced to suspend operations or any

[illegible] to [illegible] the lack of coal. This is attributed in part to the voluntary restraint in prices charged and because of the foresight of industries and public utilities in stocking up before April 1. Despite the long strike, prices never would have gotten out of hand, it is declared, had there been sufficient transportation.

The shortage of coal cars is only one symptom of the systematic starvation to which American railroads are being subjected. New lines are not being built in proportion to the increase in population and in industrial activities. Terminal facilities have become woefully inadequate, adding greatly to the time of each car's turn-around. The hope is expressed that the Interstate Commerce Commission soon will have time to take up work in connection with consolidations. Since it is clearly unconstitutional to compel consolidations, it is believed that some inducements will have to be held out to effect them. One plan is to reinvest recaptured profit in the group from which it came. It is becoming more and more evident that something must be done to save the weak roads. Railroad financing generally must be made easier. Nothing can be gained by plunging railroads into receiverships.

Philip S. Smith to Head Geological Survey: David White Retires as Chief Geologist

Resignation of Dr. George Otis Smith as director of the United States Geological Survey, so that he could qualify legally as a member of the President's coal commission, will place the full responsibility for the conduct of the Survey during the next eleven months in the hands of Philip S. Smith, who has been serving as the Survey's



PHILIP S. SMITH

administrative geologist. The new director has spent practically his entire career on the staff of the Survey and is thoroughly conversant with its work. While his outstanding accomplishments have been on his geological and research studies in Alaska, he has had wide experience with many phases of the work done in his bureau. He is widely known as an unusually capable geologist, with which he combines great executive capacity.

Simultaneously with Dr. George Otis Smith's resignation came the announcement that David White will retire as the Survey's chief geologist to resume his research work. He will be succeeded in the office of chief geologist by W. C. Mendenhall. Mr. Mendenhall has been a member of the Survey staff for 20 years. His geological field work has extended from the southern Appalachians to Alaska. For more than two years he has served as geologist in charge of the Land Classification Board. This latter place will be filled by the promotion of Herman Stabler. In connection with Mr. White's retirement as chief geologist Dr. George Otis Smith contributes this comment:



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DAVID WHITE

"On Nov. 16 David White will have completed ten years' service as chief geologist. This contribution to the administration of the Survey has been at the expense of his own scientific work, even though he has thereby increased the scientific value of the work of his associates. It seems fair that his oft-repeated request for permission to return to his own geological studies should now be granted, not only to gratify the natural desire of an investigator who has laid aside research problems one after another but to promote the advancement of our science.

"The return of Mr. White to productive research suggests anew the sacrifice involved in the administration of scientific work. Administration by scientists is the keynote of the Survey's policy, yet the intellectual cost item involved in this drafting of our best investigators must be kept down to minimum. Had I been free from other demands on my time this past summer, I would have taken this occasion to start a somewhat radical reorganization of the geological branch, the chief purpose of which would be to reduce its administrative overhead—too many geologists are giving valuable time to work for which they were not trained. Necessarily now this task of simplifying the organization must be left to the new chief geologist and acting director, but I ask for them a sympathetic acceptance of the proposal for a less elaborate but more elastic grouping of the activities of the branch. Not machinery, but product, is the measure of efficiency in a government scientific bureau."



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W. C. MENDENHALL

How the Coal Strike Affected Bituminous Coal Stocks Shown by Government Report as of Oct. 1

By W. F. McKenney, F. G. Tryon and E. E. Finn*

The government's report on coal stocks, just issued, places the total bituminous in the hands of commercial consumers at 22,000,000 tons on Sept. 1, and 28,000,000 on October 1.

To many observers of the coal market who were matching up the statistics of production with their own estimates of consumption during the strike, it will appear surprising that there could be anything like 22,000,000 tons left in the possession of consumers when the settlement came.

This article attempts to show how the country adjusted itself to the shortage in supply, and how the deficit between production and consumption was met. Details of the present condition of stocks will be found elsewhere.

There are two elements in the above-ground reserve of coal. The first element is the stocks in the hands of consumers. The second element is the coal in transit, coal on docks, in intermediate storage yards, en route in cars or vessels, and also for convenience coal stocked by the producer at the mine. Both of these elements may be drawn upon to meet a deficit in supply and they will be considered in turn.

Bituminous Stocks in Hands of Consumers

It is not feasible to collect statistics of the stocks of domestic consumers nor of the smallest steam buyers. Statistics of stocks must, therefore, be commercial consumers' stocks, including retailers.

The total quantity of soft coal in the hands of commercial consumers on Sept. 1, 1922, was between 20,000,000 and 24,000,000 net tons—probably 22,000,000 tons. The quantity on Oct. 1 was about 28,000,000 tons. This does not include coal in the cellars of domestic consumers, concerning which statistics are not available, nor steamship fuel, nor coal on the docks at the head of the Lakes, which is classed as coal in transit.

From the following table and Fig. 1, which shows the same data graphically, the coal history of the past year may be read. In anticipation of the strike, consumers began stocking up in January, and when the storage questionnaire was circulated on March 1, one month before the strike, their replies indicated stocks of 52,500,000 tons. The work of building up reserves continued through March, and from the facts of production it may be safely assumed that by April 1 stocks were at least 63,000,000 tons, although the figure cannot be given accurately because no questionnaires were circulated on that date. Then came the strike. For five and a half months consumption exceeded production and the deficit had to be paid out of stocks. There was much speculation as to how long the reserves would hold out. Early in August the disturbed state of the market plainly showed that the danger line was near. The experience of 1920 had indicated that when stocks fall to 20,000,000 tons,

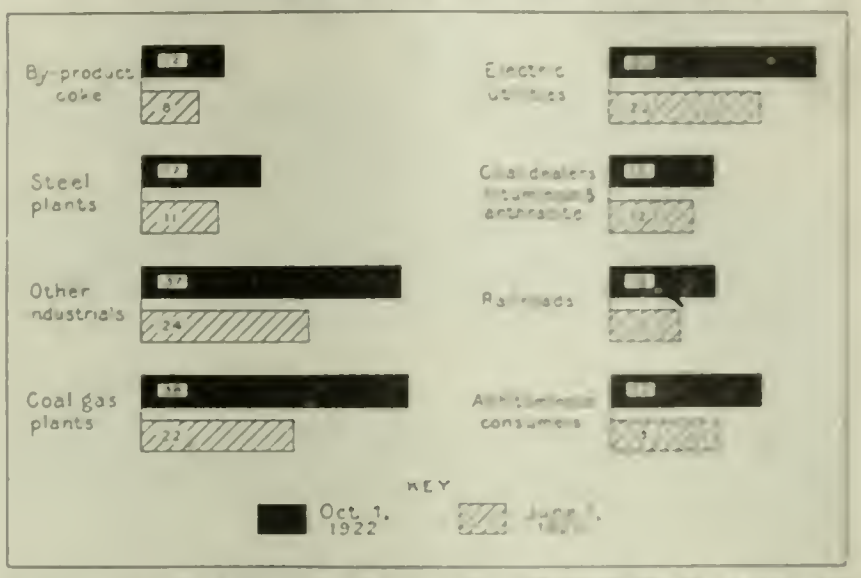


FIG. 2—DAYS' SUPPLY HELD BY DIFFERENT CLASSES OF CONSUMERS ON OCT. 1, 1922, AND ON JUNE 1, 1921

At the rate coal was being burned in September, 1922 (including alleged curtailment of consumption by [illegible]), the stocks of soft coal on Oct. 1, 1922, were sufficient for [illegible] days. At the lowest point on record—June 1, 1921—the stocks were sufficient for only 15 days. Since Oct. 1 [illegible] have continued to increase.

high prices and anxiety result, and it was, therefore, very significant that the stock-taking of Sept. 1, only ten days after the general resumption in the Central Competitive Field, should show 22,000,000 tons.

ESTIMATED TOTAL COMMERCIAL STOCKS OF BITUMINOUS COAL IN THE UNITED STATES

	(Net Tons)		
October 1, 1916	27,000,000	January 1, 1921	[illegible]
October 1, 1917	28,100,000	April 1, 1921	[illegible]
July 15, 1918	39,700,000	August 1, 1921	[illegible]
October 1, 1918	59,000,000	November 1, 1921	[illegible]
Day of the Armistice	63,000,000	January 1, 1922	[illegible]
January 1, 1919	57,900,000	March 1, 1922	[illegible]
April 1, 1919	40,400,000	April 1, 1922 (a)	[illegible]
March 1, 1920	24,000,000	September 1, 1922	[illegible]
June 1, 1920	20,000,000	October 1, 1922	[illegible]

(a) The figures for 1918 in this table are based upon actual count. Beginning April 1, 1919, the figures are estimates based upon reports from a selected list of 5,000 consumers whose stocks in 1918 bore a known relation to the entire coal stocks.

(b) Subject to revision.

Analysis of all available data on supply and consumption shows that between March 1 and Sept. 1, the dates for which accurate stock figures are available, the total consumption and exports of American bituminous coal amounted to between 195,000,000 and 200,000,000 tons. This indicates a slight decrease in consumption as compared with the 1921 average, a decrease explained by (1) warmer weather, (2) actual curtailment of operations at some steel works, coke ovens, and industrial plants through scarcity or high price of coal, (3) shrinkage in exports and (4) postponement to autumn and winter of a large part of the movement of domestic coal.

But against this consumption of [illegible] tons there was produced or imported only [illegible] tons, leaving a deficit of 42,100,000 tons to be drawn from reserves. Of this deficit, about 30,500,000 tons was paid out of consumers' stocks, and the balance—11,600,000 tons—was drawn from the coal in transit.

Some of the deficit in supply during the strike doubtless was met out of the stocks of domestic consumers. The aggregate reserves of the householders, hotels, apartments, small office buildings and other consumers covered by this class run into the millions of tons. Some of these lay [illegible]

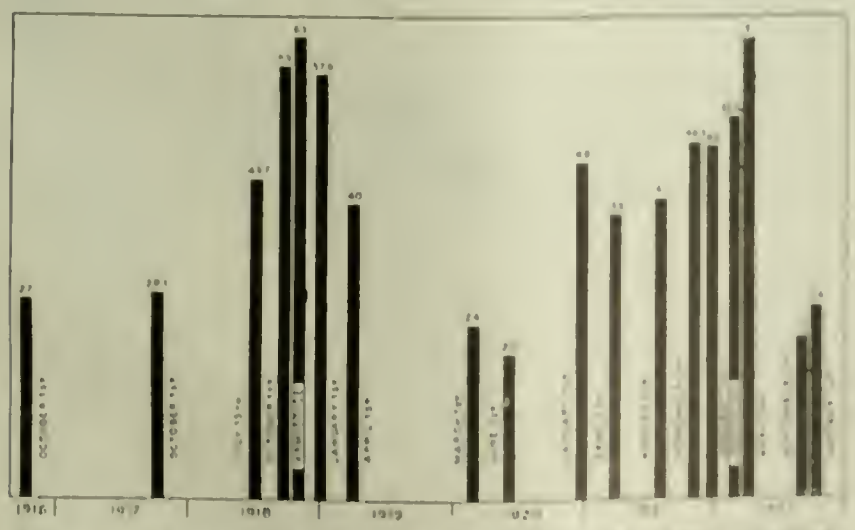


FIG. 1—TOTAL COMMERCIAL STOCKS OF BITUMINOUS COAL, OCT. 1, 1916, TO OCT. 1, 1922

Figures represent million net tons and include coal in hands of railroads, industrial consumers, public utilities and retailers. Coal for steamship fuel, on lake docks, and in transit is not included. Figures for 1922 are subject to revision.

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FIG. 3—STATE SUPPLY OF SOFT COAL ON HAND AT INDUSTRIAL PLANTS ON OCT. 1, 1922

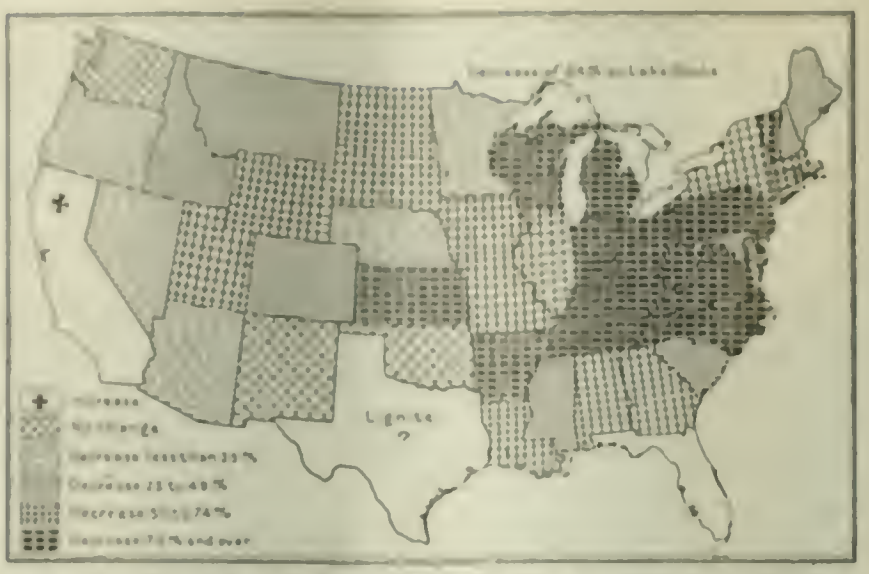


FIG. 4—HOW RETAILERS' STOCKS OF ALL COAL, ANTHRACITE AND BITUMINOUS, ON OCT. 1, 1922, COMPARED WITH THOSE ON NOV. 1, 1921

Stocks of bituminous coal in retail yards on Oct. 1 were about half what they were a year ago. Stocks of anthracite were barely 13 per cent of last year's stocks. The total stocks of retailers—including both hard and soft coal—showed a decrease of 67 per cent as compared with 1921. The map shows that the decrease was small in the Far West and most acute in the territory east of Mississippi River and north Alabama.

surplus in anticipation of a shortage, and all of them tend to draw on their reserves and postpone fresh purchases when coal is scarce and dear. This process no doubt facilitates passing a crisis in coal supply, though the extent of the relief may not be stated in tons.

Bituminous Coal in Transit

"Coal in transit" includes all coal mined and brought to the surface not yet delivered to the retailer or consumer. It resembles all in a pipe line or material in process in a manufacturing plant; it has inventory value but it cannot be fully realized upon without stopping the process. The quantity in transit has never been measured, but it evidently runs into many million tons. It fluctuates within wide limits and may be drawn upon to meet a deficit in supply. During the 1922 strike there was evidently a net reduction of about 11,000,000 tons in the coal in transit, which went to fill the deficit in supply.

There are several items in the aggregate of coal in transit which will be discussed in turn.

No one knows how much coal is moving by rail or water at any given time. There is some evidence that normally it is something like the total output of the two weeks immediately preceding. If so, the quantity en route on March 1, 1922, would be 20,000,000 tons and the quantity en route on Sept. 1, 1922, 14,600,000 tons. The difference—5,400,000 tons—would have gone to fill the deficit. However far from the mark the factor of two weeks may be, it is clear that here is a source capable of supplying some millions of tons in the event of a stoppage of production. Failure to recognize this fact led to much loose thinking about the wastage of consumers' stocks last summer.

Coal on the Lake Docks is considered as in transit because most of it must be shipped away from the docks before it reaches the consumer. It is the largest factor in the fuel reserve of Wisconsin, Minnesota, the Dakotas and northern Iowa. Between March 1 and Sept. 1, stocks on the docks dropped from 5,160,000 to 292,000 tons. The difference—4,868,000 tons—went to meet current consumption during the period of the strike. In the month of September receipts by the lake receivers so far exceeded shipments that their stocks increased to 1,581,000 tons on Oct. 1. In spite of the increase the stocks are lower than at the corresponding season of any year covered by the published record. In comparison with 1921, when stocks were unusually heavy, they show a decrease of about 7,000,000 tons. The following statistics are supplied by courtesy of the Northwestern Coal Dock Operators' Association:

BITUMINOUS COAL STOCKS AT UPPER LAKE DOCKS*

(In Net Tons)

August 1, 1921	8,188,639	March 1, 1922	5,160,452
November 1, 1921	8,824,297	September 1, 1922	292,140
January 1, 1922	7,150,654	October 1, 1922	1,581,391

* These figures are exclusive of coal on private docks of industrial consumers, which coal is included in the consumers' storage.

The quantity of soft coal in cars at tidewater, Lake ports, the New England gateways or other junction points on Oct. 1 was not abnormal.

The strike of 1922 showed that the accumulation of loaded cars unbilled at the mines may at times be a factor of some importance in the above-ground reserve of fuel. When the strike began there were 1,530,000 tons of bituminous coal in unbilled loads; when it ended there were only 20,000 tons. The difference—1,510,000 tons—went into consumption during the stoppage. The following statement of average daily coal loads unconsigned covers all important carriers, and is furnished by courtesy of the American Railway Association:

Week ended	Unbilled Cars of Bituminous	Equivalent In Tons
March 4, 1922	14,126	700,000
April 8 (highest)	30,730	1,530,000
August 19 (lowest)	412	20,000
September 2	1,305	65,000
October 1	1,535	77,000

The number of bituminous operators who store their product is very small, but is apparently increasing. A careful inquiry by the Geological Survey last March, before the strike began, showed a total of 753,000 net tons in producers' storage. Of this 502,000 tons was at or near mines in southern Illinois, central Pennsylvania, West Virginia (particularly Logan County), eastern Kentucky, Virginia, Tennessee and Alabama. The remainder—251,000 tons—was stored in yards at intermediate points.

DAILY AVERAGE OF BITUMINOUS COAL IN HANDS OF VARIOUS CLASSES OF CONSUMERS, JULY 15, 1918, TO OCT. 1, 1922

(Figures represent number of days supply based on current rate of consumption at time of stock-taking.)

	Nov. 15 1918	Jan. 1 1919	Mar. 1 1920	June 1 1920	Jan. 1 1921	Apr. 1 1921	Aug. 1 1921	Nov. 1 1921	Jan. 1 1922	Mar. 1 1922	Sept. 1(c) 1922	Oct. 1(c) 1922
	53	52	15a	61	29	28	31	38	42	39	9	12
	45	42	9a	11a	42	38	46	46	48	48	10	17
	71	55	27	24	64	47	56	67	51	56	32	37
	88	85	81	22	55	66	79	87	89	82	34a	38
	49	49	21	22	44	48	44	54	51	54	26a	30
	17	16	14	16	30	26	42	46	33	23	11	19
	31	18	37a	19a	23a	24a	41a	31a	35a	42a	13	15
	43	42	28	15	39a	36a	39a	43a	41a	43a	17	22

(a) Estimated from incomplete data. (c) See text for rate of consumption at which these figures are calculated.

Illinois and Indiana Producers Decline Invitation to Cut Domestic Prices

Chicago, Ill., Nov. 6.—The conferences in Chicago last week which Fuel Distributor Conrad Spens held with both Indiana and Illinois coal producers did not produce quite the effect Mr. Spens hoped for. His suggestion that lump prices be dropped from $5@$5.50 down to about $4 was refused frankly by Indiana men, who declared they could not agree to such a thing for fear Federal Judge Anderson in Indianapolis would swoop down on them again for price fixing. Illinois men made no written answer but are giving Mr. Spens the unmistakable impression that they cannot agree to reduce prices a bit. However the continuance of warm weather which followed the public announcement that Mr Spens was trying to cut prices so softened the domestic demand that there were signs of shaved quotations in the Midwest markets. The principal southern Illinois producers stuck to their previous lump price of $5.50, central Illinois did its best to stay above $4.75 and Indiana coals that had been selling for $5 and $5.25 were held right there, with only occasional variations.

The whole Midwest is counting on a cold snap to remedy the present strained situation.

When Mr. Spens suggested that reducing the price from $5.50 to $4 would be a satisfactory thing for the producers of the Midwest region to do, the general reply was that since mine costs had mounted 50 per cent or more with the 50 per cent or greater drop in car supply, domestic sizes were the only salvation of the coal business. If it costs almost $4 today to produce a ton of coal in Illinois, and more than half the coal produced is screenings and must be sold at a considerable loss—say at $2@$2.25—it was advanced to Mr. Spens as obvious that a maximum of $4 could not be fixed for lump or the business of coal mining would collapse amid a large puff of bug dust.

When the point was raised that West Virginia had cut the price from $7.50 to $6, thus apparently arguing that Western mining companies should effect a similar reduction, there was no hesitancy in asking if Illinois and Indiana are now to be penalized for not setting their prices up to $7.50 at the end of the strike. A hint that Mr. Spens has power to shut off car supply to recalcitrant Western mines and can permit amenable West Virginia mines to have enough cars to flood the West with competitive coal did not scare the Westerners. The attitude of many of them was: "We're ready to do battle in the courts any time cars are shut off, and anyway West Virginia isn't in position to flood the West with coal even if it got all the cars in the United States." Mr. Spens could not set a minimum price, so the operators would not set a maximum.

While the conferences at Chicago bred little ill feeling, thanks to Mr. Spens' tact and good judgment, they did not make much progress and it is understood among Western coal men that the Fuel Distributor is disappointed. The feeling among them is that a good stiff cold snap would go a long way toward relieving the tension.

Expert observers feel that Mr. Spens' activity at Chicago will have a wholesome effect. It at least gave the government a chance to indicate that it can take a hand if prices do any ground and lofty tumbling, and this is expected to have a restraining influence even if a cold snap comes down and sets the domestic market all agog.

Washington, D. C., Nov. 3.—Results of a conference between Federal Fuel Distributor C. E. Spens and a delegation of coal operators from the northern West Virginia bituminous field, at which a reduction of $1.25 per ton in the maximum price of domestic coals mined in this field was arranged, are given in the following statement, issued today by Mr. Spens:

"A conference was held in Washington, Nov. 2, between the coal operators of the northern West Virginia field, which includes the Fairmont district, and the Federal Fuel Distributor, to discuss the question of maximum prices f.o.b. at mines on prepared sizes of bituminous coal for household purposes.

"The operators signified their willingness not to exceed a maximum f.o.b. price at mines of $4.50 per ton. Previous prices having ranged as high as $5.75 per ton, the new basis, therefore, constitutes a reduction in the previous maximum figure of $1.25 per ton. This basis was voluntarily established by the operators in the northern West Virginia field in recognition of the present emergency and to assist the Federal Fuel Distributor in the accomplishment of the purposes of the act establishing this office."

Spens Urges Anthracite Producers to Help In Elimination of Speculation

Producers of anthracite have been requested by Federal Fuel Distributor C. E. Spens to market their coal only through legitimate trade channels, in order to eliminate intermediate speculation, which has tended to increase unduly the price of hard coal in some sections. Mr. Spens' communication, addressed to all hard-coal operators, under date of Nov. 4, is as follows:

Complaints are reaching the Federal Fuel Distributor from a great many sources that higher f.o.b. mine prices than those already agreed upon with the Fair Practices Committee of Pennsylvania as basic mine prices are being asked on anthracite coal, and investigation has developed that this is due to a great extent to the employment of too many intermediate channels between the producer and the consumer.

This condition of affairs can largely be corrected by the producers themselves, by confining their sales to legitimate wholesalers and to legitimate retailers who deal directly with the ultimate consumer.

In view of the current 'normal' level of anthracite prices and the intense demand due to anticipated reduced production, "intermediate speculation" savors of cruelty, and the Federal Fuel Distributor invites the co-operation of all producers to the end that the activities of this parasite on normal exchange may be entirely eliminated or at least be reduced to a minimum.

The continuance of such practices reflects on the entire anthracite industry, which is most unfortunate, since so large a proportion of the representation of that industry is cooperating with all interests in a splendid manner in coping with the present emergency.

Blast Entombs 90 Miners at Spangler, Pa.

An explosion in the Reilly Mine of the Reilly Coal Co., at Spangler, Pa., early Monday morning, Nov. 6, entombed between ninety and ninety-five miners who had gone to their work shortly before. The extent of the explosion has not yet been determined, but at the office of the company, it was said its effect was "pretty bad."

The mine rescue section of the Bureau of Mines at Pittsburgh ordered a rescue car to proceed to the mine without delay. Another car, which is now in New York State, also was ordered to Spangler.

The Reilly Mine is a shaft some 500 feet deep, and normally employs about 120 men. It is owned by the Joseph H. Reilly Coal Co., of Philadelphia, and produces about 125,000 tons a year.

Bituminous Operators About to Draft Suggestions to Coal Commission

A draft of the suggestions which the National Coal Association will make to the President's coal commission as to the scope of its work will be considered by the committee headed by J. C. Bryden at a meeting to be held in Washington, Nov. 9. While no information is available as to the specific recommendations which the operators' committee will make, it is known that they will ask only for the consideration of the broad questions involved rather than suggesting the investigation of detailed matters, which obviously would consume more time than is at the disposal of the commission. The members of Mr. Bryden's committee are J. G. Bradley, L. W. Galkin, Michael Gallagher, H. N. Taylor, George Herrington and E. C. Mahon.

The anthracite operators have as yet made no formal reply to the request of the coal commission for recommendations, although it is unofficially reported that they too are considering the draft of a letter to the commission on this subject.

Federal Income Tax Returns in Relation to Investigation of Operators' Profits

[The information in the law covering the Hammond Coal Company case profits of the coal operators for the past two years by investigators has caused many to turn to the records of the Internal Tax Bureau of the Treasury at Washington in the belief that here will be found the data desired and required. The following is a brief summary of the rulings on the laws of the past two years so they may have a bearing on the value of those figures, as far as comparisons is concerned.—EDITOR.]

With respect to gross income the tax blank for 1913 permitted the profit from the sale of capital assets, if acquired prior to Jan. 1, 1909, to be prorated over the period from date of purchase, levying a tax in the year sold, on the amount accrued since 1909. Subsequent laws fixed the profit as the difference between the "fair market value" at March 1, 1913, and the selling price, if the property was acquired prior to that date. The 1921 law places a maximum tax of 12½ per cent on capital gains.

Under the 1913 tax law dividends received were taxable at the rate in effect on other income. The 1916 law taxed dividends in like manner, when received or ordered to be made. The 1916 and the 1917 laws both specifically attempted to tax stock dividends, if paid out of surplus accrued subsequently to 1913. The 1917 law taxed them at the rates of tax in force in the period when earned, or in lieu thereof at the rate of 2 per cent. Under the present law the dividends received by corporations are not subject to income tax.

Deductions Allowed in 1917 to 1916

The tax blanks for the years 1913 to 1916 provided for deduction of "only the ordinary and necessary expenses paid within the year in the maintenance and operation of the business and properties of the corporation," and went on to specify that "all expenses of material, labor, fuel, and other items entering into the cost of goods purchased, sold, or manufactured are deductible under the head of expense." The 1917 form provided, as did the others, that expenditures for incidental repairs which do not add to the value or appreciably prolong the life of property are deductible as expenses. The 1917 law uses the words "all the ordinary and necessary expenses paid" within the year.

The 1918 law reads "paid or incurred." With the issuance of Regulations 45 covering the law of 1918, the Income Tax Bureau gave recognition to the peculiar conditions surrounding the mining industry, and in Article 222 of the Regulations set up the specific test that in a developed mine, where the minor item of plant and equipment purchased or installed would increase production, its cost might be treated as an item of expense. Specific examples were cited as "mules, mules, mine cars, trackage, cables, trolley wire, fans, small tools, etc., necessary to maintain the normal output because of increased length of haul or depth of workings consequent on the extraction of mineral."

This regulation was issued by the Internal Revenue Bureau at the urgent request of the mining industry. It served as a guide for the field examiners and auditors of the department, and promoted generally the accounting methods which had been in vogue with conservatively operated companies in preceding years. It also gave recognition to the basic differences between the mining industries and others, as manufacturing and railroad operation. In the examination of the 1917 returns by the field men of the Internal Revenue Bureau innumerable controversies had arisen with the taxpayer as to the treatment of the class of articles enumerated in Article 222, the agent of the government insisting that they be capitalized, while the taxpayer insisted that proper accounting required them to be treated as items of expense. This regulation settled the controversy so far as 1918 and succeeding years are concerned, for while the wording of the regulation was afterward revised, the principle established still holds. Since the 1917 and the 1918 laws are practically identical as to what constitutes allowable expenses, it naturally follows that the taxpayer is entitled to the same allowances for 1917 as for 1918.

All of the revenue laws have made allowances for losses actually sustained and charged off, but the law of 1921 allows "at the discretion of the commissioner, a reasonable addition to the reserve for bad debts."

The 1913, 1916, 1917, 1918 and 1921 tax laws all provide for allowances which fairly measure the loss during the year of physical property by reason of exhaustion, wear and tear—that is to say, depreciation. The earlier laws specified that it should be based on *cost*. With the issuance of Treasury decision 2,754, on Aug. 23, 1918, recognition is given to the principle that depreciation on property purchased prior to March 1, 1913, might be figured on the fair market value at that date instead of on the basis of cost.

With the issuance of the regulations for the year 1918, recognition also was given to the method used by many mining companies of calculating depreciation on the basis of the tonnage exhausted, at a rate per ton obtained by dividing the capital sum invested in plant and equipment by the total number of tons recoverable from the acreage assigned to a given mine, thus giving a unit value per ton as a measure of depreciation. The option also was given to the taxpayer to add the values of plant and equipment to the value of the mineral and development and to make a composite deduction for depreciation and depletion.

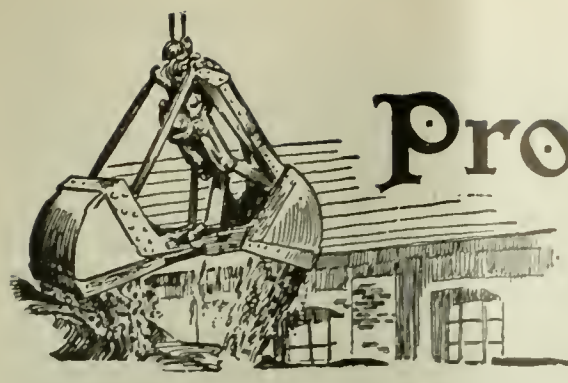
Allowance for Depreciation Allowed in 1916 Law

The 1909 law did not allow deductions for depletion. With the passage of the 1913 law recognition was given in part only to the loss to the mining company by reason of the mining out of the mineral, and deduction for depletion was allowed "not to exceed 5 per cent of the gross value at the mine of the output for the year." With the 1916 law full recognition is given to the right to depletion allowances based on cost or the fair market value at March 1, 1913. It is a fact that because of the low tax rate under the 1916 law and the trouble and expense incident thereto, few coal operators took advantage of the privilege of placing a value on their mineral at 1913 and continued to make deductions on the basis of cost. With the high rates under the Income and Excess Profits Tax laws of 1917 an additional number of taxpayers accepted the opportunity to revalue, but because of the difficulty of finding a basis on which real values could be proved many have not yet obtained the values to which they may be entitled. In the period preceding 1913 few coal properties changed hands, and not until the acceptance by the Internal Revenue Bureau of the principle of fixing values on the principle of the "present value of eventual earnings" has it been possible to gain much from this provision.

There seems to have been no doubt as to the right of the taxpayer to amortize the cost of obtaining a lease under the laws passed prior to 1918, but not until the passage of that act has he had the undisputed privilege of valuing a leasehold at March 1, 1913, for the purpose of depletion. At the present time comparatively few coal operators in some states have such values to the satisfaction of the Commissioner of Internal Revenue and have therefore not gotten the value of this deduction, although such values may be very substantial and much in excess of the lessor's interest.

Prior to 1918 interest deductions for the purpose of the income tax were limited to the amount actually paid on bonded and other indebtedness not in excess of the paid-up capital stock, plus one-half of the interest-bearing indebtedness outstanding at the close of the fiscal year. This restriction has been removed. With the 1918 law all interest is deductible, except that to carry obligations on certain tax-free obligations of the United States. It is also permissible to make deductions on the basis of interest accrued, which under former laws was not permitted.

Under the laws prior to 1917 federal income taxes were an allowable deduction in making a return to the Internal Revenue Bureau. The deductions were required to be on the basis of actual payments. With the 1917 law, however, the federal income and excess profits taxes were no longer an allowable deduction, but with this year permission was given to the taxpayer to accrue other taxes upon his books as a basis of deductions.



Production and the Market



Weekly Review

Despite steadily increasing production the spot market indicates signs of firmness. Current offerings are being absorbed quietly and as production is now above current consumption it is apparent that the general run of consumers are accumulating reserves. Because of contract and railroad requirements the meager car supply permits little increase in the volume of spot coal and the gradual re-entry of buyers has further checked the descent of prices.

Coal Age Index of spot bituminous prices was 344 on Nov. 6, as compared with 346 on the previous Monday. This corresponds to an average mine price of $4.16, a decline of only 3c. in the week as compared with a drop of 7c. in the previous week and 19c. in the seven-day period just preceding. High-grade coals are scarce and prices are firmly held.

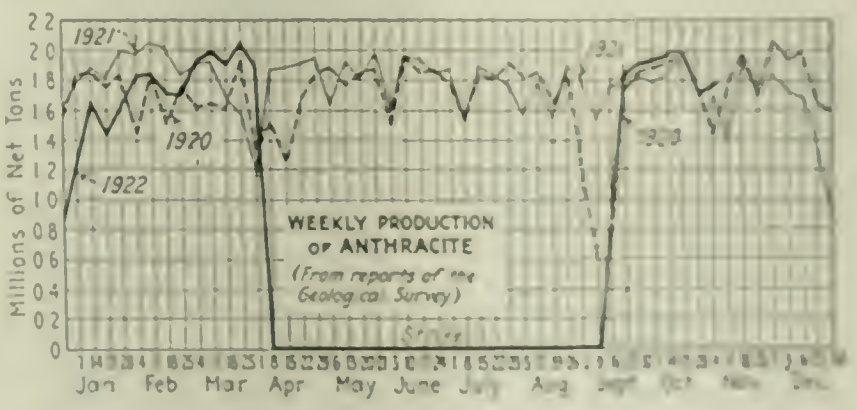
Present Situation a Reversal of 1917 and 1920

Market conditions are the easiest in the North Atlantic and New England section. The situation today is just the reverse of 1917 and of 1920, when Eastern industrial activity taxed rail facilities to the utmost to provide much-needed fuel. Eastern coal stocks are not heavy but there has been such an influx of British fuel and the coastwise trade has been so active that this market is comparatively weak.

Heavy Lake shipments and a healthy Western demand have resulted in congestion at the various gateways. An embargo on the westward movement of C. & O. coals, which lasted for a week, failed to clear this congestion, but instead choked mine sidings with the current week's loads which could not find a ready market in the East. Movement through the Cincinnati gateway is now stupendous, but the three carriers are hard pushed for cars because of the slow return of empties.

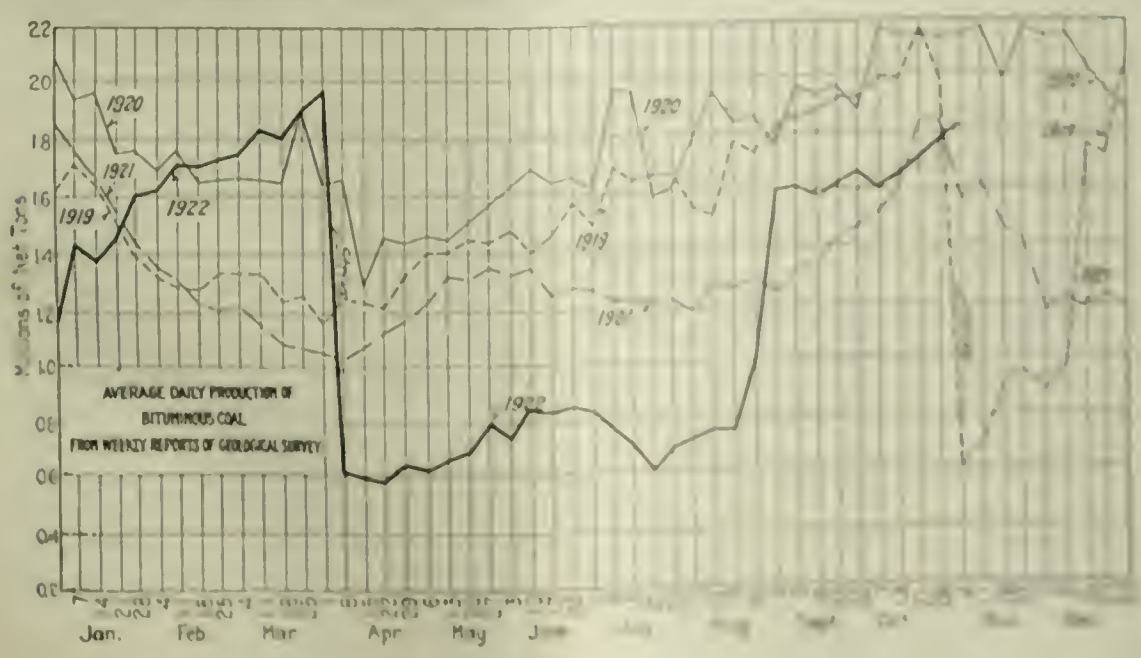
Domestic demand is still the most attractive for Middle Western fields. So much prepared coal is being made that the resultant sizes are a drug on the market. Ohio's law fixing a maximum price on coals mined and sold within that state caused such a heavy movement to other markets that the fuel authorities called a conference of producers last week to remedy the situation. Although no formal announcement was made following the meeting it is understood that the operators promised their co-operation in providing tonnage within the state, thereby avoiding the necessity of longer hauls from other producing fields.

The Northwestern territory will need approximately 3,000,000 additional tons of Lake coal before the close of



navigation. With dumpings at the lower ports being maintained at their present rate it is expected that this program will be accomplished. All-rail coal from Indiana, Illinois, etc., will of course be drawn on more heavily for this section during the winter than in normal times. Federal Fuel Distributor Spens believes that by Nov. 15 the peak of the autumn movement of grain and other commodities will have passed, thus releasing more transportation for coal.

Many buyers are relying on the close of the Lake season to release a flood of coal and weaken the price. It is not unlikely, however, that their entry into the spot



Estimates of Production

BITUMINOUS

ANTHRACITE

COKE

market at one time will offset any top-heavy market conditions.

Retail demand for anthracite is pressing. Dealers are behind in their deliveries and are urging consumers to accept substitute fuels, at least for immediate needs. The Lake program is being given preference, but this tonnage must be supplemented by a considerable all-rail movement to safeguard the Northwest's requirements this winter. Dumpings at Buffalo last week were 94,200 net tons, as compared with 120,500 tons in the preceding week. High independent quotations are now rarely heard, as dealers hesitate to pass on excessive premiums to their customers.

The steam sizes of anthracite are still heavy, although buckwheat is better taken on account of the shortage in domestic grades. Rice and barley are still soft and producers, wherever possible, are running these coals to storage.

BITUMINOUS

"Preliminary returns on coal production in the week ended Nov. 4 indicate a total of 12,481,000 net tons of which about 10,700,000 tons is bituminous coal and 1,800,000 tons is anthracite," says the Geological Survey. "Revised estimates for the fourth week of October show 10,681,000 tons of bituminous coal and 1,773,000 tons of anthracite. Thus a slight increase in the total coal raised is shown for the present week as compared with the week before.

"The increased rate of production during the past three weeks is due principally to improvement in transportation, which is reflected in the reports on operating conditions summarized in this review and also by revised figures of loading for the week Oct. 23-28, which show that following the Monday-to-Tuesday drop the rate of loading declined less from Tuesday to Friday than in earlier weeks."

Despite reassuring statements from the Department of Commerce and from the Federal Fuel Distributor, representatives of the public utilities contend that the coal situation, so far as their plants are concerned, is getting worse instead of better. The figures of the American Railroad Association also are attacked as being inaccurate. The belief held in public-utility circles is that there are duplications in the figures as to car loadings. Since the utilities are hampered by fixed incomes in bidding for coal against manufacturers, they believe nothing short of the re-establishment of priority No. 2 will enable them to build up the reserves necessary to carry them through the winter.

Eastern and Middle Western utilities have been asked to await the closing of the Lakes before attempting to build

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low Volatile, Eastern	Market Quoted	Oct. 9 1922	Oct. 23 1922	Oct. 30. 1922	Nov. 6. 1922†
		$6 75	$7 10	$6 60	$6 50 @ $7 00
		5 75	6 25	6 25	6 50 @ 6 60
		5 85	6 00	5 85	5 85 @ 5 75
		6 25	6 40	6 35	6 50 @ 6 [illegible]
		5 50	6 00	5 75	5 [illegible] @ 5 75
		6 10	6 40	7 00	6 00 @ 8 00
		5 75	5 50	6 10	6 00 @ 6 25
		5 50	5 50	6 10	6 00 @ 6 50
		7 25	7 10	7 10	6 [illegible] @ 7 [illegible]
		4 25	3 75	3 50	3 00 @ 4 00
		4 50	4 25	4 10	3 50 @ 4 75
		4 50	3 90	3 75	3 [illegible] @ 4 [illegible]
		4 85	4 75	4 75	4 75 @ 5 00
					4 00 @ 4 25
		4 25	4 25	4 [illegible]	4 [illegible] @ 4 [illegible]
		4 35	4 35	4 00	4 00 @ 4 65
		4 55	4 55	4 00	4 00
		3 85	3 50	3 25	3 00 @ 3 75
		3 50	3 50	3 30	3 [illegible] @ 3 70
		3 35	3 35	3 50	3 50 @ 3 75
		3 05	3 30	3 [illegible]	3 [illegible] @ 3 [illegible]
		3 25	3 15	2 90	3 00 @ 3 40
		3 55	3 25	3 [illegible]	3 [illegible] @ 3 [illegible]
High Volatile, Eastern					
		3 30	3 30	3 25	3 50
		3 75	3 50	3 25	3 50 @ 3 75
		3 35	3 35	3 25	3 25 @ 3 50
		5 00	4 [illegible]	4 [illegible]	4 [illegible]
		3 25	3 25	3 25	3 50
		3 60	3 50	3 50	3 75
		6 25	6 25	6 [illegible]	6 50
		4 75	4 75	4 [illegible]	4 [illegible] @ 4 [illegible]
		4 10	4 10	4 00	4 25
				6 00	
		4 35	4 35	4 25	4 50
		4 10	4 10	[illegible]	[illegible]
		4 00	4 00	3 75	4 25
		5 25	5 25	4 50	5 00 @ 6 00
		3 50	3 50	3 50	3 75
		3 25	3 10	[illegible]	[illegible]
		3 80	3 80	3 81	

	Market Quoted	Oct. 9 1922	Oct. 23 1922	Oct. 30. 1922	Nov. 6. 1922†
Pitts. No. 8 mine run	Cleveland	$4 40	$3 56	$3 56	$3 56
Pitts. No. 8 screenings	Cleveland	4 05	3 25	3 31	3 31
Midwest					
Franklin, Ill. lump	Chicago	5 40	5 30	5 35	5 25@ 5 50
Franklin, Ill. mine run	Chicago	4 50	4 50	4 10	4 00@ 4 25
Franklin, Ill. screenings	Chicago	3 25	3 25	2 60	2 25@ 3 00
Central, Ill. lump	Chicago	5 10	5 10	5 00	4 50@ 4 90
Central, Ill. mine run	Chicago	3 60	3 60	3 10	3 00@ 3 25
Central, Ill. screenings	Chicago	2 80	2 00	1 85	1 75@ 2 00
Ind. 4th Vein lump	Chicago	5 10	5 10	5 10	5 00@ 5 25
Ind. 4th Vein mine run	Chicago	4 60	4 35	3 85	3 75@ 4 00
Ind. 4th Vein screenings	Chicago	3 80	2 75	2 35	2 25@ 2 50
Ind. 5th Vein lump	Chicago	5 10	4 75	4 75	4 50@ 5 00
Ind. 5th Vein mine run	Chicago	4 35	3 75	3 65	3 50@ 3 75
Ind. 5th Vein screenings	Chicago	3 35	2 75	2 10	2 00@ 2 25
Standard lump	St. Louis	4 25	4 35	4 25	3 60@ 4 60
Standard mine run	St. Louis	3 35	2 75	2 60	2 50@ 2 75
Standard screenings	St. Louis	2 10	2 10	2 00	1 25@ 1 60
West Ky. lump	Louisville	5 25	5 00	5 00	4 50@ 5 25
West Ky. mine run	Louisville	3 60	2 45	2 80	2 25@ 2 75
West Ky. screenings	Louisville	3 25	2 10	2 00	1 50@ 2 25
West Ky. lump	Chicago	4 50	4 10	4 10	4 00@ 4 25
West Ky. mine run	Chicago	4 10	3 25	3 10	2 75@ 3 50
South and Southwest					
Big Seam lump	Birmingham	3 45	3 95	3 95	3 45@ 4 45
Big Seam mine run	Birmingham	2 60	2 60	2 60	2 25@ 2 60
Big Seam (washed)	Birmingham	3 10	2 75	2 75	2 50@ 2 75
S. E. Ky. lump	Chicago	6 25	5 50	5 50	5 00@ 6 00
S. E. Ky. mine run	Chicago	4 75	4 25	4 25	4 00@ 4 50
S. E. Ky. lump	Louisville	7 00	6 50	6 75	6 50@ 7 00
S. E. Ky. mine run	Louisville	4 75	3 85	4 00	4 00@ 4 50
S. E. Ky. screenings	Louisville	4 10	4 10	4 10	4 00@ 4 50
S. E. Ky. lump	Cincinnati	5 60	6 75	5 85	6 00@ 6 50
S. E. Ky. mine run	Cincinnati	4 75	3 85	4 25	3 75@ 4 25
S. E. Ky. screenings	Cincinnati	4 00	3 60	4 00	3 50@ 4 25
Kansas lump	Kansas City	5 50	5 75	5 75	5 50@ 6 00
Kansas mine run	Kansas City	4 25	3 75	3 75	3 50@ 4 00
Kansas screenings	Kansas City	2 60	2 50	2 50	2 50

* Gross tons, f.o.b. vessel, Hampton Roads
† Advances over previous week shown in heavy type, declines in *italics*

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

Market Quoted	Freight Rates	Latest Independent	Pre-Strike Company	Oct. 30, 1922 Independent	Oct. 30, 1922 Company	Nov. 6, 1922† Independent	Nov. 6, 1922† Company
	$2 34		$7 60@ $7 75		$7.75@ $8 15	$9 00	$7.75@ $8 15
	2 19	$7 [illegible] $7 50	7 75 [illegible] 7 85		7.90@ 8 10		7 90@ 8.10
	2 14	7 60@ 2 75	7 60@ 7 75	$9 25@ 10 50	7.75@ 8.35	9 25@ 10 50	7 75@ 8.35
	2 19	7 2[illegible] 7 75	7 75	9 25@ 9 75	8 10@ 8.35	9 25@ 9 75	8 10@ 8 35
		7 50					
	2 14	7 9[illegible] 8 20	6 [illegible] 7 40*				
	2 19	7 9[illegible] 8 10	7 90@ 8 10	9 25@ 10 50	8 00@ 8.35	9 25@ 10 50	8 00@ 8 35
		7 75	8 05@ 8 25	9 25@ 9 75	8 15@ 8.35	9 25@ 9 75	8 15@ 8 35
			7 20 7 60*				
	2 34	7 [illegible] 8 20	7 90@ 8 10	9 25@ 10 50	8 00@ 8.35	9 25@ 10 50	8 00@ 8 35
	2 19	7 8[illegible] 8 10	8 05@ 8 25	9 25@ 9 75	8 15@ 8.35	9 25@ 9 75	8 15@ 8 35
		7 75	7 20 7 60				
	2 34				8.15		8 15
	2 22	5 [illegible] 5 75	5 75@ 6 45	7 00@ 7 50	6.15@ 6 20	7 00@ 8 00	6.15@ 6 20
	2 14	5 50@ 6 00	6 1[illegible] 6.25	7 00@ 7 25	6.15@ 6 20	7 00@ 7 25	6.15@ 6 20
			5 60 6 10				
	2 22	2 7[illegible] 3 50	3 50	2 25@ 4 00	4 00@ 4.25	2 25@ 4 00	4 00@ 4 25
	2 14	2 7[illegible] 3 25	3 50	3 25@ 4 00	4 00	3 25@ 4 00	4 00
	2 22	2 [illegible] 2 50	2 50	2 00@ 2 50	2 75@ 3.00	1 [illegible] 3 00	2 75@ 3 00
	2 14	2 [illegible] 2 50	2 50	2 25@ 2 75	2 75@ 3.00	2 00@ 2 75	2.75@ 3 00
	2 22	1 5[illegible] 1 85	1 50	1 00@ 1 75	2 00	75@ 1 75	2 00
	2 14	1 [illegible] 1 75	1 50	1 00@ 2 00	2 00	1 00@ 1 75	2 00
	2 22		2.00@ 2 50		2 25		2 25

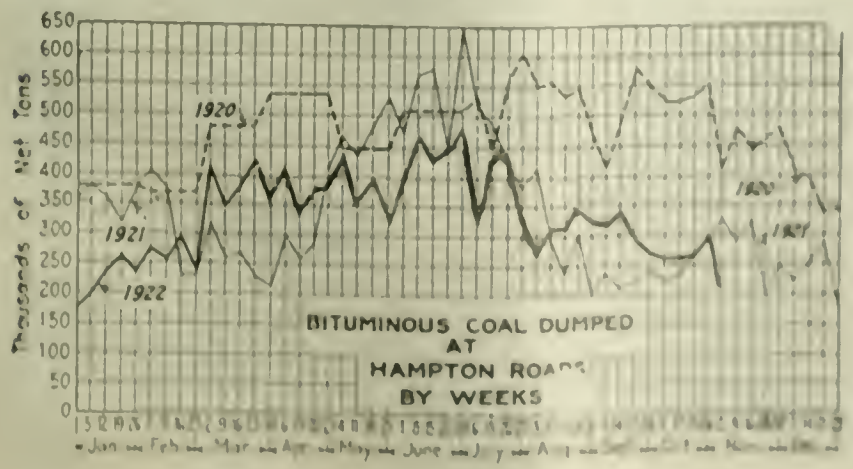
* Net tons, f.o.b. mines. † Advances over previous week shown in heavy type, declines in *italics*.



Coal Age, Index 344, Week of Nov. 6, 1922. Average spot price for same period, $4.16. This diagram shows the relative, not the actual price on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

up storage. They contend, however, that the closing of the Lakes means that freezing weather has arrived and a tonnage far in excess of that moving up the Lakes will have to be delivered to domestic consumers. Moreover, the advent of cold weather means that the railroads are 20 per cent less efficient.

The point on which the public utilities are placing most emphasis is that deliveries on their contracts frequently are as low as 15 per cent, while in only rare instances are they exceeding 50 per cent. The high prices being paid for coal in the Middle West have unbalanced the transportation movement from Eastern mines and this situation is further



How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec., 1921	Jan. 1 to Apr. 1, 1922 Inclusive	Sept. 5 to Oct. 21, 1922 Inclusive	Week Ended Oct. 21
U. S. Total	45.6	55.7		
Alabama	63.5	64.6		
Somerset County	55.5	74.9	36.4	43.3
Panhandle, W. Va.	55.3	51.3	58.4	52.1
Westmoreland	54.9	58.8	69.5	
Virginia	54.8	59.9	58.3	
Harlan	53.3	54.8	21.7	23.9
Hazard	51.7	58.4	14.4	19.4
Pocahontas	49.8	60.0	37.6	
Tug River	48.1	63.7	32.3	27.2
Logan	47.6	61.1	24.3	25.6
Cumberland-Piedmont	46.6		33.6	42.5
Winding Gulf	45.7	64.3		
Kenova-Thacker	38.2	54.3	39.4	
N. E. Kentucky	32.9	47.7	27.1	
New River	24.3	37.9		
Oklahoma	63.9	59.6	83.4	
Iowa	57.4	78.4		
Ohio, Eastern	52.6		45.3	
Missouri	50.7			
Illinois	44.8	54.5		
Kansas	42.0	54.9		
Indiana	41.4		47.5	
Pittsburgh†	41.2			
Central Pennsylvania	39.1		62.5	
Fairmont	35.3			
Western Kentucky	32.5	37.7		
Pittsburgh*	30.4		62.2	
Kanawha	26.0			
Ohio, Southern	22.9	24.3		

* Rail and river mines combined
† Rail mines.
(a) No report.

Car Loadings, Surplusages and Shortages

	Surplus Cars All Cars	Surplus Cars Coal Cars	Cars Loaded All Cars	Cars Loaded Coal Cars
Week ended Oct. 21, 1922				
Previous week				
Same week in 1921				
Oct. 23, 1922	4,409	1,774		
Oct. 15, 1922	4,275	1,588		
Same date in 1921	101,000	50,000		

curtailing the chances of the public utilities to obtain reserves sufficient to insure the proper margin of safety.

All rail shipments to New England declined to 2,880 cars during the week ended Oct. 28 as compared with 3,602 cars in the preceding week. Strenuous efforts are necessary to place this tonnage as competition from the coastwise trade is very keen.

Hampton Roads dumpings were 214,874 net tons during the week ended Nov. 2, the lowest since early last January and 80,000 tons less than in the previous week. Only the C. & O. piers registered any gain in dumpings. Tidewater prices are weak but the meager offerings have prevented much of a drop.

During October 2,688,924 net tons of soft coal and 267,744 tons of anthracite passed through the "Soo." Dock supplies of bituminous are piling up as consumers are slow to place orders. The southern end of the dock territory is being canvassed actively by all-rail shippers who need an immediate outlet for their top-heavy storage stocks, produced in an effort to meet the domestic demand.

ANTHRACITE

Production of anthracite was reduced by the observance of holidays during the last two weeks. The output for the week ended Oct. 28, was 1,775,000 tons and for last week approximately 1,850,000 net tons.

Domestic demand is pressing and dealers make only partial deliveries, urging consumers to use substitute fuels wherever possible. Every effort is being made to push the Lake program but it is apparent that considerable all-rail tonnage will have to be shipped to take out the Northwest's winter requirements.

COKE

Production of beehive coke was 330,000 net tons during the week ended Oct. 28 as compared with 310,000 tons in the preceding week. The principal increase was in the Connellsville region. That market has retained its strength and some last-quarter business has been done. Consumers appear satisfied with the recent decline in price and many of them are covering for the balance of the year.

Foreign Market And Export News

British Prices Gain Strength. Output Makes New Record: French Market Improves

Heavy production of British coal has followed a more satisfactory market. The output during the week ended Oct. 21 was 5,555,000 gross tons, according to a cable to *Coal Age*. This is the highest week's production since 1913 and is 100,000 tons in excess of the preceding week's output. Prices are strong on all good grades.

The South Wales Miners' Federation has decided to withdraw its notice of a general strike, and work in the mines will be continued. It was found that only a small percentage of the miners were obeying the call, which was issued to force complete nationalization of the mine fields.

In spite of the threatened labor trouble in Wales the pits there continue to be well booked up. The United States orders are naturally still falling off but these are compensated for by increased demands from South America and Europe, while Canada's inquiries are on the increase. The coal industry in northern England is stronger. In many cases the pits are booked up over November, and in some instances in early December. The result of these circumstances has been a further advance in prices which has led Continental customers to hold off awhile. In general it may be said that the Northumberland and Durham markets are firmly established up to the new year.

The Scottish trade with Europe continues to be good and it is thought that a large share of the contracts for Swedish State railway coal will be taken in Fife. Industrial and domestic demand is poor.

French Collieries Flooded with Domestic Orders

Nord and Pas-de-Calais collieries report in a favorable position. Industrial demand is, on the whole, satisfactory. Collieries are flooded with orders for domestic coal—owing partly to the failure of Belgium to provide the market with adequate supplies.

The situation of the Loire and Center fields is quite good for domestic and is improving for industrial coals. Production in the Sarre and Lorraine fields is increasing, with a comparatively easy outlet. The output of the Sarre mines in August was 1,019,000 metric tons, with stocks at the end of that month amounting to 545,000 tons. In August, 187,000 tons were sent to Germany.

The French Higher Railway Board has decided that in the general revision, railway rates will have to keep within a maximum limit of three times the pre-war transportation costs. At the same time it fixed May 1, 1923, as the latest date by which the revision should be completed. Coal rates will, of course, be included in the general revision of the schedule.

Hampton Roads Pier Situation

	Week Ended Oct. 26	Week Ended Nov. 2
N & W Piers, Lamberts Point:		
Cars on hand	937	571
Tons on hand	60,322	32,993
Tons dumped	96,335	66,117
Tonnage waiting	13,875	28,950
Virginian Ry. Piers, Sewalls Point		
Cars on hand	725	723
Tons on hand	46,650	43,250
Tons dumped	110,823	84,748
Tonnage waiting	7,149	26,443
C. & O. Piers, Newport News:		
Cars on hand	348	422
Tons on hand	17,400	21,100
Tons dumped	54,057	40,887
Tonnage waiting	250	1,470

Hampton Roads Supplies Dwindle

Short supplies, with extremely dull business, featured the week at Hampton Roads. Stocks were dwindling to the lowest point in the year while dumpings were also at a low ebb.

The low supply narrowed the price range and put temporary strength in quotation. The tonnage awaiting cargo neared the level of stocks at the piers.

The steamship Arcadia cleared for Oran during the week with 3,965 tons cargo.

Coal Paragraphs from Foreign Lands

GERMANY — Ruhr production was 1,959,000 metric tons during the week ended Oct. 21, according to a cable to *Coal Age*, as compared with 1,972,000 tons in the previous week.

BELGIUM — The coal market is still very firm. Consignments are in full swing for domestic consumption. Sized kinds and anthracite are high and difficult to obtain. Industrial sorts find a ready sale either to the home iron and steel works or for export.

Much feeling has been aroused in industrial circles by a decision of the Joint Committee to raise miners' wages by 8 per cent. The owners have announced a corresponding advance in the price of Belgian coal, while German fuel supplied under the Treaty of Versailles has been increased in price by about 10 francs for all qualities.

INDIA—On the Bombay coal market few transactions are being carried out and the market does not show a firm tendency. Stocks are sufficient. The prices are: Bengal first, Rs.28; good second, Rs.26@Rs.27; English coal, Rs.38; African, Rs.27½.

AUSTRALIA — Considerable improvement has been noticeable recently in the coal trade in New South Wales, and the export business recorded during August was 60,000 tons better than that of July, and nearly 70,000 tons in advance of the June figures. One of the most pressing problems facing mine proprietors is the difficulty of disposing of the stocks of small coal.

Imports of Coal and Coke

	Gross Tons Sept., 1921	Sept., 1922
Coal		
Anthracite	137	17,234
Bituminous	112,762	1,123,188
Imported from		
United Kingdom	435	999,227
Canada	96,632	93,307
Japan	8,464	...
Australia	7,230	28,950
Other countries	1	1,704
Coke	1,450	3,423

Pier and Bunker Prices, Gross Tons

PIERS

	Oct. 28	Nov. 4†
Pool 9, New York	$7 50@$7 75	$7 50@$7 75
Pool 10, New York	6 85@ 7 15	6 75@ 7 00
Pool 11, New York	6 50@ 6.75	6 50@ 6 75
Pool 10, Philadelphia	7 15@ 7 65	7 15@ 7 65
Pool 11, Philadelphia	6 90@ 7 35	6 90@ 7 35
Pool 1, Hamp. Roads	6 85@ 7 00	7 00@ 7 15
Pools 5-6-7 Hamp Rds	6.75	7 00
Pool 2, Hamp. Rds	6 85@ 7 00	7.00@ 7 15

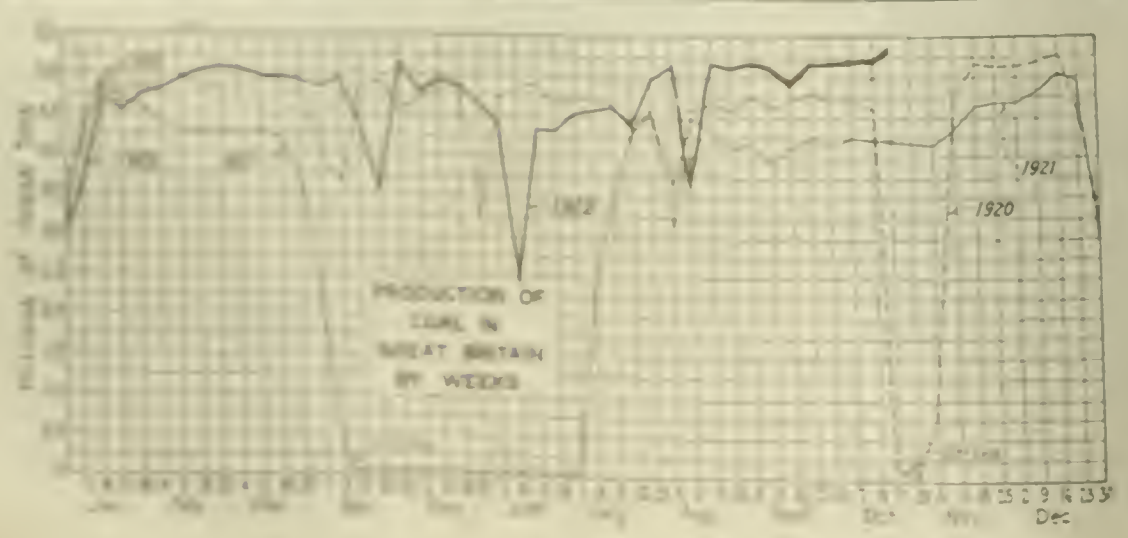
BUNKERS

Pool 9, New York	$7 85@$8 15	$7 90@$8 15
Pool 10, New York	7 20@ 7 50	7 15@ 7.40
Pool 11, New York	6 85@ 7 10	6 85@ 7 10
Pool 10, Philadelphia	7 65@ 8 15	7 65@ 8 15
Pool 11, Philadelphia	7 40@ 7 90	7 40@ 7.90
Pool 1, Hamp Rds	6 85@ 7 00	7 15
Pool 2, Hamp. Rds	6 85@ 7 00	7 15
Welsh, Gibraltar	38s. f.o.b.	38s. f.o.b.
Welsh, Rio de Janeiro	57s 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	37s. f.o.b.	37s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	41s. t.i.b.	41s. t.i.b.
Welsh, Algiers	38s. f.o.b.	38s. f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	64s. f.o.b.	64s. f.o.b.
Welsh, Madeira	42s. 6d. f.a.s.	42s. 6d. f.a.s.
Welsh, Teneriffe	38s. 6d. f.a.s.	38s. 6d. f.a.s.
Welsh, Malta	41s. f.o.b.	41s. f.o.b.
Welsh, Las Palmas	38s. 6d. f.a.s.	38s. 6d. f.a.s.
Welsh, Naples	41s. f.o.b.	41s. f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore	52s. 6d. t.i.b.	52s. 6d. t.i.b.
Welsh, Constantinople	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, St. Michaels	50s. t.i.b.	50s. t.i.b.
Welsh, Port Said	49s. f.o.b.	49s. f.o.b.
Welsh, Oran	38s. f.o.b.	38s. f.o.b.
Welsh, Fayal	50s. t.i.b.	50s. t.i.b.
Welsh, Dakar	42s. 6d. f.o.b.	42s. 6d. f.o.b.
Welsh, St. Vincent	42s. f.a.s.	42s. f.a.s.
Welsh, Montevideo	50s. f.o.b.	50s. f.o.b.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	Oct. 28	Nov. 4†
Admiralty, large	27s 6d@ 28s 6d	28s @ 29s.
Steam, smalls	16s. @ 16s 6d.	16s @ 17s.
Newcastle:		
Best steams	27s.	27s.
Best gas	24s @ 25s.	24s. @ 25s.
Best bunkers	23s 6d.	23s 6d.



North Atlantic

Firmness Pervades Market Due to Meager Car Supply

Big Buyers Prevent Further Price Slump—Receipts Readily Absorbed, Though Average Consumer Bides Time — High-Grade Coals, Now Scarce, May Disappear with Seasonable Weather.

Extremely poor car supply kept the market firm last week. Big buyers are all that hold prices from slumping further. The light receipts are, however, absorbed with but little difficulty, but the average consumer is content to rest on his oars. Some of them have accumulated sufficient reserves to enable them to await heavier receipts, which it is felt will soften the spot market.

High-grade coals are very scarce. Any seasonable weather will hasten their disappearance from the market. Southern coals are moving in slowly and British receipts are now only occasional. Much complaint is heard from the mines over poor commercial loading time, while railroad fuel loadings are being given preferential car supply, it is asserted.

PHILADELPHIA

The consumer continues to be perfectly satisfied under present conditions, while the producer complains that the limited production makes mining extremely expensive at present prices.

Everyone still talks of shortage of cars, although some roads take exception to this statement, and maintain that the market is being well taken care of. The transportation lines point out that they are carrying the heaviest tonnage of general freight for many years and that coal shippers cannot expect to get all the cars.

The big buyers continue to be the railroads, steel plants and power concerns, and it is this buying that is keeping the market up. Quite a few of the private plants have already accumulated supplies in excess of normal, although the railroads are much behind.

The best market has been in the high-grade coals, with Pool 1 very scarce. While Pools 9 and 71 are in better volume the prices at this time are inclined to become a trifle more firm.

The steamship Nordfarer cleared for Havana last week, the first cargo in some time.

NEW YORK

There has been a slight improvement in the Tidewater market and more activity exists in the line trade. At times the improvement has been reflected in the quotations but the market is still spotty.

Buyers showed a little more interest but were cautious about placing orders. In some quarters quiet buying is reported which has been spread over considerable territory. In this manner it is thought many consumers are better prepared for the future than is generally known. The railroads have taken good care of themselves, contracts being reported under $3 for assigned cars.

There were at the local terminals on Nov. 2, 1,489 cars of coal, nearly all of Pools 9 and 10. This was approximately 500 cars less than there was on hand the first day of the week.

Producers report a better demand from New England for Pennsylvania coals after strong efforts made to regain some of the business lost to Southern coals during the strike. In this market Southern coals are being received in smaller quantities while British coals are arriving only occasionally.

Pittsburgh gas run of mine was quoted locally $4.50@$4.75 and lump, $5 @$5.25 early in the week. Other quotations included Shawmut district around $3.25; Allegheny Valley, $3.30; B., R. & P., $3.25; Westmoreland gas, $4.15; Westmoreland slack, $4.75, and Broad Top smokeless, $4.50@$4.75.

CENTRAL PENNSYLVANIA

The car shortage is becoming more acute as cars are being diverted to the hard-coal regions. In many instances, even box cars are being sent east. On the other hand, but little coal is bought, the market being exceedingly dull. The output during the week ended Oct. 22, was 18,885 cars, against 20,249 for the week previous. At some places mines were without cars all week and in order to keep the men busy, large quantities of coal were being stored.

The lower grades are selling at $3@ $3.25, while Pool 10, which is extensively mined, ranges $3.25@$3.60; Pool 9, $3.50@$4, and Pool 71, $4@$4.75.

UPPER POTOMAC

Conditions in the Upper Potomac more nearly approximate normal in so far as production is concerned. In the Georges Creek field the strikers in certain sections such as Frostburg and Lonaconing are still holding out in the hope of forcing a recognition of the union. In neither region is the demand particularly stiff.

BALTIMORE

The striking feature of the market continues to be the light demand and the sliding scale of prices. This is made quite plain when it is pointed out that the average spot price of all grades of soft coal at the end of September was around $5, while the present price average is about $1.50 lower. There is enough coal at present to go around in easy fashion despite the poor run of cars, which has now been a feature for several weeks.

Some increased demand is noted from retail dealers who are persuading householders that they must burn soft coal in lieu of anthracite. This element is by no means heavy, however, and has not had any material effect on the price list, which is as low as it has been for a number of weeks past. The importation of English coal is not brisk at this point.

FAIRMONT

Transportation conditions appear to be improving slightly yet mines are hardly getting more than 25 per cent car supply, with those having railroad fuel contracts being given the preference. Lessened movement to Western markets because of additional embargoes only forced more tonnage to the East, and tended to soften prices. Not much coal was consigned to Western points except by way of the Charleston gateway and thence over the K. & M.

West

SALT LAKE CITY

Operators indicted by the district grand jury last week have appeared in court and given bonds. Individuals indicted are all well known in the industry. There is practically no public interest in the proceedings.

Vice-President Morgan Harper of the U. S. Fuel Co. told a *Coal Age* correspondent that the car shortage is worse now than he has ever seen it here. Mines are working around two days a week and this condition is almost entirely due to the car situation. There is a surplus of labor and men are being turned away every day. Operators are behind on their orders, but not hopelessly.

Some business is being done in California, Washington and Oregon, but no Utah coal is being placed on the Pacific. Railroads are buying for current use only. The local market has improved somewhat as a result of the cold snap but practically nothing is being done on storage orders, though many are still without their winter supply.

DENVER

The lack of production in Colorado, due to car shortage and railroad inability during the week ended Oct. 21, according to statistics compiled by operators here, amounted to 41 per cent or 87,605 tons. Mine capability for that period was only at the rate of 915 tons. Loss of production on account of no market was 14 per cent or 2,873 tons. The actual production amounted to 70.4 per cent or 118,147 tons.

In spite of the car shortage, production in Colorado from Jan. 1 to Sept. 30, 1922 shows an increase of 507,193 tons over the same period in 1921, there being 6,916,131 tons of coal mined thus far in 1922. Warm weather has softened the domestic demand though few consumers are ready for winter.

KANSAS CITY

Warm weather has caused a slump both in demand and price for some grades. Kansas nut coal is piling up at the mines and it is estimated that there are 400 cars of that grade awaiting orders.

Retail demand has slumped along with the wholesale, but steam coal is easier and demand for slack is holding up well when compared with other grades. Prices for Kansas are unchanged.

Anthracite

Operators Booked Way Ahead: Receipts Decline in East

Retailers Able to Fill Only Part of Urgent Demand—Lake Business Blamed—Independent Coal Offered Freely, but Dealers Are Backward in Ordering It.

Producers are heavily booked ahead. Eastern receipts are so low that retailers are unable to fill more than a portion of their urgent consumer demand. Lake business is given as the reason for the decline in Eastern movement. During October 595,100 tons cleared from Buffalo, but the movement is now declining.

Independent coal is more freely offered, but dealers are slow to place orders for the high-priced tonnage. Substitute fuels are not finding a ready market, thereby adding to the volume of unfilled anthracite business on retail books. Buckwheat is in somewhat better call, but other steam grades are slow and companies are still running to storage.

NEW YORK

There is an urgent domestic demand. Dealers—wholesale and retail—are being pushed for deliveries with the result that producers nearly without exception, are heavily booked ahead.

Consumers continue to insist upon receiving their regular coals, notwithstanding the shortage and the efforts being made to introduce the use of substitutes.

State Fuel Administrator Woodin issued an order on Oct. 27 and until further notice all egg, stove and chestnut coals dumped at the railroad terminals for delivery to dealers in Greater New York or arriving by rail at the dealers' yards shall be known as pebble coal and no delivery to any consumer shall be made from such coal in excess of one ton.

Quotations for straight lots of egg, stove and chestnut as high as $12.50 from some of the independent operators continue, although the latter believe this will be, as a rule, a couple of dollars lower.

Buckwheat is moving better but is comparatively weak. Rice and barley are flooding the market. There are reported to be more than 2,000 cars of these coals at the various terminals with more than 100 loaded boats in the harbor.

PHILADELPHIA

The amount of coal for delivery is even less than last week, and the yards are near the condition they were in during the summer. Quite mild weather having prevailed the consumers on the dealers list have lightened somewhat, but the movement is nevertheless greatly worried. There have been instances of late where retail men have actually locked their doors against would-be purchasers.

There is just the slightest hope that relief will be forthcoming a little earlier than Dec. 1, which latter date has been the usual time for the speeding up of deliveries to this market.

Many dealers are already taking in a little bituminous coal, as well as coke, and an even larger number have purchased a car or two of buckwheat. The consumer, however, when he is confronted with the fact that there is a shortage of anthracite now intimates that it is artificial and that everything will be all right soon.

Steam coal is little changed, although buckwheat may be said to have made some gains. Rice and barley are plentiful, and all sizes continue to be sold off company prices.

BALTIMORE

The fuel committee continues to take up a number of questions, especially along hard coal lines. One of the interesting situations of the moment in this regard has to do with a Pennsylvania operator who is said to have made offers by letter of coal at a price considerably above the maximum.

The situation of the hard-coal dealer is none too pleasant. More than 40 000 families are still without coal and the complaints that are pouring in are of a strenuous nature. Dealers say that it is hard to deal with some of their old-time customers who think they should be given preferential treatment, and who insist upon having hard coal. A number of the dealers have gotten down to the delivery of one-ton lots and are far from getting around the circle of their customers even on that basis. Coal is coming in at the rate of about 3,500 tons per day, with a shortage of over 250,000 tons to meet.

BOSTON

Householders are still proceeding comfortably on the assumption that somehow they will have enough coal to keep them warm through the winter. Receipts are discouragingly low, especially by the all-rail route, and retail dealers who have not been able to make one-ton deliveries on more than a fourth of their orders are wondering what will be the outcome.

At wholesale production lags notably. A succession of miners' holidays is one cause, and a developing car shortage is another.

BUFFALO

The supply is coming in so slowly that consumers are in despair. Dealers are wondering how they are going to stand the pressure when cold weather sets in.

Lake movement is rather light although for October the loading was 797,100 net tons as compared with 794,400 tons last year. Last week loadings were 94,200 tons, of which 47,400 tons cleared for Duluth and Superior; 3,000 for Hancock; 600 for the Soo; 17,500 for Milwaukee; 6,200 for Escanaba; 7,500 for Chicago, and 12,000 tons for Green Bay. Freight rates are 40c. to Duluth; $1 to Hancock and the Soo; 50c.@60c. to Chicago; 50c. to Milwaukee and Green Bay, and 55c. to Escanaba.

Coke

CONNELLSVILLE

The market is fully as strong as a week ago, from the price view-point, and a close analysis might show it a shade stronger. Distress coke, on track and requiring to be moved, goes at about $7.50, while for shipment over a few days or more the market is steady at $8.

Current buying appears to be light, while production has been increasing continuously. Prevention of further decline appears to have occurred by a number of furnaces concluding to buy to the end of the year on the drop from $12 to $8, not waiting for any further decline, and insuring themselves against an advance in December, which might occur on account of railroads being affected by bad weather.

The pig iron market is very dull and it seems improbable that any more idle furnaces will go into blast in the near future. Furnaces consider $8 altogether too high for coke, when they have difficulty in selling pig iron at $30 and have to make iron on old orders at considerably less. Foundry coke remains at $10 to $11, with only a moderate demand.

The *Courier* reports production during the week ended Oct. 28 at 109,110 tons by the furnace ovens and 50,670 tons by the merchant ovens, a total of 159,780 tons, an increase of 13,060 tons.

UNIONTOWN

Clearing up of congestion at the Lakes together with a railroad jam in the Eastern market were responsible for a stiffening of both the Eastern and Lakes market this week in the Connellsville region. As soon as the jam at the Lakes was relieved buyers there commenced sending orders into the region.

A quick coke market with a slipping price has tended to absorb much of the surplus furnace tonnage to the point now where coke is again becoming scarce. On top of that is renewal of contract negotiations, the first of any importance this year, indicating that some furnaces at least prefer to have their fuel supplies come in regularly than to take chances on a temporary advantage in spot sales.

Steam coal is quoted at $3@$3.50 and byproduct, $3.50@$3.75.

The strike situation remains unchanged. The union is continuing the erection of barracks at the various coke plants replacing the tents occupied by strikers during the summer.

BUFFALO

Coke is not active so far as the big smelting trade is concerned and is quoted by jobbers at $10@$10.50 for foundry, $9.25@$9.75 for furnace and $7@$7.50 for odd grades. The local byproduct plants are increasing their oven activity on account of the domestic demand, selling their screened product at $12 at the ovens.

Chicago and Midwest

And Now Domestic Sizes Lose All Their Buoyancy

Producers Decline to Drop Prices but Demand Slacks in Hope That Spens Will Lower Market—Nut and Egg Are Suffering with Screenings.

The main struggle going on all last week in this region was to prevent the slump of prices on domestic sizes. It cannot be denied that demand for domestic egg and nut and even for lump slacked off noticeably after Fuel Distributor Spens' visit to the Illinois and Indiana producers Monday and Tuesday, Oct. 30 and 31. He asked that domestic prices be cut. The producers of both states declined, but the market sagged anyway and the only thing expected to save it was a cold wind from the North.

Steam demand continued to be absent. Almost every car of screenings that was not shipped under an iron-clad contract had to be forced. Southern Illinois sank as low as $2.25 when it had to go on the open market though a good deal was shipped at as high as $3 on contract. Car supply did not improve in any field but the weakening of the market made it impossible, for the first time, for some of the fields to use all the cars that were allotted them.

Practically all the business the western Kentucky field gets is day-to-day trade, which is unsatisfactory. Lump there is quoted at $4.50 @ $5.25 but there is shaving of the price occasionally to get all the output started away from the mines. In eastern Kentucky a few big buyers, concluding that Jan. 1 will see the market upset, are beginning to contract for the entire output of certain operations from now until April 1, at a figure a little above the present mine run market.

CHICAGO

If the Chicago coal market was discouraging a week ago, now it is absolutely depressing. The visit of Fuel Distributor Spens and his public efforts to get domestic prices reduced by agreement among coal men has had the inevitable effect. Domestic demand, which was the only demand there was, has softened. Continued warm weather has noticeably slowed buying of big coal. People who were more or less of the opinion that prices would drop, now are assured of it—and another ten days of this warmth is certain to produce that result.

Up to the end of the week the principal Franklin County producers published no concessions on their lump price of $5.50. Central Illinois lump ranged $4.50@$4.90 whereas some of it had previously sold a little above $5, and Standard district lump had hard sledding at $4.25. Indiana lump maintained its level of the week before. Egg and nut sizes weakened some and screenings continued to be a sodden drug on the market.

A small volume of Pocahontas kept reaching here at $6@$6.25 and enough hard coal was in the market to supply a part of the demand, though most of this anthracite, as usual this year, is shipped here by one concern. Old line company mine prices on the larger sizes range $6.92@$8.25 but occasional shipments of independent coal average around $12.50@$13 with an offer on a small quantity now and then running much higher.

Trade in everything has been getting lighter day by day for the entire week. The coal fraternity is still watching the Northwest skyline and the weather reports for hopeful signs of a storm and coal such as drifted down into Utah and Wyoming. When it comes, they say, the abnormal coal situation will remedy itself in large measure.

ST. LOUIS

Buying of both steam and domestic is practically at a standstill. Contracts are being held up and almost no coal is moving except that which is forced in anticipation of lower prices. Dealers have a pretty fair supply on hand and in transit and are afraid of being caught in the event of a decrease. This same condition applies to the country.

A summing up of coal men's opinions here is that a price on southern Illinois domestic size will be somewhere around $4.25@$4.50. This would mean a cut of up to $1.25 under present prices. Figuring on the same basis, Mt. Olive for country shipments would be about $4 and for St. Louis shipments would range about $3. This is almost impossible. Standard, based on the proposed reduction in the price of southern Illinois, would be $1.50 under southern Illinois, which would be about $3 for domestic sizes.

Retail prices, Nov. 1, for sidewalk delivery, were: Standard, $6.75; Mt. Olive, $7.50; Carterville, $9.50; Anthracite, $15.50; Coke, $12.50; Smokeless, $14.

Anthracite receipts recently compiled show up to Sept. 30, 5,000 tons had been shipped to St. Louis; 1,500 tons were shipped the week ended Oct. 7 and 3,000 tons ended Oct. 14.

WESTERN KENTUCKY

The field is getting a slightly better car supply, due in part to shorter hauls, cars getting back to mines more rapidly, and due to the fact that repairs are being made to slightly disabled equipment more readily now that the railroad shops are speeding up.

October car supply ran slightly better than 36 per cent on the I. C., and about 24 per cent on the L. & N. This was a better showing than in September. Production has been maintained on car-supply basis.

It is reported that some western Kentucky production has been loaded out by water to Memphis and Southern river points, by loading barges one-third to one-half full, and using light draft towboats. With a very poor stage of water in the Ohio, river movement has been necessarily small.

General prices appear to be a little weaker, though best coals have held their own.

SOUTHERN ILLINOIS

Continued mild weather has prevented the speculative market that was expected about this time. While lump and egg from the Carterville field is moving fairly well, nut coal and screenings are barely moving and some mines are carrying no bills. The tendency is to put off buying until something definite is known as to what the Government is going to do about prices.

In the Mt. Olive district there has been a surplus of all kinds of coal the past week. One reason that domestic coal does not move is on account of hopper-bottom equipment. Steam is unusually slow. The Chicago market for this coal has been easy and very little is moving to Omaha and Kansas City. The situation in the Standard field is bad. Screenings are down to $1.25, while 2-in. lump has dropped from $3.75@$4 to $3.25 and the steam nut has gone as low as $2.50.

Railroad tonnage out of both the Mt. Olive and Standard fields is fairly good. Mt. Olive district screenings are holding at $1.50@$1.75, while Carterville are down to $2. There have been occasional breaks in the prices of other sizes, but as a coal the Carterville and Mt. Olive fields are maintaining their domestic prices pretty well.

Movement of coal out of the Standard field has been extremely bad on account of embargoes. The railroads are obliged to take the billing and then they just put the coal on a side track and there it stays.

LOUISVILLE

A considerable volume of day-to-day business is being handled and a little open business where jobbers are given instructions to ship all they can secure at bottom prices. It is reported that some of the larger consumers have been placing a few contracts for production of mines, or part production, to April of next year. Some producers are unwilling to contract, as they see a higher market later, but others are very uncertain concerning the market from January forward.

Some coal men at the present time are arguing that cold weather will create a big demand, and that prices will jump fast, and that neither mines nor railroads will be able to take care of demand. Others hold that when Lake movement stops it will force prevent shippers to the Lakes to look for business, and will result in much larger production of lump coal which will take care of domestic demand, while screenings will go a long way toward supplying industrial demand.

Most retailers have very little coal on hand and only about half the domestic stokers have laid in fuel winter supplies. Undoubtedly retailers are going to be in the market rather steadily this winter for practically everything.

Eastern Inland

Last-Minute Lake Business Checks Declining Prices

Good Dispatch at Lower Ports—Car Supply Only Factor Limiting Production—Domestic in Strong Demand—Ohio Producers Co-operate with Fuel Authorities.

Prices are decidedly firm. The end of the Lake season is in sight and last-minute orders have helped the market. Dumpings are proceeding steadily and dispatch at the lower ports is good. Car supply is the only factor limiting production and there is so little free coal available that the market appears quite active. Domestic is in strong demand and industrials are quietly taking all possible tonnage without creating a bidder's market.

Ohio coals show a wide range. Most of this fuel is going out of the state at figures in excess of Ohio's maximum prices. At a conference last week Ohio producers agreed to co-operate with the authorities who seek to avoid the confusion of replacing this tonnage from outside sources.

EASTERN OHIO

Operations during the week ended Oct. 28 were again diminished by car shortage. Output was less than any week since early September. Tons produced amounted to 254,000 or about 47 per cent of rated capacity. Production during the calendar year indicates that out of a potential capacity of 35,977,000 tons only 8,401,000 tons or 23 per cent have been mined. This transportation situation is now usually bad as it does average this field and the volume of output is limited solely by car supply.

With the modest quantities of free coal available, demand has been considerably in excess of the supply and the trade therefore quite active. However, the larger steam users are awaiting the closing of Lake navigation at which time it is confidently expected there will be a plentiful supply.

In the spot market prices are holding at the maximum figures set by the Ohio Fuel Administration. Only small quantities of Pocahontas here are reaching this section.

Receipts at Cleveland during the week ended Oct. 28 were the largest of any week during the past two years. Total receipts amounted to 1,265 cars, an increase of 248 cars over the preceding week. Of this quantity 1,020 cars were consigned to industries and 245 cars to retail yards. Weekly receipts for the past month closely approximate requirements.

It is figured that in order to take care of this season's program about 1,000,000 tons of Lake coal will have to be sent forward.

Receipts at the lower docks are averaging around 2,300 cars per day and loadings around 2,500 cars daily. The railroads had 8,871 cars at the Lake front on Nov. 1 and 4,800 cars in transit.

CLEVELAND

The market has turned definitely upward. Demand for industrial fuel is broker than for some months. There is still no sign of buying for stock piles, however. That hand-to-mouth buying still prevails is evident from the fact that dealers report numerous pressing inquiries for delivery within 24 or 48 hours. Such prompt delivery is difficult to obtain and as a consequence consumers are beginning to realize that they have stayed out of the market too long.

The car supply is still scarce and much Ohio coal has been going out of the state because of the low fixed prices. As a result of the intervention by Federal Fuel Distributor Spens Ohio operators have agreed to load more fuel for consumers within the state in return for the assurance of more cars. The approach of cold weather, however, is expected to increase the demand sufficiently to keep the market strong.

Prices are up on an average of 50c. a ton for most grades over two weeks ago. No. 8 ¾-in. is bringing $4.75 against $4.25 two weeks before. No. 8 slack is quoted at $3.50. Middle district mine run is quoted at a range of $3.50@$3.75; screenings are $3.50@$3.75.

Up to Nov. 1 a total of 14,000,000 tons of coal had been sent by Lake to the Northwest. This compares with 20,000,000 tons to Nov. 1 in 1921. It is expected that between 3,000,000 and 4,000,000 tons more will be shipped.

PITTSBURGH

Coal prices on the whole are decidedly firmer than a week ago and the market in general may be said to have advanced about 25c., with the exception of domestic. By agreement with the fuel authorities operators are limiting 11-in. domestic lump to $4.50 as maximum, which compares with $5.25 @$5.50 ruling early in September. In some quarters it is suggested that the stiffer attitude on other grades is due to the concession made on domestic.

Car supplies continue far below capacity, but are as good as at any time recently. There is a heavy movement of Lake coal with some purchases being made. The line trade appears to be well taken care of as to current consumption. There does not seem to be any disposition to stock coal at this time.

Steam is now quotable at $3.25@$3.50, this being for either Pittsburgh district or Connellsville coal of good grade. Byproduct commands $3.75@$4 or of fair grade. Both steam and byproduct are 25c. higher than a week ago. Gas coal has stiffened even more, good Youghiogheny commanding $4.50 for mine run and $5@$5.50 for screened, while the better Connellsville gas coal brings $4 or possibly $4.25 for mine run.

BUFFALO

Some shippers call the prices a little stiffer, some do not. It all depends on the temper of the consumer. At the same time the buying is fairly good. The number of sellers has increased considerably of late, here at least, and that gives the market a dull look.

Bad storms will, no doubt, stiffen up coal prices, but more cars will put the prices down. It is a stand-off which idea is to prevail. Only scarcity of cars has held prices up where they are. While there does not seem to be much coal moving that has not been sold, if shipments fail to come in the consumer will pay more for a quick shipment. Quotations are about 35@$5.25 for Youghiogheny gas lump; $4.75@$5 for Pittsburgh and No. 8 steam lump; $4@$4.50 for Allegheny Valley and all mine run; $3.25@$3.50 for slack. To this add $2.09 to Allegheny Valley and $2.24 to other coals to cover freight.

COLUMBUS

With comparatively warm weather still continuing there is a slight recession in the domestic trade and prices have started to weaken. Dealers' stocks have been gradually increased during the past few weeks and some are not buying any more coal until they have disposed of what they have on hand.

Retail prices are steady at former levels. Hocking lump is not plentiful as a large part is still going out of the state. West Virginia grades are selling around $10 delivered and Pocahontas even higher.

Steam trade is rather good. Prices at the mines are firm at state fuel administration levels with $3.75 the usual figure. Screenings are selling slightly lower than the levels provided by the administration.

DETROIT

With moderate temperatures continuing, buyers are not manifesting the degree of interest that jobbers believe is necessary. Bituminous coal is coming into Detroit in moderate supply, but the quantity arriving apparently just about equals the amount called for in the hand-to-mouth system of buying.

Most of the receipts are coming from mines in Ohio. Hocking lump and egg is quoted $5.65@$5.85; mine run is $3.75, nut, pea and slack, $3.35. Three-quarter lump from the Fairmont district is offered at $4.50; mine run, $4, slack, $3.50. Pittsburgh No. 8 ¾-in. is quoted $4.50; mine run, $3.75; slack, $3.40. Four-inch domestic lump from West Virginia or Kentucky is held at $6.25, with egg at about the same price; mine run and slack are $4.

No improvement has occurred in anthracite supply. Shipments are equal to perhaps one-third of the normal daily requirements.

NORTHERN PANHANDLE

Mines were somewhat handicapped by the difficulty of getting coal through the Holloway yards of the B. & O. but with other outlets available Western and Northern shipments were not affected to the same extent as in other regions of northern West Virginia. Although the demand for steam coal is not particularly keen, yet buying is on a somewhat larger scale than it has been recently.

Northwest

Dull Market May Precede Storm When Cold Comes

Bituminous Demand Is Just as Soft as Weather—Prices Weaken in Spots—Only Cry Is for Hard Coal—All-rail Competition Causes Concern.

Soft weather prevailing for more than a week is depressing the market and even though receipts from the Lakes are not tremendous, yet soft coal continues to pile up on the docks with consequent worry on the part of dock men and some shaving of prices here and there to move it. This is not true of hard coal, however. The demand in most quarters has grown stiffer as the days pass and prices, especially at Duluth, show an upward tendency. As much as $1 has been added on all sizes above buckwheat, which, as usual, is a drug. In Milwaukee the increase has not made any progress.

The volume of rail coal going into the Northwest is worrying many dock men. Illinois and Indiana mines are shipping steadily into southern sections of this territory, finding there a chance to expand a steam market that is almost dead in their own states. On the whole the situation is quite unsatisfactory for everybody concerned.

DULUTH

Anthracite is by far the most prominent feature here. With the advent of cold weather there was a general rush of hurry-up orders which has increased until by now dealers are at their wits end and are supplying lots of one and two tons. Two companies have advanced the price of anthracite $1 at the dock. Others may follow suit at once. Egg is selling at $13.50, nut at $13.80, stove at $13.75, pea at $12 and buckwheat remains $7.50 as before.

A firmer trend is noticed in bituminous prices, but there has been no upward change as yet, with the exception that the 25c. differential between Hocking and other soft coals has been eliminated.

Forty-four cargoes arrived during the week, of which seven were anthracite. On the way from lower ports are twenty-four of which four are hard coal. Vessel owners here have given assurance that there will be sufficient bottoms to carry all available supplies until freeze-up.

Official figures have not been released, but it is estimated that 1,600,000 tons were brought up during October. The majority of this was bituminous. According to C. P. White, federal administrator for the Northwest, this section will receive plenty of soft coal, but will only get about 30 per cent of needed anthracite by water.

Dock men here fear they are losing lower state customers to Illinois rail coal shippers.

MILWAUKEE

Mild weather has a soothing effect on the market. Demand is only fair, and there is an absence of concern as to the winter's fuel supply, notwithstanding disturbing newspaper reports predicting a big anthracite shortage. Reports of reduced prices in the Ohio and Pennsylvania tend to check buying of soft coal to some extent.

The yards are filling up with soft coal under heavy receipts by Lake. Coal will have to move to the interior much faster than it has if room is to be provided for the final rush before the close of navigation. Anthracite is coming slowly, and it is evident that dealers are wary about stocking up at present prices. There has been no change in prices of either coal or coke. Any raise in prices is bound to be scrutinized very closely by the state marketing commission.

October receipts by Lake, not including carferry receipts, aggregate 141,414 tons of anthracite, and 654,945 tons of soft coal, making the season's receipts 142,114 tons of the former, and 1,945,900 tons of the latter. Last year the receipts during the same period aggregated 855,750 tons of anthracite, and 2,319,716 tons of soft coal.

MINNEAPOLIS

The fall situation is a contest of endurance, with buyers holding out as long as they dare, and accordingly a great deal longer than good sense would dictate. The buyers have forced various concessions in prices on soft coals, both dock and all-rail even though the volume of fuel available or in prospect does not equal the required requirements.

If the prolonged endurance test works out to the advantage of the buyer again this year, it will be obvious that the wholesale trade will have a difficult task ahead to market coal in normal seasons—if there is ever to be such a period again. Buyers won in two or three endurance tests and feel their ability to overcome any situation that they may encounter.

There is left only about three weeks of navigation on the Great Lakes. And despite the excellent tonnages moved to the docks, the output for the season shows a sharp decline. Even after deducting the carry-over of last spring and figuring the tonnage consumed last year, the present season's totals are low. On any reasonable comparison of the two seasons the present winter will not have enough coal. And the surplus will have to be filled out with all-rail coal. Doubtless there will be a somewhat better showing from the Illinois mines than a year ago, but the tonnages will have to show a heavy gain to make this year's receipts equal to last year's consumption.

New England

Buying Falls off Again; Spot Prices Are Uncertain

Little Interest Evinced in Current Market—Wide Variation in Quotations and Only Scattered Tonnages Placed at Lowest Figure—Consumers Supplied in Advance.

Buying has again dropped off. There is so little interest in the current market that it is hard to say for just what prices spot coal is selling. Pocahontas and New River are being offered all the way from $8.50 down to $7.90 on cars, Boston or Providence, for inland delivery, but even at the lower figure only scattering tonnages are being placed.

The smaller consumers entered the market for moderate purchases ten days or so ago, but, having arranged for their requirements for the balance of the calendar year, they see no reason for buying still further in advance. The larger users have comfortable reserves, due chiefly to heavy receipts of British coal, and apparently there is no disposition even to sound the present market.

At the Virginia terminals a few cargoes are moved, but the great bulk of coal at the piers is being applied on early contracts. Most of the agencies have been out scouring the territory, but so far as reported their efforts bring only small results. In other words, the expected firmness in prices has not materialized.

The smokeless coals are being held at $6.75@7 per gross ton f.o.b. vessel. Accumulations, however, have accumulated more than 100,000 tons at the Hampton Roads ports, due not to increased demand at tidewater but partly because of smaller receipts from the mines and partly also on account of better car movement west. With the season advancing it is only natural, particularly in view of anthracite shortage, that the Western and Northwestern should absorb an increasing proportion of prepared coal.

The trade all over Central Pennsylvania continues quiet. Receipts at the Hudson River gateways show a fair average movement, but coal operators are apprehensive that orders will fall actually short of car supply. At the New York and Philadelphia piers there is practically no business of moment going

Cincinnati Gateway

Indecision Is Outstanding Feature of Spotty Market

No Notable Price Concessions with Lifting of C. & O. Embargo—Recessions Foreshadowed—Huge Movement of Loads, but Return of Empties Falls Behind.

The lifting of the embargo which the C. & O. enforced during the week ended Oct. 31 brought about another spotty market that has been more largely marked with indecision than price concessions. Evidences of coming drops in prices can be observed in rejections of coal shipped through the Cincinnati gateway to the steel interests in the neighborhood of Chicago as well as the industrial centers around Detroit and Toledo.

Car movement over the Ohio River bridges has again climbed to stupendous figures although the superintendent of terminals here pointedly remarks that there has not been a corresponding return of the empties. All three of the coal carriers using this as a connecting point are in distress through lack of motive power and shortage of cars. Most of the Hazard and Harlan mines report that are lucky to get 1½ to 2 days' supply of cars.

HIGH-VOLATILE FIELDS

Kanawha

An embargo imposed by the C. & O. on the eastward movement of Kanawha coal during the final week of October forced all the product of this field into Eastern markets where there was no demand whatsoever and to which producers of high-volatile coal had been making no effort to ship. The embargo thus had the effect of forcing further recessions in prices. Producers were forced to take $3 a ton or lower, with the alternative of closing down, as against a price of $4 in Western markets, with gas coal commanding a price of little less than $4.50. With the opening up restricted car supply made but little difference that usual.

Logan and Thacker

Embargoes also affected the Logan district. For operators had any Eastern orders when the embargoes became suddenly effective. Many of the mines were shut down during the last days of the month.

A great deal of interest was attached to the announcement made as to the abandonment of the strike called by the United Mine Workers in Mingo County in 1920. During the latter part of October and the first few days of November there was a somewhat better run of cars than in other fields as that Thacker mines were able to produce 40 per cent of normal. Prices prevailing in the West are fully $1 a ton higher than in the Eastern, and almost the entire product continues to move westward.

Northeastern Kentucky

Production in the section supplied by the C. & O. was upset during the closing week of October. The embargo bottled up most of the product since nearly all of it is being sold at the Lakes and in Inland West markets. Mine run, so far as Western delivery is concerned, is commanding a price of $3.75@$4.15 but the same coal in the East cannot be sold for more than $2.75 @$3.

LOW-VOLATILE FIELDS

New River and the Gulf

Embargoes diverting coal from normal channels and a shortage of cars disarranged conditions in the New River field during the last week of October. All C. & O. coal was being moved eastward, without regard to whether it was produced in high or low volatile territory. The additional coal shipped to Tidewater and Eastern territory in general only caused further price recessions. In the East smokeless mine run, particularly at Tidewater was little more than $3. Lump could have been sold at $6@$8.50 but most of the smokeless producers were not selling it above $6, owing to the agreement with government agencies.

Demand for Gulf fuel would have justified a production of more than 50 per cent, which was all that was possible owing to limited transportation facilities. Physical difficulties prevent the shipment of much tonnage to the West where much better prices prevail. It is not possible to obtain more than $3.50 for mine run at Tidewater whereas the same coal would bring $6 in Western markets.

Pocahontas and Tug River

Inasmuch as the N. & W. was the only road handling much smokeless for points west of the Ohio River, the Pocahontas region managed to get a little more coal into Western markets than other smokeless regions. The N. & W. is not encouraging a large Western movement owing to the difficulty in securing the return of empties. The average mine is working two days a week. Run of mine for Western delivery is bringing about $6 a ton as against $3.50@$4 at Tidewater. Lump is being limited to $6 per ton although producers could secure practically any price they desired if so disposed.

Tug River production is being gradually increased but mines are still experiencing a great deal of difficulty in securing all the cars they need. In the ordinary course of events most of the coal originating in this district is sent to the West, and hence only a certain class of equipment can be used. The demand for byproduct is fairly active. Mine run commands a price of $6 which is equal to that for egg and lump under the fair price agreement. Very little of the product is going east.

Cincinnati

Lake buying has again tapered off here which, with a foreshortening of the steel demand has cut the high prices a bit for byproduct and gas coals as well as the steam and splints. The former still maintain the premium that has been exacted for months past though there is not the big spread between the two prices that there was two or three weeks ago. Domestic buying has been a little lighter and the production greater which has inclined the values toward softness—nothing radical, but lacking in stability.

There has been virtually little change in the smokeless lines. The movement westward has been better because of the release of some of the smaller sized equipment that was held at the Lakes. This with the easing off of the Eastern markets has caused more attention to be paid to the Inland trade and it would surprise no one—with the close of fresh water carriage—to see a much heavier movement to the customers whose orders have been booked for months by both Pocahontas and New River concerns.

The retail situation shows no change. Figures are still under those promulgated by the Ohio Fuel Administrator with some splint lump selling as low as $8.75, delivered.

South

BIRMINGHAM

Each succeeding week seems to increase the gravity of the car situation, the shortage being reflected in a decrease of 10,000 tons in production for the week of Oct. 28, as compared with the previous period. Official figures show that only 45 per cent of the equipment ordered was furnished, and indications point to a less favorable showing for the current week, mines located on the L. & L. being very hard hit.

There has been no improvement in the steam coal market—in fact it is weaker, if anything, consumers showing little interest in acquiring a supply far in advance of requirements. The supply available for the spot trade is about in line with the volume of demand except as regards the lower grades, there being some surplus of Big Seam and the like. Quotations on better grades are holding up well.

Dealers in domestic coal are showing considerable concern in regard to winter supply. Numbers of yards are practically empty, while none has stocked to any extent as yet, and the slow movement and curtailed production is being viewed with alarm. A few days of sustained cool weather would wipe out the supply on local yards.

VIRGINIA

Production losses in one section are being offset by gains in other parts of the field with mines on the Southern producing a much larger percentage than usual. The total output is still adhering to about 65 per cent of normal. Production is hardly more than equal to the demand. The price at Tidewater is little more than $3 a ton. Falling prices have had a tendency to eliminate some of the smaller mines.

News Items From Field and Trade

ALABAMA

It is reported that hydraulic mining of coal will soon be inaugurated at Alco, near Shiras, by the **Alco Coal Co.** Arrangements have been made to transmit electricity from the transmission line of the Alabama Power Co. to the hydraulic plant, which will pump water from Hurricane Creek for washing away the surface of the coal. About 500 tons a day will be mined by the new method, according to an official of the company. This is the first time hydraulic mining as applied to coal has been tried. The Alco company has spent about $56,000 on its new plant.

Erskine Ramsey, vice-president and chief engineer of the Pratt Consolidated Coal Co., and well known capitalist, has donated $100,000 as a nucleus for the erection of an engineering hall at Auburn, Ala., in connection with the Alabama Polytechnic Institute. It is announced that the additional funds needed for the erection of the building will be in hand by the first of the year, the new building to be known as **The Ramsay Hall of Engineering.**

COLORADO

The office of the secretary of state has supplied the information that the **Alamo Coal Co.**, represented by **George C. Manley**, Denver, has been incorporated for $1,000,000. William B. Lewis, 40 Wall St., New York, and Harry F. Nash, Denver, are also mentioned as incorporators. Both are identified with the Oakdale Coal Co., Mr. Lewis as president and Mr. Nash as vice-president and general sales agent. The latter is also well-known as the secretary of the Colorado-New Mexico Coal Operator's Association. The mine of the new corporation will be opened near the Kebler properties of the Colorado Fuel & Iron Co. at Tioga, near Walsenburg.

Benedict Shubart of Lindrooth, Shubart & Co., Denver, made a business trip to Chicago and other eastern points late in October.

ILLINOIS

Much interest has again been caused in the regions around Franklin and Williamson counties by the rumor that the **Big Muddy River is to be dredged** so that coal barges can come up from the Mississipi and coal shipped by water to points all along the river. The movement this time is said to be backed by some large interests, among them being Edward F. Goltra of St. Louis, owner of a large barge line on the Mississippi. The dredging of the river would no doubt be a big assot to the coal fields of southern Illinois, inasmuch as it would to a certain extent relieve the car shortage and make it possible to ship coal to Chicago and destinations an equal distance south, at least $1 per ton cheaper.

Robert Clem, a resident of Herrin, has been named a member of the Illinois miners' examining board by Governor Small. The position involves attendance of the monthly examinations in Springfield and pays a salary of $1,800 a year.

Fred W. Price, mine manager at the mine of the Tamaron & Little Muddy Coal Co., Tamaron, was seriously burned in a gas explosion recently. He was hurriedly given medical aid and is expected to recover.

The Consolidated Coal Co., St. Louis with three mines in the Mt. Olive field one at Collinsville and one at Breese, has bought two steam shovel unloaders that will handle 1,000 tons of coal daily from cars. Tracks have been laid over a big acreage and screenings and nut from 3-in. down will be put in storage at central points to be taken up next spring and summer. This is caused by the poor market. It also indicates a belief on the part of some operators that there will be a good market for steam coal after April 1. The Consolidated will store several hundred thousand tons. The **Southern Coal, Coke & Mining Co.**, of St Louis, blazed the trail by doing this pioneer work last winter. Its huge piles of storage coal were drawn on from April 1 to Aug. 1 and were to some extent the means of keeping the market from soaring on western Kentucky coals.

The Rex Coal Mining Co., of Rock Island, has been incorporated with capital of $20,000 and work has been begun on a mine one-half mile east of Warner. H. E. Bishop is president of the new company; C. L. Hintz, vice-president; and C. W Krueger, secretary and treasurer These men all live in Rock Island, and with A. Hintz and H. V. Burt, compose the board of directors. The lease obtained by the company consists of 600 acres.

It is stated that the **Kincaid Railway & Mine Supply Foundry**, of Kincaid, has been sold by the Peabody interests to **Duncan Brothers**, of Alton. It is also stated that the Kincaid plant will be operated in connection with the Alton plant, the latter employing over 500 men. The Kincaid factory has been closed since March 30.

The Great Lakes Coal & Coke Co., Chicago, with a capital stock of $125,000, has filed incorporation papers. The company will mine and deal in coal coke, by-products, etc. The incorporators are: Rushton L. Fordyce, George Shakel, and Walter Gramm.

The Buckley Coal Corporation has been incorporated at Springfield. The company is capitalized at $100,000. The concern will acquire mines and mine coal and other minerals. The incorporators are George W. Shwaner, Carl H. Eschoff, and Edgar H. Buckley.

J. D. Tracy, of the Department of the Interior, Bureau of Mines, who has been located at the Pittsburgh, Pa., experimental station, has been transferred to the Urbana station of the United States Bureau of Mines.

F. T. Lovering, for many years Western foundry representative of Pickands-Brown & Co., Chicago, has resigned, joining the force of Atwill-Makemson Coke & Coal Co., Chicago. Mr. Lovering will have entire charge of Western sales of foundry coke. **Atwill-Makemson Coke & Coal Co.** have recently been appointed exclusive sales representatives for the sale of Sloss-Sheffield Steel & Iron Co.'s solvay foundry coke, formerly handled by David Evans & Co., Chicago.

INDIANA

The Evansville Coal Co., of Evansville, has filed articles of incorporation and will engage both in wholesale and retail coal sales. The directors of the company are Charles W. and Frederick Cook of Evansville, Thomas C. Mullins, mayor of Boonville, and Samuel Ashby, an attorney of Indianapolis.

The Ramabo Coal Co., Indianapolis, has been incorporated with capital of $25,000. Directors, Charles S. Raub, Simon J. Martenet, Ferdinand Born.

IOWA

Fred Harper, and associates, of Givin, have organized the **Given Coal Co.** and are sinking a slope mine on the C. H. Colvin farm, two miles northeast of Givin. The mine will be open Jan. 1.

The Charles Schuler Coal Co., of Davenport, Iowa, is ready to operate a new mine two miles east of Alpha, Ill., on the Burlington an extensive switching system having been laid out within the past month. The mine is located about two miles from the railroad. The new mine is preparing to operate on a daily capacity of 35 cars. Mining rights on more than 2,000 acres have been secured.

KENTUCKY

Recent state incorporations include the **Moss Federal Coal Co.**, Pineville, capital $ 0,000, M. J. Moss, M. J. Moss, Jr., and M. H. Moss, incorporators; **English Ridge Coal Mining Co.**, Ryan, $5,000, J. J. Gregory, J. C. Fawbush and W. H. Rankin; **Ed White Coal Co.**, Dublin, $5,000, Edward White, John Stamper, Jr. and A. M. Hassell.

It is reported from Letcher County that J. L. McCormick of the firm of McCormick Va., representing the **Mineral Development Co.**, a Philadelphia coal holding corporation owning considerable undeveloped coal acreage in eastern Kentucky, is now in Letcher County securing leases, with plans for large development of coal properties in the Elkhorn fields, but without much possibility of development work until next year.

According to a press dispatch, official notice has been made of the **resignation of S. A. Keller**, of Middlesboro, as president of district 19 U. M. W., embracing the southeastern Kentucky and eastern Tennessee district. It is reported that the resignation along with that of **J. W. Brooks**, vice-president, was accepted by National President Lewis. **William Turnblazer**, national organizer, has been appointed district president, according to the report. The resignations and appointment became effective Nov. 1.

MARYLAND

For the time being it has been decided by the **Georges Creek Coal Co.** to abandon any attempt to operate the Big Vein mines of the company at Lonaconing, Md., and the company has resigned its organization and boarded up its mines. The company attempted to operate by a small force but the few men at work having received threatening letters, failed to report and the company has thought it advisable to suspend operations until more favorable conditions obtain. This concern will continue to operate its mines in West Virginia and western Pennsylvania.

MICHIGAN

Michigan's recently enacted fuel control law has not so far increased the available supply of coal nor is there given the legislation for any reduction in cost of fuel for domestic or steam use. Applications are being filed by brokers and other representatives of the coal trade who are required to take out state licenses. The applications embody information concerning the amount of coal or coke sold by the applicant last season, the amount sold so far this year and the quantity in possession of the dealer at the date of making a license.

MINNESOTA

The retail trade of the Northwest has been **urged to authorize shipping coal from the docks to the interior in open top cars** as a means of relieving the car shortage. Box cars are preferred, however, for winter shipping.

C. P. White, fuel statistician for the Northwest is urging consumers in that territory to lay in their fuel now and so aid in distributing coal as economically as possible.

The use of peat is urged upon farmers of Minnesota, who may have deposits available. Peat exists in considerable of the counties of the state. It is reported to be the equal in heating value of Australian wood. At a test made recently at Duluth, however, peat at a cost for fuel was found to be a failure. Although cheaper in the pure than coal it was found that a much larger force of men was required to handle the peat and that the bulk made storage and moving problems burdensome.

MISSOURI

The Kansas City Light & Power Co., which owns [illegible] of coal land located at Prairie Hill, has a force of surveyors at work selecting the route for a railroad from Salisbury to the coal lands. It is expected that the survey will be completed in about two months. A survey also will be made from the coal lands to Cairo in Macon County and the company is actively engaged in securing the [illegible] affording a connection with the Burlington road as well as the Wabash. The output from the coal lands is being contracted at this time. As soon as the road is completed it is planned the company will operate its own mines. The company is also interested in the development of the coal land and will mine the coal for its own plants, the remainder of the coal and other deposits.

Development of the coal field along the western border of Bates County has resulted in the boarding of [illegible] a mile from the Missouri-Kansas line, on the Wathena, and is already in reality an industrial town. Four companies of coal operators have [illegible] along the main line. Several more buildings are under construction.

E. L. Barton is opening up a coal mine west of Boonville. It will be the largest in that county.

Keystone Coal & Mining Co. of Baltimore

Mine Builders

St. Louis Coal Co., of St. Louis, capital

Carter Coal Co., of Lexington, capital

Carter-Mayo Coal & Grain Co.

The West Missouri Power Co. has bought

NEW MEXICO

The St. Louis Rocky Mountain & Pacific Co. at Raton, has awarded to Stearns-Roger Mfg. Co., Denver, a contract for furnishing the machinery for the new steel tipple at the Van Houten Mines. The power of the plant will be under the direction of **Frank A. Young**, chief engineer of mines, is now perfecting a central washing and preparation.

NEW YORK

The National Exposition of Power and Mechanical Engineering will open in the Grand Central Palace, New York City, and will remain open until Dec. 14, except on the intervening Sunday. The exposition will be the first large scale attempt to display mechanical and power plant apparatus so that the general consumer's state of development will be apparent and only to the highly trained engineer may he be the layman with knowledge of the newer developments. There will be seven sessions of the various devices that enter into the process of taking coal from the mine, handling it at the power plant, burning it to make steam to generate electric power and sending the current out through wires to the consumer.

The Mather Collieries Co., of Cleveland, a holding company for the Nos. 6 and 8 mines, has changed its business office to the Marion Trust Bldg.

Charles V. Crandall, vice-president of the Tennessee Coal Corporation of Knoxville, Tenn., is now making a tour of coal & iron properties, for investment purposes, and incidentally for the improvement of **C. B. Goode** of New York, a native of Amsterdam, Holland.

Lee Lattimore, son of Dr. and Mrs. Lattimore of the Quemahoning Coal field, with headquarters at Cumberland, Md., was a recent visitor to the New York market.

OHIO

Alex Vessels, who is identified with the Cleveland office of the Walter L. Ross Coal Co., has been promoted to a post of assistant to the general manager of the Ross Quemahoning Coal Co., also of Cleveland, of which he is interested.

Robert S. Tyson, treasurer of the Ohio Mahoning Coal Co. of Youngstown, was a recent guest of the officials of the Ohio Quemahoning Coal Co. at Cleveland.

Frank Easley, president of the Jamison Coal & Coke Co., and **Pat Casey**, of the Pat Casey Co., Akron, were visitors at the Cleveland Coal Exchange the week of Oct. 9.

I. E. Woods, of the Crystal Block Coal Co., Cleveland, is confined to his home with a broken leg.

Products against coal and oil companies have been started in the Hamilton County Common Pleas Court by the Hamilton Coal Co., Cincinnati. Unsecured claims are asked for $1,000 and $2,000 respectively. The petitioners allege that the defendants have failed to pay for coal delivered to them.

Frederick Gilbert, of Cleveland, has been appointed receiver for the Ohio Fuel Co., Columbus, by Judge Wilkin of the Federal Court. The receivership is the result of a suit brought by the Ohio Fuel Co. to collect $1,000 alleged to be due for coal delivered to the defendant company. The receivership is not expected to interfere with the operation of the company's mines.

Mine Workers operating mines south of Jackson are preparing to ask a wage increase of 10c. per ton, it is reported. The mines are located in the Madison district.

OKLAHOMA

Drills have been busy for many months prospecting up the coal lands lying northwest of Vinita, southeast of Centralia and west of Welch and Bluejacket, and veins have been found underneath a vast area. One transaction alone shows the **magnitude of the expected development.** It is the filing in a Chicago trust company of a mortgage for $4,500,000 given by the **Central Coal & Coke Co.** on 70,000 acres of coal rights. To tap this coal country a railroad has been proposed extending the Miami electric line going west through the coal fields to Tahlequah, and this line is only awaiting some money to build. Another road has been proposed from Caney to Vinita. Still other lines have been proposed from the Missouri Pacific, in Kansas, into the coal fields.

The Pittsburgh-Midway Coal Co., which has been operating one steam shovel near Chisholm, has installed a second shovel. It is taking the coal out at a depth of about 14 ft. This company has bought outright several hundred acres of land and is pushing operations in an aggressive way.

PENNSYLVANIA

R. E. Garrett, J. E. Stewart, D. E. Thompson, T. F. Miller and Charles Buchman, constituting the mines committee of the **Bertha Coal Co.**, Pittsburgh, have just returned from an extensive survey of the company's properties in Pennsylvania, Ohio, West Virginia and Kentucky. Despite many production handicaps the company will show an output of 500,000 tons greater than any previous year. This company is now building plans whereby production will be greatly increased in 1923.

One of the side issues of the seven-month industrial struggle in the **non-union fields of the Berwind-White Co.**, was pointed in the miners last week at the hearing conducted by **Mayor Hylan's investigating committee** from New York City. It looks to the Ohio as though it was simply a well-organized plan by union officials to get some publicity and possibly sympathy and help from outside sources. Mining conditions are good at Windber and the Berwind-White Co. is paying as much, and in some instances more, than the union operators. It is understood the company has offered work to all who want it.

More coal lands were sold at sheriff's sale in Greene County, Pa., on Oct. 9 than in any previous sale in the history of the county. The sale was attended by a large crowd of buyers and bidding was spirited. The principal tract sold was that of the Pittsburgh Coal Co., which was purchased by the Pittsburgh Coal Co. of Delaware, a subsidiary company. There was no intimation as to what the deal would be closed.

James P. Walsh, vice-president of the Pittsburgh Coal Co., in charge of sales, has resigned.

The partnership conducting business under the name of the **Phoenix Coal & Coke Co.** has been dissolved. **H. C. Schade** will continue business under the old name.

At the annual meeting of the **Pennsylvania State Chamber of Commerce**, which convenes in Harrisburg on Nov. 14, **W. D. B. Aiken**, chairman of the public service commission, will discuss the coal situation. Mr. Aiken is prepared to talk on all phases of the question and to discuss findings of the commission as to supply, price and distribution, disclosing facts and basic conditions of interest to both producer and consumer. The program contains an exceptional number of speakers, which include Governor William C. Sproul, Former Governor Frank O. Lowden of Illinois, United States Senator David A. Reed, Dr. J. T. Holdsworth of Pittsburgh and Vernon F. Taylor of Indiana.

Shipments of anthracite for the coal year, April 1 to Sept. 30, 1922, as compared with the corresponding period last year, and reported to the Anthracite Bureau of Information by the initial transportation lines, were as follows:

	Coal Year to end of Sept., 1922 Tons	Coal Year to end of Sept., 1921 Tons
P. & R. Ry.	926,516	6,628,806
L. V. R.R.	950,769	6,037,810
C. R.R. of N. J.	345,447	3,282,575
D. L. & W. R.R.	560,717	5,470,016
D. & H. Co.	533,858	4,489,212
Penn. R.R.	382,007	2,439,508
Erie R.R.	497,841	3,696,454
N. Y. O. & W. Ry.	128,427	778,937
L. & N. E. R.R.	181,550	1,529,266
Total	4,507,132	34,350,584

Coal mining companies in Cambria County have filed appeals with the county commissioners from the triennial assessment on the grounds that the real estate was not assessed at the actual value thereof, being assessed without due regard to the valuation and assessment made of other similar properties in the country, but was assessed in excess of the value and assessment of such other properties. The following companies filed appeals: Holding of the **Wilmore Coal Co.**, Richland and Adams townships and Scalp Level borough and Conemaugh, Croyle and Stonycreek townships; **Berwind-White Coal Co.**, Richland and Adams townships and Scalp Level borough; **Maryland Coal Co.**, Richland, Croyle and Adams townships.

Wellington M. Bertolet, of Reading, has been appointed as state director of anthracite and has reported to the State Fuel Commission to act in conjunction with **R. C. Morse, Jr.**, director of transportation, and **E. W. Parker**, director of anthracite distribution. The appointment had been made in order to apportion equitably the allotment of anthracite among Pennsylvania consumers and to secure a fair adjustment of coal shipments to local dealers and thereby secure greater public relief in the present emergency.

TEXAS



LEE M. POOL
President Retail Coal Dealers' Association of Texas

Lee M. Pool, of Greenville, is the new president of the Retail Coal Dealers' Association of Texas. Mr. Pool is a young and progressive retail coal dealer at Greenville, and is taking an active interest in association affairs.

VIRGINIA

The Virginian Railway is ready to proceed with **construction of its new steel coal pier** adjoining its present pier at Sewall's point. The new structure will cost slightly over $3,000,000 and will require two years to build. Sanford & Brooks, of Norfolk and Baltimore, will do the piling and build the super-structure, while the Bethlehem Steel Bridge Corporation will build the pier. The Atlantic, Gulf & Pacific Co., of Norfolk, will do the dredging. Plans for the pier are to make it the most modern in the world.

Depression in the coal business was assigned as the reason for the closing Nov. 1 of the Norfolk offices of the **Willard Sutherland Corporation. Chester B. Koontz**, formerly with the West Virginia Coal Co., handled the business for the corporation.

WEST VIRGINIA

It has been possible to increase production to 5,000 tons per month at the plant of **Gilbert Smith** on Lick Fork in the New River field. Development work was not begun at this plant until late in June so that the owners of the mine believe that favorable progress has been made in getting the property on a productive basis.

The Consolidation Coal Co. has taken steps to build an industrial town of 2,500 homes at Coalwood, believed the largest enterprise of the kind ever undertaken. It will involve an expenditure of over $10,000,000.

The following West Virginia coal corporations have increased their capital stock in the amount named or else have been granted authority to do so by the state secretary: **Virginia Fuel Co.**, from $20,000 to $100,000; **Home Coal Co.**, from $25,000 to $100,000; **Raleigh Wyoming Coal Co.**, from $500,000 to $3,500,000; **Columbia Coal Co.**, from $90,000 to $165,000. **The New Republic Coal Co.** has been granted authority to decrease its capital stock from $250,000 to $50,000.

The plant of the **Standard Thacker Coal Co.**, operating on the Polk Harris farm west of Williamson has changed hands, having been bought by a company in which Judge R. D. Bailey of the circuit court, Sheriff A. C. Pinson of Mingo County and Andy New are prominent stockholders. The purchase price is understood to have been approximately $70,000.

The Price Hill Collieries Co., operating near Mt. Hope, is adding new equipment to its plant and has placed a contract with the Fairmont Mining Machinery Co., for a three-track shaker screening outfit, equipped with loading booms.

In line with other improvements being made at the plant of the **Cambria Coal Co.**, of Clarksburg, the object of which is to increase the productive capacity of the mine, a bar screen outfit is being added to the equipment at the company's plant.

Charleston capitalists have launched the **Gilbro Coal Co.**, the offices of which are to be at Charleston. This concern has a capital stock of $50,000. Active in organizing the company were W. M. Gillie, Duke W. Hill, P. S. Stewart, S. H. Harrison and T. Brooke Price, all of Charleston.

Organization of the **William Ann Coal Co.** of Huntington presages operations on a large scale, this company being capitalized at $200,000. Interested in the new concern are: Joseph H. Bowen, and E. S. Baker of Bramwell; D. T. Prichard and W. E. Prichard of Huntington; D. H. Prichard of Cincinnati.

Owing to the fact that they did not like one of the teamsters employed at one of the plants of the **Gilbert and Davis interests on Scott's Run** in Monongalia County, **approximately 300 miners went on strike** on Oct. 26, and for a time refused to work, notwithstanding the fact that officials of the union informed them they were violating the terms of the contract made with the operators. Matters even went so far that the president of sub-district No. 4 conferred with International President John L. Lewis with a view to having the charter of local No. 4775 on Scott's Run revoked. Later, officials in the union went to Scott's Run to talk to the men and to induce them to return to work without further violation of the union contract.

For his participation in the attacks on Willis Branch during a period of two years and particularly for his part in the conspiracy to remove a machine gun from the station of the Virginian Ry., at Pax, **George Barrett**, an international organizer of the United Mine Workers for district No. 29 was sentenced in the circuit court of Pocahontas County, during the last week of October, to **serve six years in the West Virginia State Penitentiary.** Some of those implicated in the plot turned state's evidence and it was largely on their testimony that the jury found a verdict of guilty. "Flat" Williams, one of the witnesses for the state, testified as to his part in the plot but stated that he thought the machine gun might have belonged to Barrett since he had been told that guns were being shipped in to aid the union cause.

W. E. Deegans, who is widely interested in southern West Virginia coal properties is one of the leading figures in the newly organized **Beda Smokeless Coal Co.**, which will have its principal office at Huntington. This company has an authorized capital stock of $25,000. Others interested in the new corporation are: Kathryn Deegans, Huntington; John B. Hofmier, Fort Worth, Tex.; J. P. Chapman and M. A. Chapman, of East Bank.

CANADA

"The coal measures of Vancouver Island" is the subject of a report prepared by **Dr. J. D. Mackenzie**, head of the B. C. Office, of the Canadian Geological Survey, who has been engaged in the indicated researches for the past two years. He is of the opinion that the amount of recoverable coal on the island is considerably below what has been estimated. He points out that there are three workable coal horizons in the Nanaimo district, and only one in the Comox district, the latter lying over the pre-cretaceous or barren formation and disturbed by protrusions of the latter in places.

Finding the **sale of Welsh coal to be drugging**, the Brantford, Ont., City Council has reduced the price to $18 per ton. Niagara Falls, Ont., coal dealers have complained that in their purchases of coal supplies they are compelled to pay a freight charge of 70c. per ton for haulage across the Suspension Bridge, a matter of a few hundred feet. Fuel consumers on the Canadian side, however, can order from Niagara Falls, N. Y., dealers, and have it transported across the bridge in wagons for something like 15c. per ton. The Ontario Fuel Commissioner has advised that he has no jurisdiction in the matter.

Dr. W. H. Collins, Director of the Geological Survey, Dominion Department of Mines, on his return from a three weeks' visit to the various field parties who are at work surveying the **mineral industry of Nova Scotia and New Brunswick**, reports new coal beds, the existence of which was unsuspected, and deposits of oil shale in both provinces. They are not yet being mined, but constitute the basis of an important future mining industry, he says.

William A. Sherman, president of district 18 of the United Mine Workers, has announced that at the close of the present agreement between the operators and the union the latter would demand a **continuation of the present wage scale, but with a six-hour day and a five-day week**, instead of an eight-hour day and a six-day week. The present agreement terminates on March 31, 1923. The district includes eastern British Columbia and southern Alberta.

A special committee has been appointed by the Dominion Government to **investigate the possibility of adapting Canadian coal to furnace use** as a means of relieving the fuel situation. The members are **Dr. Charles Camsell**, Deputy Minister of Mines, chairman; **F. C. C. Lynch**, chief of the Natural Resources branch of the Interior Department, secretary; **J. D. McLeish, E. P. Hamel and D. B. Dowling** of the Mines Department, and **J. H. Challies**, chairman of the Dominion Water Power Board. A proposal to relieve the situation is the importation of the best grades of Welsh anthracite during the summer months. Dr. Camsell believed that Welsh anthracite of the finest quality free of dust would be available for transportation to Canada commencing in April of each year. This coal has an ash content of approximately 1 per cent as compared with the ash content of American anthracite, which sometimes runs as high as 15 per cent according to the analysis of government experts. It was understood that the summer importation of Welsh coal would involve stockpiling the anthracite as it comes from the mines and doing the screening and sizing in Montreal. Dr. Camsell intimated that the people of Quebec and Ontario need not look for relief immediately as it could only come after careful study and preparation.

A statement issued by the Dominion Bureau of Statistics states that the **output from Canadian mines during July** amounted to [illegible] tons, an increase of [illegible] tons over the preceding month but short of the average record for July by the three preceding years by [illegible] tons or 18 per cent. The output for the first seven months of the year was less by 1,[illegible] tons than the average for the same months of the last three years. **Imports in July** were 447,000 tons, a decline of 13 per cent below the record for June. Imports during the first seven months of the year were 41 per cent below the 3-year average for the same period. **Exports in July** were [illegible] tons, as compared with 9[illegible] tons in June. The record for the calendar year on the other hand was 19 per cent below the average for the seven months period of the last 3 years. The net result of the movements of coal during July was that the amount made available for consumption in Canada was 1,[illegible],000 tons as compared with a 3-year average for July of 2,[illegible] tons. For the first seven months of the year the amount made available for consumption was 11,[illegible],000 tons, as compared with a 3-year average for the same period of 16,230,[illegible] tons.

WASHINGTON, D. C.

Bids are requested by the Navy Department for the supply of [illegible] 1923 at various points in New York, Massachusetts, New Jersey, Pennsylvania, Virginia, Maryland and the District of Columbia, under Schedule [illegible], Requisition [illegible] N S A, Bureau [illegible] and [illegible] will be opened Nov. 24, 1922.

The United States Civil Service Commission announces an open **competitive examination for laboratorian** on Dec. 6 and 7, 1922. Vacancies in the federal chemical service throughout the United States, including the Departmental Service, Washington, D. C., at $1,[illegible] to $1,[illegible] a year, or higher or lower salaries, will be filled from this examination, unless it is found to the interest of the service to fill any vacancy by reinstatement, transfer, or promotion. Applicants should at once apply for Form 1312, stating the title of the examination desired.

Not later than Dec. 1 officials of the **American Mining Congress** expect to have the industrial co-operation plan which was outlined at the Cleveland convention functioning in its preliminary phases. The method of procedure contemplates a thorough study of conditions in all mining fields by sectional committees which will pay particular attention to the adequacy systems of welfare work and other forms of co-operation between employers and employees already in operation. These sectional committees probably will be named, each working under the direction of a chairman and reporting to a general chairman. In those regions where more than one class of mining is in operation, it is probable that subcommittees will be named from the sectional committees to undertake a study of the work and needs of a specific type of mining.

The United States Supreme Court has upheld the arguments on the **constitutionality of the Kohler mine cave law** [illegible]. Ordinarily the case would not have been reached for a year at least. The request for the advancement of the case was made recently by attorneys W. D. Van [illegible] J. Mahon. The action was started by the latter against the Pennsylvania Coal Co. and in the Supreme Court of Pennsylvania the law was declared valid.

The resignation of Dr. George Otis Smith, as director of the Geological Survey, [illegible] to engage in [illegible] The Federal Coal Trade Commission, was announced recently at the White House with the statement that it was hoped he would be able to remain [illegible] after which the commission expects to [illegible] report.

The work of mine rescue car No. 4 of the **United States Bureau of Mines** [illegible] conducted classes in rescue and first-aid training at Wyoming, Pa., and Millport, Pa. This car was closed to the general [illegible] at the Warren County Fair, Pa., [illegible] First-aid classes have been conducted by the personnel of car No. 4 at Saginaw and Bay City, Mich. Car No. 7 recently conducted **first-aid training** at Alma and Ionia, Mich. At the West Virginia State Fair at Wheeling demonstrations of the use of oxygen breathing apparatus by a mine rescue team [illegible] were given by the crew of car No. 4, which was manned by representatives of the Bureau of Mines and the Pittsburgh Coal Co. Later, at the West Virginia Fair at Charleston, similar exhibitions were given by [illegible] probably 15,000 persons. It is estimated that 4,000 persons a day, [illegible] of whom were women, visited the mine rescue station during the [illegible] Mines at the coal and [illegible] at Huntington, W. Va., car No. 4 co-operated with the West Virginia Department of Mines in exhibits at the [illegible] County Fair at Ulysses, where [illegible] visited the car.

Traffic News

The Cincinnati, Indianapolis & Western R.R. is now transporting about 1,000 tons of coal a day, a portion of which is used on the company's road, the remainder being sold to other railroads and to manufacturing plants. This company purchased some 20 miles of the abandoned C. & O. R.R. line, known as the Chesapeake & Ohio Coal R.R., the transportation facilities of which are being used for the first shipment of coal from the company's property.

The L. & N. is giving cheer to the coal industry with its announcements of new power and cars and other equipment purchased and its plans for development of its coal properties in Kentucky. The expenditures of about $12,000,000 has been authorized during the last year of which half will go into channels of direct benefit to coal shippers.

The I. C. C. has granted reparation to several Carterville, Ill., operators who had complained against rates from mines in Kentucky. Rates were unreasonable from June 25, 1918, to March 1, 1920.

The Clarksville Ice & Coal Co., Red River Ice Works and several others were parties to the complaint.

Reparation has been awarded the **Indiana Block & Tiller Co.** to cover unreasonable rates charged for the movement of coal from certain mines in Indiana to Vincennes and Terre Haute. The I. C. C. finds that the rates were unreasonable to the extent that they exceeded 45c. for hauls of ten miles and under, 60c. for hauls of ten and not over thirty miles, and 75c. for hauls of over thirty miles.

The rate charged between Missabe Junction, to Steelton Mine, was cancelled unreasonable by the **Minnesota Steel Co.** of Duluth. The Interstate Commerce Commission found that the rates charged were unjust or unreasonable.

The complaining firm held that the rates on coal from the anthracite region to certain points in northern New York are unreasonable or otherwise unlawful.

The rates charged on coal from mines in the central and southern districts to Edgewood and Burton Grove, Ia. are held to be unreasonable in a report prepared for the commission by Examiner Disque.

The case of the **Pittsburgh Coal Producers Association versus the P. C. C. & St. L. R. R.** was considered at a hearing assigned from 70 to Examiner by Commissioner Eastman.

An order limiting to **car supply to wagon mines,** similar to that made by the I. C. C. has been issued by the **Public Service Commission of Pennsylvania.** Upon any day that such commission learns that the mines with two-compartment system of mine-run coal shall not be furnished or supplied by any railroad which customarily does not load or is unable to load such coal in both compartments, then the mines of whatsoever kind or system from which such coal has been customarily loaded with such cars.

Purchase of 1,500 coal cars is a part of the program of the **Virginian Railway** for the handling of additional coal from the Winding Gulf and other territory in southern West Virginia, according to an announcement just made by Vice-President Ely of that road. Additional locomotives will also be required, it is said, but the company has not completed plans for the purchase of these. It will not build any additional repair shops although the company has recognized that it will not have any unnecessary cars for handling equipment.

Recent Patents

Method of and Apparatus for Treating Timber. August Heine, Minneapolis, Minn., assignor to Wood & Walsh, St. Louis, Mo., a corporation of Missouri. 1,422,786. July 11, 1922. Filed Sept 18, 1918, serial No. 254,065.

Apron for Coke-Oven Doors. Leman E. Doty, Elyria, Ohio, and F. H. Smith, Brentwood Borough, Pa. 1,422,756. July 11, 1922. Filed Feb 7, 1921; serial No. 442,988.

Art of Extracting Coal in Mines. Herman Mark Hamm, Germany. 1,422,874. July 18, 1922. Filed Oct. 3, 1917, serial No. 194,319.

Trade Literature

Power Hoe (Improved Drag Scraper). Link Belt Co., Chicago, Ill. Book No. 444. Pp. 31, 6 x 9 in.; illustrated. Describes how the power hoe takes coal to storage from pile alongside railroad track and also how it is reclaimed from storage by this device.—Advertiser.

Sullivan "WH-3" Air Compressors. Sullivan Machinery Co., Chicago, Ill. Bulletin 75-12. Pp. 12, 6 x 9 in.; illustrated. Among the advantages claimed for these machines is economy of steam, that the efficiency of its air end is higher, that its working parts are more accessible and that it is less expensive.—Advertiser.

Sullivan Power-Driven Air Compressors. Sullivan Machinery Co., Chicago, Ill. Bulletin 77-12. Pp. 16; 6 x 9 in.; illustrated. Describes the power-driven wafer valve air compressors, class WG-6, single stage; class WH-6, two-stage belted; and class WK-6, direct motor driven.—Advertiser.

Relays. General Electric Co., Schenectady, N. Y. Bulletin No. 47,606. Pp. 25; 8 x 10 in.; illustrated. Covers the operation and general application of relays, with particular consideration to the selection of relays for the protection of systems against troubles due to line faults.—Advertiser.

The Value of Accurate Testing of Coal. Pittsburgh Testing Laboratory, Pittsburgh, Pa. Bulletin 24. This is a four-page pamphlet, 8 x 11 in., with a page of illustrations showing the proper method of preparing a sample of coal by hand.

Cochrane Combined Catalog. H. S. B. W.-Cochrane Corp., Philadelphia. Publication No. 1080; pp. 210; 6 x 9 in.; illustrated. Describes this concern's varied line of open feed-water heaters, V-notch meters, metering heaters, flow meters for fluids in pipes, water softeners (including both hot and cold processes) pressure filters, back-pressure valves (including valves for atmospheric relief service and flow valves) steam and oil separators drainers or traps. Among the new devices shown is a deaerating heater and a flow meter for measuring the flow in pipes.

Pneumatic Collecting and Conveying Systems. B. F. Sturtevant Co., Hyde Park, Boston, Mass. Catalog No 291. Pp. 72; 8 x 11 in., illustrated. Covers the application of Sturtevant fans to air-washing systems, removal of dust from coal breakers and grinding, buffing and polishing wheels, the conveying of pulverized coal and the removal of fumes and gases. It also contains 17 pages of tables on how to find the size of fans, the suction, volume, r.p.m. and horsepower for any system, cubic feet of air handled per minute, size of pipe and sheet steel, etc.

Line-Shafting Equipment. The Medart Co., St. Louis, Mo. Catalog No 43. Pp. 182, 7 x 7 in., illustrated; tables.—Advertiser.

Federal Fuel Control Notes

A conference of Fuel Administrator Spens and his special counsel, C. J. Hepburn, and Ohio Federal Representative Commander H. B. Bouton, with Governor Harry L. Davis, Ohio Fuel Administrator C. J. Neal and Attorney General John C. Price was held at Columbus Nov. 1 for the purpose of securing coal supplies for the people of Ohio, in view of the fact that a large part of Ohio-produced prepared sizes are going outside of the state where higher prices are obtainable. For some time Ohio Administrator Neal has been asking Mr. Spens to relieve the Ohio situation, which is becoming acute. The conference was the result of the threat of Ohio Administrator Neal that unless some relief was forthcoming he would seize Ohio mines as is provided in the emergency measure enacted at special session of the Ohio legislature. A number of Ohio operators joined in the conference and when the question of shipping Ohio product within the state was put up to them there was a general willingness to co-operate. Administrator Spens attended the matter of preventing cross hauling as it were, and thus relieve the railroad situation. The conference adjourned without any definite action taken. It was announced that there would be no increase in the Ohio fair price list at this time as these prices were believed to be fair and reasonable.

The first instance of submission of a coal price dispute case by the Pennsylvania Fuel Commission to the federal fuel authorities occurred Oct. 28, when W. D. Ft. Amey, chairman of the Pennsylvania commission turned over to Fuel Director Spens the case of the **Mill Creek Coal Co.**, selling through the **Delano Coal Co.**, of Philadelphia. Chairman Amey made the following statement of the case: "The prices for anthracite charged by the Mill Creek company, selling through the Delano company, being largely in excess of prices fixed in Governor Sproul's proclamation, have been complained against by the fuel administrators of several states. These companies have been requested, and opportunity offered them to appear before the Fair Practices Committee to exhibit their cost figures and to justify their prices. By report of that committee these companies have neglected or refused to present themselves before that body. The recommendation of the Fair Practices Committee is that they be certified to the Federal Fuel Administrator at Washington, for such action as he thinks expedient, and in this the Pennsylvania Fuel Commission concurs. I have accordingly today submitted the Fair Practices Committee's report to Fuel Director Spens."

Obituary

William S. Porteous, age 85 years, died at Amherst, N. S., Oct. 23. He was born in New York and came to Nova Scotia 30 years ago and had been in the coal business in Amherst for the last 21 years.

Byran G. Tighe, pioneer in the coal industry in Chicago, died recently. He was vice-president of the Bickett Coal & Coke Co.

Melvin E. Lynn, sales manager for the Campbell's Creek Coal Co. at Cincinnati died suddenly at his home on Oct. 29. He was a native of McKeesport, Pa., and the son of a coal operator of western Pennsylvania. He joined the forces of the company nearly forty years ago. Mr. Lynn was an ardent supporter of the idea of coal transportation by water and was a member of the Ohio Valley Improvement Association.

John Hergoyne Foote, president and treasurer of Foote Bros. Gear & Machine Co., Chicago, died recently. He was known all over the country not only for his skill as a gear maker and inventor for transmission and other machinery but for his keen interest in anything that would further efficiency in machine operation.

Coming Meetings

The Illinois Mining Institute will hold its next meeting Dec. 1 and 2 at Urbana, Ill. Secretary, Martin Bolt, Springfield, Ill.

Pittsburgh Wholesale Coal Association will hold its annual meeting Nov. 14, at Pittsburgh, Pa. Secretary, W. R. Crowthers, Pittsburgh.

West Virginia Coal Mining Institute's annual meeting will be held Dec. 5 and 6, at Huntington, W. Va. Secretary, R. E. Sherwood, Kanawha Bank Bldg., Charleston, W. Va.

Harlan County Coal Operator's Association will meet Nov. 15, at Harlan, Ky. Secretary, E. R. Clayton, Harlan, Ky.

The National Industrial Traffic League will hold its annual meeting Nov. 15 and 16 at the Hotel Commodore, New York City. Secretary, J. H. Beek, Chicago, Ill.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

Canadian Institute of Mining and Metallurgy, annual Western meeting Nov. 15-17, at Vancouver, B. C. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Can.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, *Editor*

Volume 22 NEW YORK, THURSDAY, NOVEMBER 16, 1922 Number 20

Portent of the Report on Coal Stocks

COAL producers needs must look deep into the stock report of the Geological Survey last week to find comfort. The consumers are told by their Washington organization, the United States Chamber of Commerce, to consider the soft-coal crisis over and to go into the market for winter supplies. The Chamber says the trouble is over. It is understood that the Interstate Commerce Commission is actively considering the lifting of the service order that gives coal preference and priority in transportation and in the use of cars. For weeks the production of soft coal has been increasing and the price declining. Stocks are now at a point above 35,000,000 tons, sufficient for thirty days on the average.

There are several things that will prevent the coal market from sinking to the deadly monotony of two years ago. One, and the most important, is that these millions of tons of reserves are not equally distributed, even as they have been in normal times in the past. The railroads are particularly short of stocks. Their supply on Oct. 1 is reported as 5,450,000 tons, a 15-day supply, or only half the normal 30-day reserve at this time of the year. Locally this will have an important bearing on the situation as soon as zero weather, long delayed in the northern areas, arrives. Nothing plays hob with coal distribution like confiscation by the railroads when they have to resort to such tactics for protection.

Current market reports record the steady demand for domestic sizes and bear out the conclusion of the Survey that retail dealers have low stocks. For the past month lump coal has been at a premium and the resultant sizes of steam coal are in oversupply. This situation will not be cleared up until industrials, particularly in the regions adjacent to the mines in the Middle West, take it upon themselves to resume stocking. Every indication is that the pressure for domestic coals will continue heavy throughout the winter. Railroad-fuel demands in this territory, however, will curtail the supply of lump that can be applied on this business.

The iron and steel industry, requiring a large volume of special coal and with but half a month's reserve on Oct. 1, which by the way is not far below normal, is working with renewed activity. Though reserves of coal are not dangerously low, the stocks of byproduct coke on hand are reported as but one-fourth those in March and it seems apparent that there can be no falling off in this important market. With respect to steam coal New England has been in a comfortable position all year and it is now apparent that the Northwest will have little trouble on that score this winter.

On the whole the feeling of relief that the crisis is past is warranted. A month's average reserve is insurance against a panic market, but it is at least 10,000,000 tons below the normal supply in the hands of consumers at this time of year. Offsetting the inequality of its distribution is the fact that the most distant markets are best supplied, which means that acute local trouble will be largely confined to consumers near the mines and thus able to get coal by rail without delay save when storms interfere. Severe weather is inevitable. Industry is gaining in activity. There is no likelihood that the coal market will fall flat this winter. Healthy activity will be better for all than a runaway market.

Making Strikes Unnecessary

WITH an April strike hanging over its head, the country is told by the United Mine Workers that the causes of strikes lie between the arrogance of mine officials and the refusals of the operators to meet the miners in the negotiation of wage settlements. In the second of its communications to the Coal Commission in answer to a general request for information on the causes of strikes and suggestions for their prevention, the committee of the miners' union urges complete unionization of the coal fields as the only true solution of the coal problem. The miners point out that the coal miner is the best striker in the world and say that they desire not that strikes be made impossible, but unnecessary.

It is not conceivable that the union in presenting these two communications to the commission has any idea that they will be taken seriously. These "releases" are too obviously releases for the press—the last for support of the press in the suggestion that newspaper reporters be used as investigators is evidence in point. The commission has too patent an opportunity for checking the loose statements of the miners to cause any concern to those who desire that the facts be known.

In respect to the last two general strikes the commission may conceivably go behind the record and concern itself with the basic causes; it may not contend itself with the loose assertion that the miners had to strike because they could not learn what wage they would be offered when their contract expired. There is more than the turning of a phrase in the statement of the bituminous-coal operators that absentee control of mine labor is a prominent factor in general strikes. But then the overlordship of labor exercised by John L. Lewis is more a thing to be cursed by the soft-coal operators than otherwise. The solution of the labor problem here is a control of that leadership in the public interest and not its complete abolition. It is fatuous to suppose that the union among the coal-mine workers can be eliminated.

Since the public, and hence the Coal Commission, is chiefly interested in strikes as they affect the supply and price of coal, local strikes are of minor importance. Every industry that is organized has petty strikes, the building trades being a particular case in point. Dis-

valve at individual mines are common, and all too frequently these end in strikes in contravention of the contract between the company and the men. The United Mine Workers are maintaining that the officials of the coal companies are responsible for these outbursts. The fact of the matter is that the very nature of the relations between the producing company and the contract miner is such that constant adjustment is required in respect to matters of payment for work. No contract has ever been written that makes provision for every contingency. The foreman who is responsible for results and costs is no more anxious to get work done as cheaply as possible than is the miner to get all he can for what he does.

We venture to say that the promotion of a miner to foreman changes his viewpoint only and not his human nature. The complaint of the United Mine Workers that petty strikes are solely the result of arrogance on the part of minor officials is a one-sided statement. It is not borne out by the facts. Time and experience in the coal mines have produced a system of carrying upward the petty troubles between miner and underofficial. It is set forth in the contract, and in most instances conciliation prevents open rupture and a strike.

Where local strikes become common, as in the Middle West in recent years, there must be some underlying cause beyond the mere personalities of the mine officials. Plainly enough the irresponsibility of the miners toward their contracts has been increasing. There have been notorious but comparatively rare instances where individual operators have violated the contract by paying bonuses over the agreed scale of wages. In general, however, it is the union miner who in recent years has shown the greatest contempt for his contract, and until he can be made to respect his obligations in full, and act at his convenience, there will be local as well as general strikes.

Investigating Profits of Coal Industry for Last Ten Years

IN FRAMING the act under which the coal commissioner is presenting Congress said that the profits of the coal industry for the last *ten years* should be investigated. The coal industry, particularly the bituminous-coal men, should be thankful that ten years and not five was specified. On the whole the last five years have been the most profitable ever enjoyed by the coal industry. They have, furthermore, been the only five-year period in which the coal operators had any real idea of costs and profits. Prior to the war the coal company that had a real set of books on which were charged more than actual out-of-pocket expenses was an exception. Depletion, and in particular depletion of leaseholds, and depreciation were unknown accounts, little understood and, for that reason, generally neglected.

The commissioner has no choice in the matter of calling on the coal companies for a ten-year record, for the law says that it shall be done. The coal companies should be keen on giving that record. They should spare no expense in putting their books for the entire period on a comparable basis, setting up accounts for depletion and depreciation and other omitted items in the earlier years. If they fooled themselves ten years ago as to what they were making on their operations that is no reason for perpetuating the error. That no charge was made for depreciation in the earlier part of that period on the accounts as then kept does not mean that that figure did not exist as a charge.

The auditors and bookkeepers of every company should at once begin a study of the old records and be prepared to give the commission these reports when it calls for them, as it must. To look over the records of the past will cause much painful reminiscing but it were well that the facts be known.

Mine Transportation

AS THE mine hauls lengthen, the business of mining more and more approaches that of railroading. Those who realize it earliest will profit most from that knowledge. The railroads have failed because they have not been kept in condition. The mines accordingly have suffered a shortage in car supply. Conditions are little better below ground. Car supply at the face is short because the underground railroads have been allowed to run down and are inadequate.

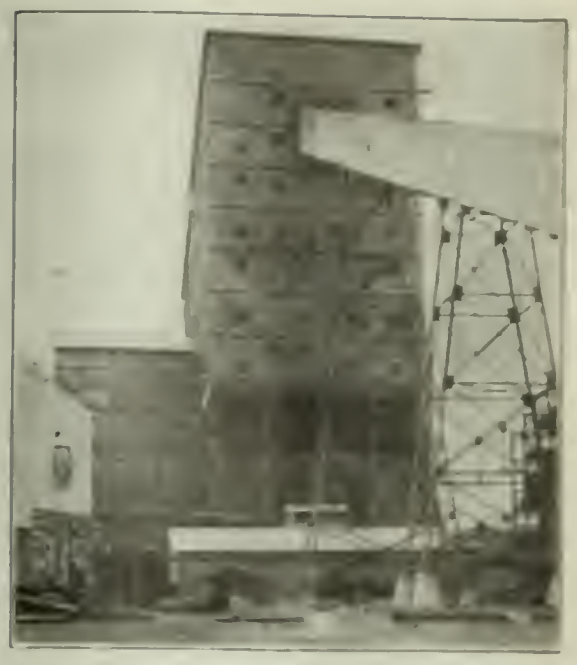
It may yet be that we shall see roads ten and more miles long with separate transportation officials. This arrangement will be the only way of giving transportation its due emphasis. Mines already have hauls four to five miles long; there may be some even longer. As much as ten years back there was a mine in Wyoming having a five-mile haul. There are some in central Pennsylvania equally long. It would be interesting to get figures on this subject.

What is being done to meet these difficult problems? One company, the Cambria Steel Co., has laid 70-lb. rail and introduced a 35-ton locomotive. Another, suddenly waking up to the idea that its transportation problem overshadowed that of mining, replaced its light rail with rail of like weight to that of the mine to which reference has been made. Some of the anthracite mines are using limestone ballast. Other companies are introducing a bedding of field stone. Many old stone fences in farming and mining regions have already found their way underground. Train dispatching is being introduced, and cars are being made having spring draft rigging and even axles with spring boxings. Some companies no longer wait till cars are ditched to examine them but keep them under constant inspection. Others follow railroad methods in the inspection and laying off of locomotives. Bonding and feed-wire erection are improving. Tracks are better lined and graded.

About eight years ago at a meeting of the Coal Mining Institute of America someone said something about transportation problems around the mines and a general laugh greeted the suggestion that the mine had any transportation problems of its own apart from railroad transportation. The leading superintendents of today realize that they have a real railroad system underground, and the very recognition of that fact is a cure for many of the mining evils with which they had formerly contended. One superintendent who realized that the main problem of his mine was transportation was able to convert that operation from a dismal failure to a conspicuous success. There is a distinct value in calling a spade a spade. It sometimes solves your problems for you. In some of our mines with insufficient superintendence to call the mine tracks a "railroad" would in a month or two develop an individual known as the "road superintendent" and in a few months later a road that would make haulage both cheaper and more speedy.

Dunmore Breaker Makes A Specialty of Grate or Broken Coal

BY DEVER C. ASHMEAD*
Kingston, Pa



Pennsylvania Coal Co.'s Fireproof Preparator—Lump and Steamboat, Still Dry, Are Picked on Table by Sixteen Men—Protection of Rock Chutes—Screen Areas Provided—Clay Pipe for Carrying Fine Coal

At No. 1 colliery of the Pennsylvania Coal Co., Dunmore, Pa., just outside the City of Scranton, a new breaker has been completed, regarding which a preliminary and incomplete description was given in the paper entitled "Advances in the Preparation of Anthracite," read before the American Institute of Mining and Metallurgical Engineers and appearing in Volume 56 of the *Transactions*.

Since this paper was written the breaker has been finished. It went into operation on Sept. 11, 1922, at the conclusion of the anthracite mine strike. The building is constructed entirely of steel, concrete and glass. Wood was used only for the lining of the loading pockets and the construction of the jigs. The building is as fireproof as it is possible to make a structure of this kind.

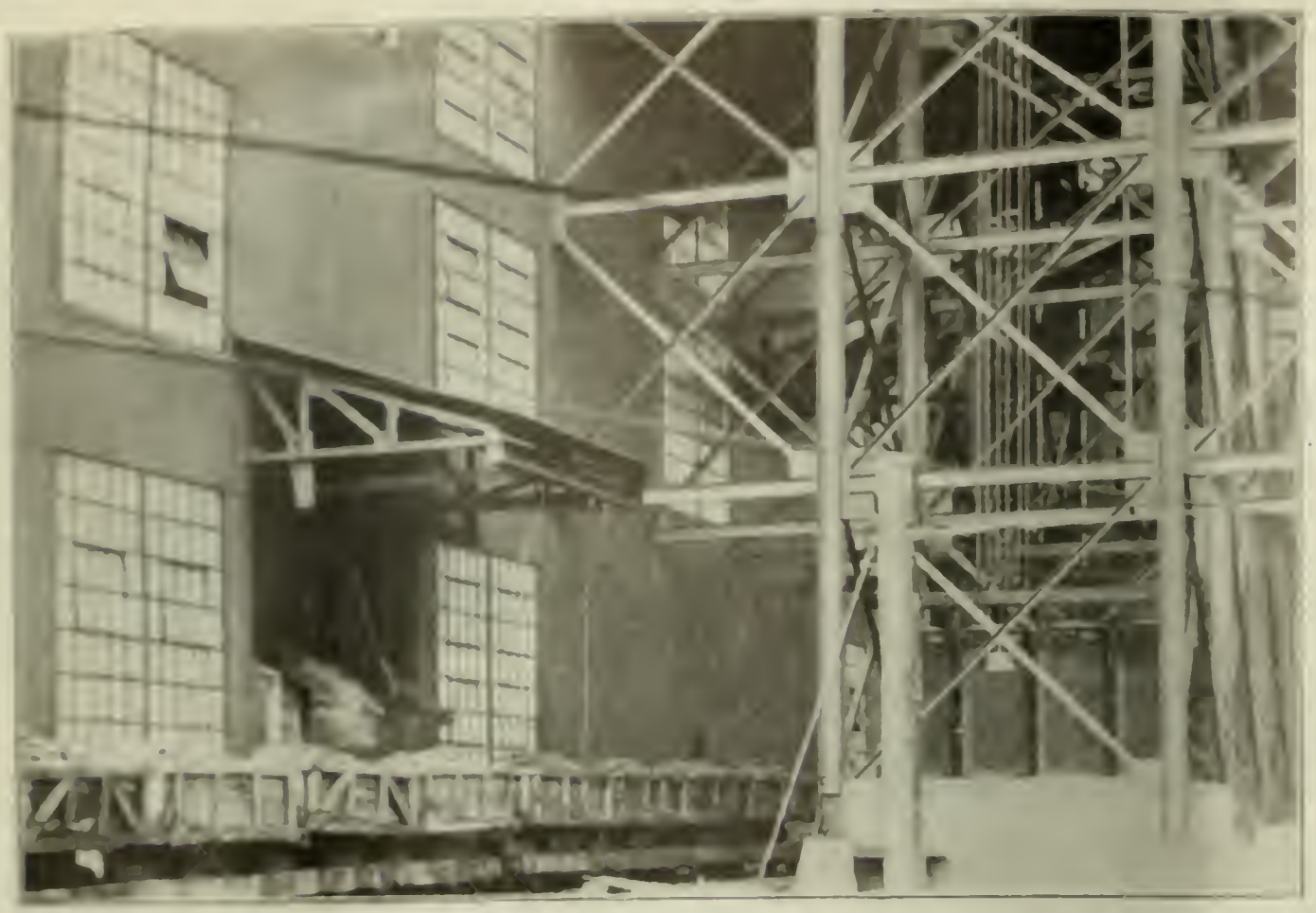
*Anthracite Field Editor, *Coal Age*

Some features about the building are of considerable interest, differing from those in most of the other breakers in the anthracite field. At this preparator a specialty is made of grate, or broken, coal. The coal is not wetted before it reaches the bull shakers at the top of the breaker but is allowed to pass in a dry condition from the bull shakers to the picking table, where sixteen men carefully remove all loose slate and chip off whatever may be found adhering to the large pieces of coal. Another feature somewhat peculiar to this breaker is that the rock chutes are so designed that only pieces of rock less than 8 in. square can travel down them. The miners are not supposed to put in their cars any slate larger than the size specified.

By thus limiting the size of rock that the chutes will handle these transportation ways are considerably reduced in size and can be made less heavy. Furthermore,



No. 1 Breaker



Terminal Rock Loading Chutes

The rock is all under 6 in. in diameter, as the chutes are not made so that they will accommodate any larger size. Bigger rock is accordingly left in the mines. This provision makes it possible to use rock chutes of lighter weight than is usual. An electric locomotive hauls the rock cars to the rock dump for disposal. Note the transformers on a platform to the right.

small rock can be better inspected than large when it gets to the rock shakers.

The breaker drive is not centered in a single unit but consists of several motors: One of 200 hp. is used to drive the main dragline conveyer and six of 100 hp. actuate the shakers and the jigs. There also are three 25-hp. motors, making a total of 875 hp. installed.

Designed to handle an output of 4,000 tons in eight hours, the breaker has not as yet reached its capacity, but the output during the early part of October ran consistently at about 3,000 tons per day of eight hours. The areas of the shaker screens are as follows: The lumpcoal deck has 90 sq. ft. of screening surface; the grate or brokencoal, 225 sq. ft.; the egg-coal, 609 sq. ft.; the stovecoal, 360 sq. ft.; the chestnut-coal, 648 sq. ft.; the pea-coal, 180 sq.ft.; the No. 1 buckwheat-coal, 180 sq. ft.; the rice-coal, 216 sq. ft., and the barley-coal also 216 sq. ft.

In some places in the breaker the chutes are lined with vitrified clay pipe, and this is applied in an unusual way. In the first place a concrete chute was constructed somewhat larger than the half section of the vitrified clay pipe. The pipe was then installed and grouted into place. A distance of from $\frac{1}{4}$ to $\frac{3}{4}$ in. was left between the joints of the pipe lining.

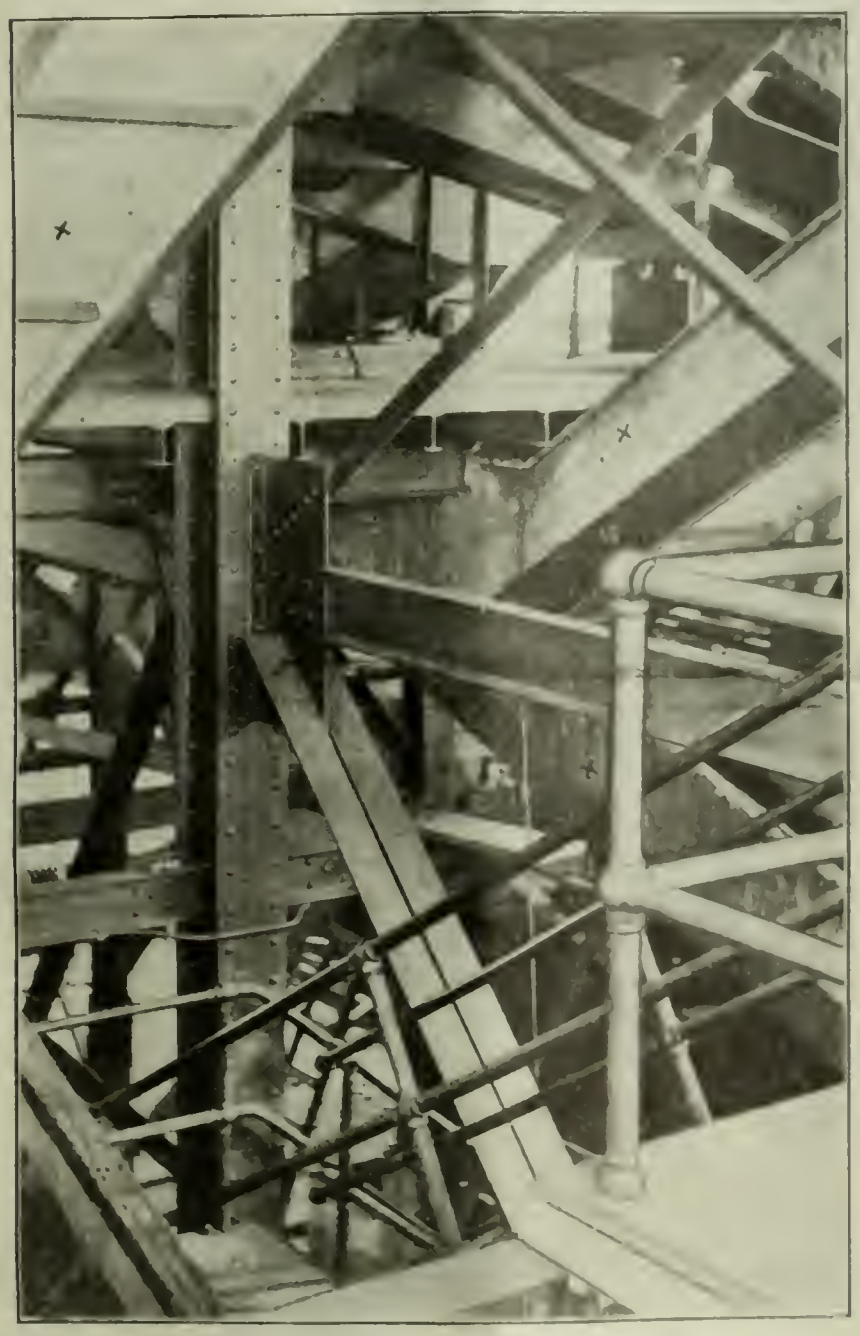
It is doubtful whether this arrangement will prove satisfactory in practice, as the grout is not as hard as the glazed surface of the pipe. In consequence it is likely to be abraded, and then the pipe will be attacked from the edge, and as a result will wear abnormally.

Foot of Conveyor



It would seem that a longer life would be obtained if the sections of the vitrified clay pipe were laid tight against each other. One of the accompanying illustrations shows this pipe and the construction of the chutes. All the boiler coal is weighed by a fuel meter.

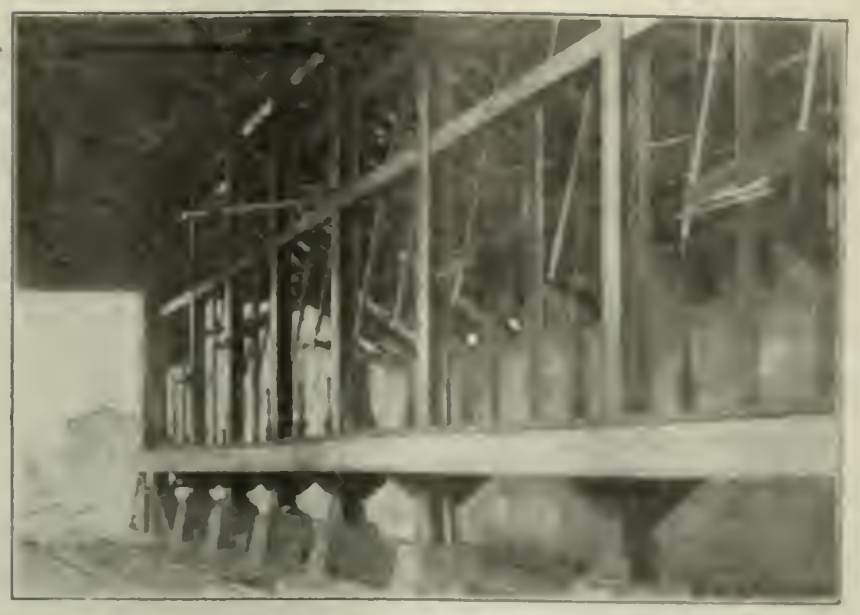
The loss of coal from spillage at the average breaker is considerable. When the railroad cars are loaded some coal will inevitably be spilled either over the top of the car or through leaks in its bottom or sides which have not been properly stopped. This coal usually collects on the ground around the loading pockets until it is finally removed by a man with a hand shovel. Arrangements were made in designing this breaker to avoid this labor. The floors under the loading chutes and the bottom of the breaker have been built of concrete and so arranged that they drain to one point. It is possible, therefore, at this plant to wash all the coal spilled in loading to a tank where the coal settles out of the water and is removed by a dragline conveyor which takes it to the condemned-coal conveyor, whence it is sent through the breaker for re-treatment.



CONCRETE CHUTES WITH VITRIFIED-PIPE LINING

Chutes marked with a cross are of vitrified pipe set in a concrete base. The upper surface of one of these pipe chutes can be seen in the lower left-hand corner. Such chutes are not only fireproof but in some degree serve to stiffen the building in which they are used.

One of the accompanying illustrations shows the flow sheet of the Pennsylvania No. 1 breaker. The figures in the accompanying text refer to those on the illustration. When it comes from the mine the coal goes to



NO WASTE OF COAL AT THE LOADING POCKETS

The floor of this section of the breaker is of concrete and so arranged that any coal spilt can be washed to a tank below the track and sent back through the breaker for preparation.

the foot of the main conveyor. Here the coal is weighed (1) and the mine cars are dumped by means of a steam dump (2). The coal is then taken to the top of the breaker by means of a Wilmot chain conveyor (3) which measures 385 ft. between centers and has 12-in. joint pins. The flights are 5 ft. apart and 4 ft. wide. It has an estimated capacity of 4,000 tons in eight hours.

When the coal leaves the conveyor it is dumped into a chute leading to the three-deck, main, or bull, shakers (4) in the top of the breaker. The lump coal, which includes the steamboat, passes to a picking chute (5) and is here picked by sixteen men. The coal is kept dry until it is hand picked. Thus the pickers are aided in distinguishing between slate and coal. The broken and egg coal which is taken from the second and third decks of the main shakers (4) pass directly to Elmore jigs (6 and 7). The rock from these jigs is hand picked to remove coal and bone, the latter being sent to the bone rolls (8), from which the crushed material passes to another shaker (9) which makes egg, stove and two sizes of chestnut coal. The coal from the jigs then passes to the picking floor, where the lump left



DRIVING MECHANISM FOR BELT CONVEYOR

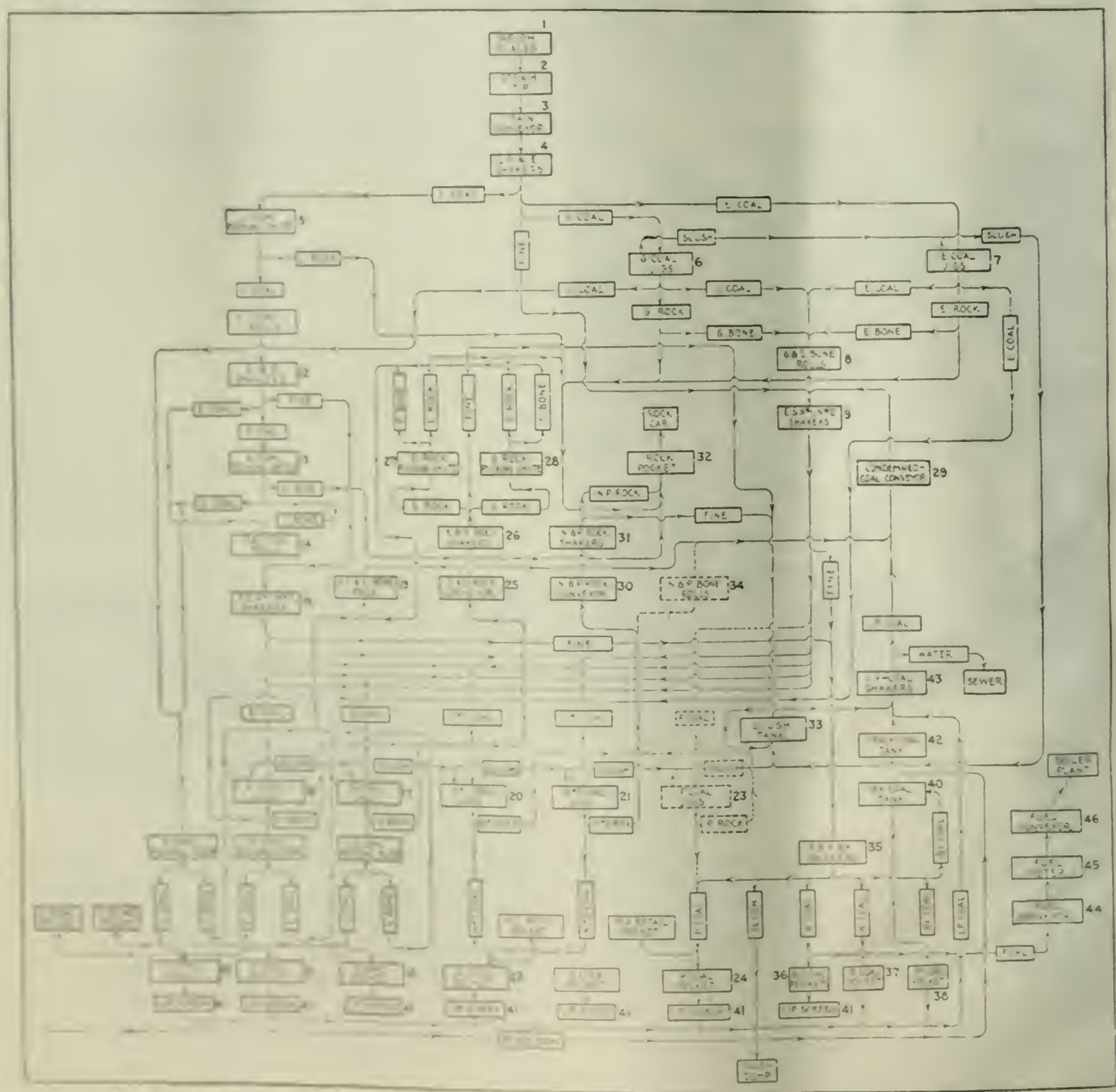
A flywheel is mounted on the driving shaft to offset pulsations caused by the belt.

to the coal will be removed. The cleaned product goes directly to the pockets (10 and 11).

Cleaned lump coal from the picking chute (5) goes through the main rolls, and thence to a set of broken, or grate, and egg shakers (12). Grate coal then passes to a picking chute (13) and unites with the egg coal and passes through the rolls (14). Thence it passes to another set of shakers (15) on which egg, stove and two sizes of chestnut are made. The egg, stove and chestnut coal then goes to Wilmot jigs. After cleaning the coal in the jigs, it passes from the egg jigs (16) and the stove jigs (17) and is then hand picked, the cleaned product going to the proper pockets (11 and 18). Bone coal recovered in handpicking the grate, egg and stove coals unites and goes through rolls (19), the crushed product of which will be carried by the condemned-coal conveyor (29) to the shaker (9).

Cleaned coal from jigs (20 and 21) which treat the two sizes of chestnut coal, after uniting, go to the nut pocket (22). Shaker (9) is so arranged that the bottom deck can be changed to produce pea coal; in that case this size passes to the pea jigs (23), the cleaned product of which will go to the pocket (24).

Rock from the egg and stove jigs (16 and 17) unites and is taken by the egg-and-stove rock conveyor (25) to the egg-and-stove rock shakers (26). Here it is separated, after which the bone is hand picked (27 and 28) from the rock and is sent to the grate, egg and stove bone rolls (19), and thence to the condemned-coal conveyor (29). The rock from the chestnut and pea jigs (20, 21 and 23) unites and goes to the chestnut-and-pea rock conveyor (30), thence to a shaker (31), where the fines are removed. The rock then goes to the rock pocket (32) and the fines to the slush tank (33). Instead of sending this rock from the chestnut and pea jigs (20, 21 and 23) to the rock conveyor (30),



FLOW SHEET OF BARKER-GOODWIN WHOLE PREPARATION PROCESS AND LOADING PROVISIONS

[illegible] nut; P [illegible] pea, No. 1 and No. [illegible]
[illegible] washed after washing



Wilmot Jigs

In this battery of jigs, egg, stove, chestnut and pea coals are cleaned. The spiral chute to the left conveys the broken coal prepared near the top of the breaker to the pocket near the railroad track. It will be of interest to compare the light, uninflammable walls of this breaker with those of the old wooden structures which formerly were all the anthracite region knew. With the old breakers it was difficult to distinguish coal from slate under the unfavorable light conditions obtaining.

however, it can be sent to the chestnut and pea rolls (34), from which the resulting product is sent to the condemned-coal conveyor (29).

All of the fine coal from shakers (9 and 15) unites and passes to shaker (35), where pea, No. 1 buckwheat, rice, barley and slush are separated. The sized coals without further treatment pass directly to their respective pockets (37 and 38), the slush going to the slush dump (39). The barley coal can be sent from the shaker (35) to the barley tank (40) on its way to the pocket (38). All the slush from the Elmore jigs near the top of the breaker and from the Wilmot jig passes to the slush tank (33).

As already stated, the coal spilled is washed to the track-coal tank (42). All the lip-screen coal (41) is taken to shaker (43) on which it is joined by the track-tank coal. Here the water is separated from it. The coal is then delivered to the condemned-coal conveyor, which takes it back through the breaker for re-treatment.

The buckwheat, rice and barley sizes, instead of going to their respective pockets after being screened



LONGITUDINAL AND END CROSS-SECTION OF BREAKER

Lump coal is carefully picked by pickers and slate is loaded so that [illegible] eliminated. When the slate is [illegible] distinguish from that of coal. [illegible]

economy in itself will give a considerable return on the cost of construction of the new breaker, which is estimated to have been between $800,000 and $900,000.

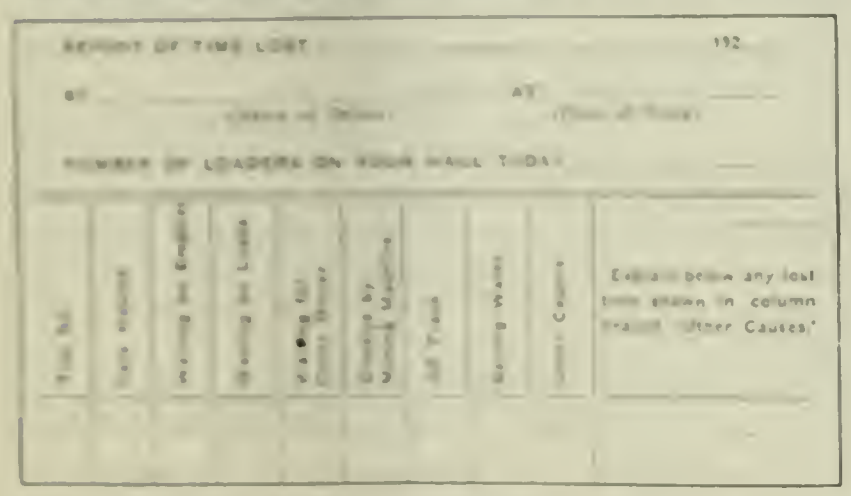
Every new breaker shows a large saving over previous breakers. This one is certainly no exception to that rule and the saving in this instance would be more marked were it not for the fact that a special grade of coal is required at this breaker. Except for this it is possible that many of the sixteen platemen now employed might be dispensed with.

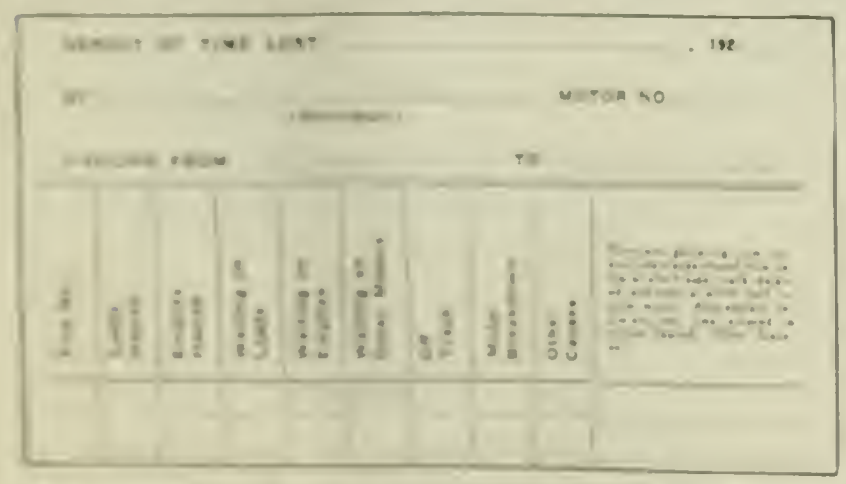
Reporting Delays Lowers Production Costs

By George Edwards

AN IMPORTANT item of expense in coal-mining operations is delays. It is a common occurrence at the average coal mine for the tipple to be waiting on coal, the main-haulage locomotive standing idle at the main sidetrack, and at other times the gathering locomotives and mules waiting on the main-line locomotive.

The explanation that usually will be given on inquiry is that the delay has lasted only a few minutes. Further questioning brings one no closer to the real trouble.







DELAY REPORTS FOR INDIVIDUAL MOTORMEN AND DRIVERS

for it is a common failing with most of us to blame delays or other failures on someone else.

Recently at a new and modern mine, where preparations are being made to handle a large tonnage, 12 minutes was lost while a car of slack was being moved and another car was being placed under the chute. The most common delay on main-haulage roads is derailments, inconvenient switching room inside and out, and frequently failure to move the trips owing to the desire to haul longer trips than the locomotive can handle.

A boss newly engaged recently found that the main-line motors had perpetual trouble in moving their trips. He decided on smaller trips and more of them, and his plan resulted in an immediate increase in production.

But the bane of the gathering crews' existence is derailments and lack of space to get around the mine cars and trips easily and speedily, the latter trouble being due to low entries and to roadways narrowed along the clearance side by standing posts and timber sets and by loose material such as ties, rails, posts, slate and coal laid alongside the tracks. This is often the first fault to be rectified.

A good plan when studying delays is to have "delay reports" made out daily by drivers, motormen, tippleman and others for a month or more at a time. In this way the causes of delay of every kind can be placed where they belong. The attached reports, used periodically by the North East Coal Co., in Kentucky, have proven to be most valuable in locating trouble and keeping everybody moving

Disk Fan Actually Made from Metal Disks

A DISK fan usually is a machine built up with the aid of rivets. The illustration shows one that actually is made out of two disks by merely cutting the fan radially and pressing into fan blades the sixteen sectors thus formed. The two disks are placed back to back and riveted together, forming a wheel 5 ft. in diameter. The blades overlap one-half their width for their entire length. The bearings are collar oiled and are proof against suction, which sometimes draws out the lubricant. The fan is made by the Pittsburgh Fan & Manufacturing Co., Bessemer Building, Pittsburgh, Pa.



PRESSED-STEEL DISK FAN

This fan is made by merely cutting and pressing two disks (which have been riveted together) so as to form blades.

Temple Coal Co. Supplements Its Breathing Apparatus With Mask That Absorbs All Poisons in Mine Air

In Devitalized Air Oxygen-Breathing Equipment Alone Can Be Used, but in Many Cases Where a Safety Lamp Will Burn, Work Can Be Done Safely in the Right Kind of Mask

By Dever C. Ashmead*
Kingston, Pa.

IN PRACTICALLY all parts of the anthracite fields one of the great dangers of mining is from the emission of gas. No matter what ventilating precautions are taken, how completely safety lamps, electric and flame. are furnished, how closely the men are inspected to see if they are carrying matches beyond danger points, or how rigorously the working places themselves are inspected, gas explosions will occur as long as man mines coal.

With the danger of these explosions always in mind coal-company officials in the anthracite region have established rescue stations at the various collieries. One of the most modern and well-equipped of these is that of the Temple Coal Co. at its Mount Lookout Colliery, near Pittston, Pa.

This station has six Gibbs oxygen apparatus, Edison electric lamps, Wolf safety lamps, carbon-monoxide detectors, an oxygen pump and cylinders, a mercury manometer for testing apparatus, a resuscitating device and six Burrell all-service gas masks.

After an explosion of methane, afterdamp is formed, which consists of oxygen, nitrogen, methane, carbon dioxide and carbon monoxide. In many cases enough oxygen is present to support life, but, unfortunately, it is not possible for a man to live in an atmosphere that contains much carbon monoxide. In consequence men who have hitherto engaged in rescue work have had to wear a helmet that would provide them with oxygen and would also exclude from the atmosphere they breathed any carbon monoxide.

*Anthracite Field Editor, *Coal Age*.

After a long series of experiments a chemical known as hopcalite has been discovered that will change carbon monoxide into carbon dioxide. It is used in the all-service gas mask. This chemical, together with charcoal and calcium chloride, is placed in a canister which is shown hanging from the necks of the men in one of the illustrations.

Air is admitted through the bottom of the canister and as it passes through the charcoal it is filtered, the smoke being absorbed with any ammonia gases which it may contain. It then passes through the calcium chloride, which absorbs the moisture, and then through the hopcalite, which changes the carbon monoxide into carbon dioxide. Again the air passes through calcium chloride and then through another layer of charcoal, and then into a timing device. Sufficient hopcalite is provided in the canister to last for two hours.

With each breath the timer is actuated. The breath operates a small valve which revolves an indicator in a clockwise direction around a dial. This action is automatic, the position of the dial indicating the length of time the canister has been used and of course the length of time that canister can be worn before being recharged. Each canister is good for a two-hour period of actual service, whether worn intermittently or continuously.

One important feature is that the air of the mine is dried in the canister and is so deflected that it strikes the lenses of the face mask so that they remain clear under all conditions. This deflecting of the dry air against the lenses removes all moisture that might be

Gas-Mask Crew

These men are fitted with gas masks which can be used for two hours in any afterdamp mixture so long as there are breathable quantities of oxygen present in the air. Thus the mask may be worn wherever a light will burn. The hopcalite used in the mask has the power of rendering a certain quantity of carbon monoxide harmless by oxidizing that gas and forming carbon dioxide.





RESCUE CREW AT MINES OF THE TEMPLE COAL CO. AT MOUNT LOOKOUT COLLIERY, NEAR PITTSTON, PA.
At this colliery six oxygen apparatus, six all-service gas masks, several electric lamps, safety lamps, carbon-monoxide detectors, an oxygen pump and cylinders and a resuscitating device are kept ready in case of accident.

deprived by the exhaled air. The air passes out through the exhalation valve, which opens on exhalation and closes upon inhalation, so that the wearer gets absolutely fresh air at each breath.

The mask gives all the protection a self-contained oxygen apparatus will give, provided enough oxygen is present in the surrounding atmosphere to support the flame in a flame safety lamp. In other words a flame safety lamp is the guide in knowing how far to travel, for it indicates when a point has been reached at which the oxygen content of the atmosphere is too low to support life under exertion. The safety lamp will be extinguished when the oxygen in the air falls as low as 16 per cent. As a man can live in an atmosphere which contains as little as 12 to 13 per cent of oxygen the indication of the expiring flame of the safety lamp affords a liberal factor of safety. As the hopcalite is not affected by a change in temperature, the mask will furnish protection regardless of the heat or cold to which it is exposed during or before service.

Gas Mask Has Advantage of Lightness in Weight

The Burrell gas mask has another advantage over the oxygen apparatus. It is extremely light, weighing only 3½ lb. Thus the wearer can do heavy work and not become as fatigued as when wearing the oxygen-breathing apparatus. The gas mask is particularly valuable in re-establishing ventilation and for exploration work, particularly in advance of the working gangs. Members of the rescue crew also can use this type of mask in keeping open communications with the oxygen-apparatus squad and the base of operation at the foot of the shaft.



EQUIPMENT ROOM OF RESCUE STATION
In this compartment can be seen the oxygen tanks and on the shelves, boxes and frames containing the masks and various apparatus. Above the door is a mirror for inspecting the latter before leaving the station.

In making preliminary explorations of mine fires it would be quite helpful, for it would permit the superintendent or mine foreman to make his preliminary explorations of the conflagration without exposing himself, as such men too often do, to the danger of carbon-monoxide poisoning.

A few gas masks of this kind kept in the mine might serve pumpmen, stablemen and others well should a fire break out during an off shift when they alone are on duty. It would practically assure their arriving at the surface in condition to report the occurrence of the fire. Another purpose for which it might be valuable is in protecting shotfirers and firebosses from monoxide poisoning. Misfires often occur which set fire to the working places. A gas mask of the all-service type would permit the shotfirers to make explorations in safety despite the heavy smoke that arises from such fires.

Wages Paid and Selling Price of Coal and Coke in West Virginia

(Year Ended June 30, 1921)

County	Pick Miners Paid Per Gross Ton Run-of-Mine: Car	Ton	Selling Price: Coal	Coke
Barbour	$1.27	$0.82	$4.59	$6.75
Boone		.79	4.35	
Braxton		.96	4.84	
Brooke	1.12	1.12	3.75	
Clay		.93	4.10	
Fayette	1.11	.92	4.39	10.90
Gilmer	.98	.98	5.84	
Grant	1.41	1.06	4.99	
Greenbrier		.87	6.99	
Harrison	1.09	.92	4.43	9.63
Kanawha	1.37	.93	4.37	
Lewis	1.24	1.01	5.38	
Lincoln	1.03	.92	4.14	
Logan	1.07	.94	4.64	
Marion	1.23	.99	4.67	11.62
Marshall	1.24	.96	4.25	
Mason	.92	.92	4.10	
McDowell	1.16	.94	4.51	10.10
Mercer	1.38	.89	4.51	
Mineral	1.40	1.04	5.38	
Mingo	1.12	.97	4.07	
Monongalia	1.17	.98	4.55	8.84
Nicholas	1.12	.97	4.95	6.75
Ohio	1.32	1.01	3.38	
Preston	1.12	.96	4.76	9.93
Putnam	1.02	1.02	3.94	
Raleigh	1.09	.87	4.72	
Randolph	1.27	.93	4.09	10.00
Ritchie		.89		
Taylor	1.01	.84	4.89	
Tucker	1.26	.99	4.26	
Upshur	1.18	.94	4.76	11.93
Wayne		.93	5.05	
Webster		1.01	7.08	
Wyoming	1.02	.94	4.74	
Average	$1.17	$.95	$4.65	$9.58

Keeping the Storage Battery Young and Lively

Danger of Manual Adjustment in Charging Lead Battery—Disadvantages of True Constant-Potential Charging—Modified Constant Potential with 2.6 Volts per Cell and Fixed Series Resistor Recommended for Lead Battery

By M. F. Packard*
East Pittsburgh, Pa.

Too much emphasis cannot be placed on careful charging, for the life and performance of the storage battery are so largely dependent on the way in which this work is done. Ignorance of the requirements and carelessness in their fulfillment are responsible for most premature battery failures. For this reason this article will discuss the charging problem, indicating the advantages and disadvantages of various methods, so that the one best adapted for a given condition may be selected. Only the vital phases can be discussed and then only briefly, for the subject is a lengthy one.

In charging a lead battery it is of greatest importance to avoid gassing at high charging rates and to keep the cell temperature below 110 deg. F. Until the prescribed finishing rate is reached these requirements are fulfilled by adjusting the charging rate in amperes to a value at all times less than the ampere hours out of the battery. The locomotive should be equipped with a reliable ampere-hour meter, which will indicate the ampere hours out of the battery and be a guide in determining the discharge limit.

The ampere-hour meter is designed to run slow on charge and when used on a lead battery should be adjusted so that about 15 per cent more ampere hours will be returned than were taken out. The ampere-hour efficiency varies somewhat with the battery construction and charging conditions, so it may be found necessary to depart a little from the figure given. The meter may be readily adjusted, however, and a few trials will determine the best setting. The battery-compartment cover must be left open throughout the charge, so that the highly explosive gases that are given off by the battery during part of the charge can escape freely. No lighted tobacco, matches or other exposed fire or sparks should be allowed in the vicinity of the battery while it is being charged.

In the past the charging current has been adjusted quite extensively by hand, but when the charge was thus regulated the battery frequently was damaged severely in consequence of the ignorance or carelessness of the attendant. It is seldom practicable to hold the ampere input equal to the ampere hours out of the battery, as this involves too constant attention, and there are objections to the size of the equipment needed, as will be shown later in discussing constant-potential charging.

The usual procedure is to start the charge at a fixed rate in amperes—termed "the starting rate"—continue at this rate till the battery begins to gas, and then reduce the current to "the finishing rate," which is held to the end of the charge. All locomotive type batteries have these two rates designated and they can be approximated by occasional adjustment. The danger is that the initial rate may be continued after the battery has begun to gas violently. This dislodges the active material and causes overheating, with the destruction of the separator.

The finishing rate of charging may be continued for a reasonable time after the battery is fully charged without causing injury. The charging current is adjusted either by varying a series resistor or the field of the generator. The latter is most economical, but with series resistance less frequent adjustment is needed, as it acts as a ballast and the current may remain fairly constant if the difference between the line and battery voltages is great enough. The approximate cell voltage during a charge by this method is shown in Fig. 1, curve *A*.

An automatic charging system is greatly to be preferred to one necessitating manual adjustment and, moreover, it is entirely practicable. True constant-potential charging is automatic in so far as regulation of the charging rate is concerned, and with suitable protective apparatus no attention will be needed after the charge is started. The voltage chosen is such that the current will taper with the rising counter electromotive force of the battery and always be approximately equal to the ampere hours out of the battery.

Fig. 2 illustrates what takes place during a charge by this method. This system has several drawbacks which make its use ordinarily impractical. These are: (1) The excessive power that is required in the early stages of charging a completely discharged battery. (This makes both the investment in generating equipment and the demand charges high.) (2) The difficulty in preventing excessive voltage fluctuations and (3) the

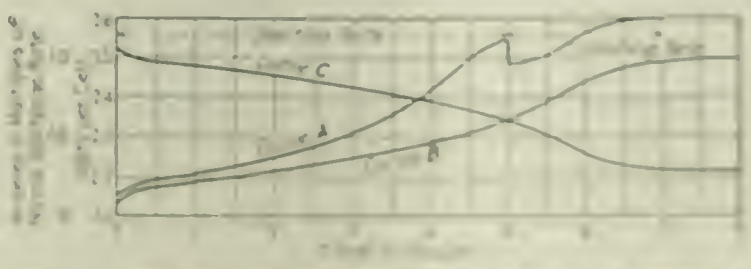


FIG. 1—CHARGING CURVES FOR LEAD BATTERY



FIG. 2—CURRENT CURVE, CONSTANT VOLTAGE CHARGE

*General engineering superintendent, Westinghouse Electric & Manufacturing Co.

necessity for adjusting bus voltage to meet seasonal temperature changes.

The simplest and safest automatic charging system probably is that called the modified constant-potential method. Best results can be obtained with a fairly uniform voltage, but fluctuations are not harmful provided adjustment is based on maximum potential, their only effect being to prolong the time required for the charge. The most suitable potential is 2.6 volts per cell, and this should be provided. A fixed series resistor also is required.

For higher voltages greater resistance must be used, and the time for a complete charge will be correspondingly lengthened. Lower voltages can be utilized, but the objectionable features of the true constant-potential system begin to arise. Typical voltage and current curves for a charge of this nature with a bus potential of approximately 2.6 volts per cell are given in Fig. 1, curves *B* and *C*. It will be observed that the current tapers as in the case of true constant - potential charging, but at no time does it exceed a permissible value. By this method the initial peak is never excessive and the charge is ended at the finishing rate or less. The charging apparatus for any of the tapering-current systems can be made so as to disconnect the battery upon power failure, to re-establish connections upon the return of power and finally open the circuit when a full charge has been given to the battery or accumulator.



FIG. 2—CHARGING DIAGRAM FOR MODIFIED CONSTANT POTENTIAL CHARGE

A failure in the voltage supplied while the battery is being charged will cause the reverse-current relay on the main bus feeders, opening the circuit and preventing the cells from discharging into the line. When power returns the magnetic contactor will reconnect the battery.

The diagram in Fig. 2 illustrates one way of accomplishing this with the modified constant-potential system. A failure of the supply voltage when the battery is on charge will cause the reverse current relay to function, opening the circuit and preventing discharge by breaking the closing coil circuit of the magnet contactor. Upon the return of power the magnet contactor will reconnect the battery, its closing coil being energized through the contact of the reverse-current relay, which will be closed by its shunt coil. Upon completion of the charge, as determined by the ampere-hour meter, the circuit breaker will open the circuit, being tripped by its shunt coil, which is energized through the zero contact of the ampere-hour meter.

The circuit breaker will open also in case of any short-circuits that cause overload. When the difference between the line and battery voltages is so great that the time of charging becomes excessive, it is possible to use a two-step resistor and increase the rate during the first part of the charge, automatically reducing it at the correct point by a circuit breaker controlled through an auxiliary contact of the ampere-hour meter.

In cases where a single lead battery is to be charged from a motor-generator set the generator can be designed with a drooping characteristic such that the current will taper essentially as in the modified constant-potential system. Furthermore, the series resistance may be omitted. The disadvantage of this is that it is applicable only to a single battery of fixed capacity and of a given number of cells.

It should be borne in mind that all automatic charging outfits need some adjustment subsequent to installation, as the manufacturer seldom knows the exact voltage conditions or the loss in voltage in the connecting wires. Either resistors are provided with taps to permit slight changes or a certain degree of generator-field adjustment is possible, and a little experimenting will determine what is needed.

What is termed an "equalizing charge" must be given to a lead battery approximately once each week, whatever normal charging method is used. This consists of a prolonged overcharge, disregarding the ampere-hour meter, at a rate preferably about one-half the finishing rate, though if conditions make a reduction impossible, the finishing rate may be used, provided the cell temperature is watched and kept within the permissible limit. The object of this charge is to make up for any deficiency in normal charging caused by inaccuracies in the ampere-hour meter or by peculiarities in the individual cell and to be absolutely certain that all the cells and all the plates in each cell are fully charged.

It is advisable to use one cell of the lead battery as a "pilot cell" as a guide to the condition of the whole. Before discontinuing the equalizing charge all cells of the battery should be gassing freely and evenly and three consecutive half-hour readings should show no increase. Occasionally, at the end of an equalizing charge, a record of the specific gravity of each cell should be taken. A slightly higher final cell voltage is required for equalizing, but usually no special provision need be made, as the load is small and the natural regulation sufficient. When the straight constant-potential system is used, however, it frequently is impracticable to raise the bus voltage as much as is necessary, in which case the battery must be divided into two groups and a series resistor inserted.

It is sometimes necessary that a battery stand idle for a prolonged period. The simplest way to prevent deterioration is to give it an equalizing charge about once a month and, of course, add water occasionally. If this infrequent charging is impossible it usually is best to dismantle the battery, and instructions to suit the conditions should be obtained from the manufacturer.

Charging Requirements of Nickel-Iron Battery

The requirements for charging batteries of the nickel-iron type differ in many respects from those enumerated for the lead battery. On the whole there is much less chance of injuring the battery by improper charging, though the performance and output may be adversely affected if certain precautions are neglected. The charging rate is limited only to that which will not produce a cell temperature in excess of 115 deg. F. or cause frothing at the filler opening. The greater internal loss renders the possibility of overheating much more acute than in the case of the lead battery; therefore the temperature should be carefully watched.

Normal charging for a battery of this type is at constant current, and the value chosen by the manufacturer has been found by experience to give the best results. When that current has been adhered to, practically maximum capacity is obtained and the chance of overheating, with the battery as commonly installed in locomotives, is small. The temperature of a battery will rise during discharge. How much depends on the time of discharge. Consequently it seldom is advisable to start charging just as soon as the locomotive returns to the shed. Before current is fed to it the battery should be permitted to cool.

An ampere-hour meter is about the only convenient guide for determining the state of charge, as readings of the specific gravity of the electrolyte are of no value. The meter should be adjusted to run slow on charge so that about 25 per cent more ampere hours will be returned than were taken out. As in the lead battery, some departure from this value may be advisable.

Should the extent of the previous discharge be unknown the battery may be considered fully charged when the voltage has remained constant for 30 minutes at about 1.9 volts per cell with normal current flowing. The precautions mentioned for the lead battery with respect to ventilation of the compartment and exposed flames should be strictly followed.

The nickel-iron battery will give its best performance if charged at the normal constant-current rate. To obtain a reasonably constant current, without excessive loss, the current flow must be adjusted manually. Practically the only objection to this method, if the precautions mentioned are taken, is the attention required. The danger of overheating is not great, and overcharging is not harmful. The charging rate is satisfactorily adjusted either by varying a series resistor or the field of the charging generator, as in the case of the lead battery. The curve, Fig. 5, shows the variation in terminal voltage for constant-current charging.

Finishing Current Too Weak to Be Effectual

Though strictly constant-potential charging without series resistance does not involve as high an initial peak as in the case of the lead battery the tapering of the current to a small value at the end of charge is objectionable. It has been found that the portion of the charge at less than the normal value of current is not sufficiently effective in performing the necessary electro-chemical action to charge the battery completely. The effects are shown by sluggish action and a gradual reduction in the effective discharge voltage. The battery is in no wise harmed by this treatment and may be restored to a healthy condition by means of overcharging and several cycles of normal charge and discharge. The employment of this method is practically precluded by the inefficiency and poor performance of a battery regularly thus charged.

Automatic charging, of course, is very desirable and it is most commonly obtained by practically the same method as that termed "modified constant-potential" in the case of the lead battery. The scheme of connections shown in Fig. 3 applies equally here. The use of a fixed resistor will result, of course, in a tapering charging current and loss of capacity similar to that experienced when true constant-potential charging is employed, but the effect becomes less as the variation in the current from start to finish decreases.

The charging current should average practically normal and the variation will be less as the series resistance and bus voltage per cell are increased. The energy loss is quite appreciable when the resistor is of a value to give satisfactory results. Experience has shown that a battery can be kept up to essentially full capacity if the charging current is not permitted to fall below approximately 80 per cent of normal at the end of charge. The extremes allowable with this method are therefore from 20 per cent above to 20 per cent below the normal rate. This requirement necessitates a line voltage equivalent to about 2.25 volts per cell. The approximate current and cell voltage curves for charging through series resistance with a line voltage of 2.25 volts per cell are shown in Fig. 4. Increasing the line voltage and series resistance is favorable, of course, to the battery performance, but results in greater losses.

This type of battery can also be successfully charged automatically without series resistance from a generator designed with a drooping characteristic produced by the combination of differential series and shunt-field windings. The variation in the charging current from start to finish may be even less than the maximum recommended in the preceding paragraph. Only a single battery of fixed capacity and number of cells can be charged from such a generator, and this is frequently undesirable from the standpoint of both convenience and cost.

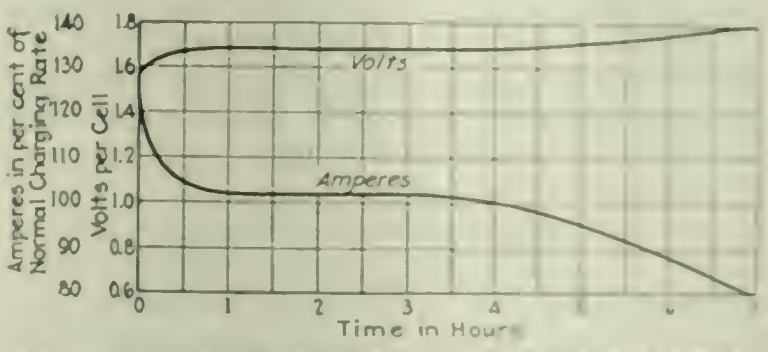


FIG. 4—CHARGING CURVES, NICKEL-IRON BATTERY
Approximate curves with a fixed series resistance and a line potential of 2.25 volts per cell

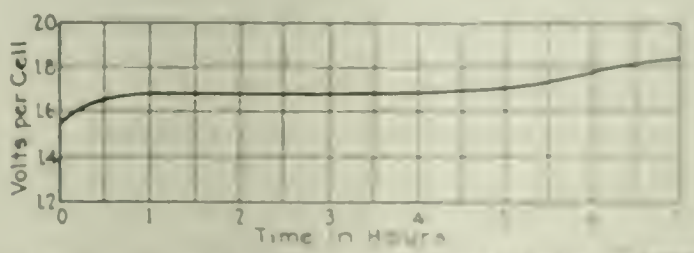


FIG. 5—CHARGING CURVE OF NICKEL-IRON BATTERY
This also is a curve which would be modified with a different condition of battery, another temperature and a changed cell structure.

The nickel-iron battery may be taken out of service and permitted to stand in any state of charge or discharge without any resulting injury. It is necessary to keep the plates covered to the proper height with electrolyte, and therefore distilled water to replace evaporation must be added occasionally. The battery should be stored in a dry place and when put in service again given a long overcharge after careful inspection of the cells.

An equalizing charge such as that necessary for the lead battery, of course, is never given, but an overcharge is often desirable, especially if in normal service the battery is seldom completely discharged. The overcharge should be continued approximately 50 per cent longer than the time required for a complete normal charge and will be most effective for good if the battery is first completely discharged, even to zero voltage.

Stone Dust, Water and Steam as Means of Protection Against Mine Explosions

A DISCUSSION by a representative body of mine inspectors at the annual meeting of the Mine Inspectors' Institute of America this year gave a well-balanced review of the methods to combat the coal-dust hazard now in effect in the United States. There was no consensus of opinion. Most of the men, who spoke from the fullness of their experience with one system or another, agreed that no method was anywhere near 100 per cent perfect, but that as a damper on explosions any and all have a marked effect and each has its place.

Men from both West Virginia and Alabama were strongly in favor of a lavish use of water throughout coal mines from mine opening to face. C. H. Nesbit, of Alabama, past president of the Institute, said that the common method in his state was to wet down mines regularly with water at 80 lb. pressure. Sluicing off roofs, timbers, walls and floors, he said, was a most effective way to remove dust, which was the origin of explosions, and that the use of water under pressure undoubtedly prevented much trouble in the mines where the practice is maintained.

V. E. Sullivan, of West Virginia, said that in his state it is standard practice to wash down the main ways thoroughly and to introduce humidified air into the air courses. Results, he said, have been uniformly good. J. H. Haskins, of Illinois, remarked that if any such volume of water were to be turned loose in the mines in the No. 6 seam in Illinois those mines simply would not be workable. There is too much water there already. He contended that the wetting down plan is not everywhere feasible.

Colorado is a state, said James Dalrymple, chief inspector of that commonwealth, where every imaginable mining problem is encountered and where conditions vary from one extreme to the other, sometimes within a small district. He said the hope is not so much to prevent explosions as it is to prevent coal dust from taking part in them. Naturally complete prevention would be ideal, but as nobody knows how to achieve that Utopian goal, the next best thing is to render dust as nearly innocuous as possible and then strive to reduce the hazards of the face—the spot which Mr. Dalrymple believes the source of most "blows."

Moist Mine, Not Merely Moist Air, Is Wanted

In his state water is used plentifully in certain mines and an effort is made in most of them to humidify the air to a point somewhere above 90 per cent by introducing exhaust steam. But even this is not a reliable protection, he said. A 100-per cent humidification by steam wouldn't prevent a blast. Hence water is used where practicable. Water conditions are so variable, he said, that he knows of regions where a mine that must pump for dear life to keep its workings dry enough to operate is within 15 miles of a mine so dry that wells driven 2,500 ft. get not a drop, and water must be hauled in in tank cars at great expense.

It is well known that steam, as a humidifier, is damaging to mine timbers, causing much trouble in certain operations. Mr. Dalrymple said that he has observed that the damage is much less where humidification goes on 24 hours a day than where it is spasmodic. The continual change from wet to dry is far more damaging than constant moisture.

Humidification has no effect whatever as a deterrent after an explosion once has started, according to J. W. Paul, mining engineer at the Bureau of Mines experiment station in Pittsburgh, Pa. He said experiments have clearly proved that 100 per cent humidification is no better in the face of a blast than 65 per cent. Humidification is of real value, however, in a mine, he said, because it offsets evaporation and so keeps the coal dust wet.

Mr. Paul strongly advocated the use of rock dust to stop the force and spread of explosions. He said that from 5 to 8 lb. of pulverized rock is enough to neutralize all the coal dust produced at a working face in each shift and suggested that it would be a good plan to supply each miner with a bag each day containing that quantity. It would take him just about half a minute to toss the rock dust around and coat the ribs and roof with it. By this means not only would safety be increased but a "concreting" effect would be produced, thus greatly improving the illumination of the working place.

"But," added Mr. Paul, "I don't know whether the men would be willing to spend half a minute doing it."

"I know exactly what they'd say in Illinois," contributed Thomas Back, of Peoria, Ill. "They'd say 'Who's gonna pay us for all this extra work?'"

Others surmised that the miners would use the rock dust to tamp shots. If they did, somebody suggested, why wouldn't that produce the same results? The dust would be thoroughly distributed by the shots, thus producing the desired effect. The answer was that if the shot was good, distribution would be poor.

Salt as a Medium for Gathering Moisture

From that point the discussion shifted to the use of salt as a humidifier when used as stemming by shotfirers. James Sherwood, of Kansas, said that at one time he had encouraged the use of it in his region, for he found that great waste piles at salt mines could be obtained at $1 a ton. Unfortunately as soon as the demand for it was noticed by the salt plants the price went out of sight, and it became too expensive for coal mining.

An expert opinion on the use of salt was asked of S. P. Howell, explosives engineer at the Bureau of Mines experiment station in Pittsburgh. Mr. Howell said the salt would stay in the borehole providing the shot performed as it should, thus rendering the salt worthless for the purpose intended. Only windy shots would distribute it around the room. He said, further, that if the salt were tamped in too close to the explosive it would become, at the moment of firing, an ingredient, thus modifying the strength and character of the explosive to such an extent that the miner would never be able to tell how large a charge of explosive he ought to use to bring down the coal.

The success of the Old Ben Coal Corporation in the use of shale dust as a check against explosions was mentioned by W. L. Morgan, who explained how the dust is suspended along roofs of entries in delicately balanced troughs. The air blast traveling ahead of an explosion dumps the dust into the atmosphere, damping out the force and flame of the "blow" with remarkable results. Experience has shown the safety engineer of the Old Ben company that a mine cleaned and watered by the best-known methods is little, if any, safer than one knee-deep in coal dust. Therefore a tremendous effort has been made for years to find ways of checking explosions after they start. The shale dust is the most effective means thus far developed.

Washing Coal in Large Pipe by an Upward Current of Water

SPEED in washing, the use of the pressure of the water delivered to the washer to accomplish the desired results, the expenditure of a minimum of power and a saving in space are all advantages that can be claimed for the Draper coal washer, manufactured by the Rhondda Engineering & Mining Co., Ltd., of Bridgend, Glamorganshire, South Wales.

The illustration, Fig. 1, shows a washer capable of cleaning 10 tons of coal per hour. It occupies a floor space of only 5 ft. 3 in. x 2 ft., the height being 8 ft. 9 in. If a machine of this kind will do the work claimed for it, it will be unnecessary to build the big structures that have been erected in the past for the washing of coal. A washery then will be a far less conspicuous building.

The unwashed coal is delivered, as shown in Fig. 2, into a small hopper at the top of the washer unit. It falls into another hopper and is met by a current of water striving to escape. This water has entered by a water inlet below the second hopper. The coal is not heavy enough to resist the current, and it is swept into a chute with and by the escaping water. The sulphur and slate, however, can make their way despite the outrush of water and they fall into an 11-in. cast-iron pipe below the real washing section. It drops onto a

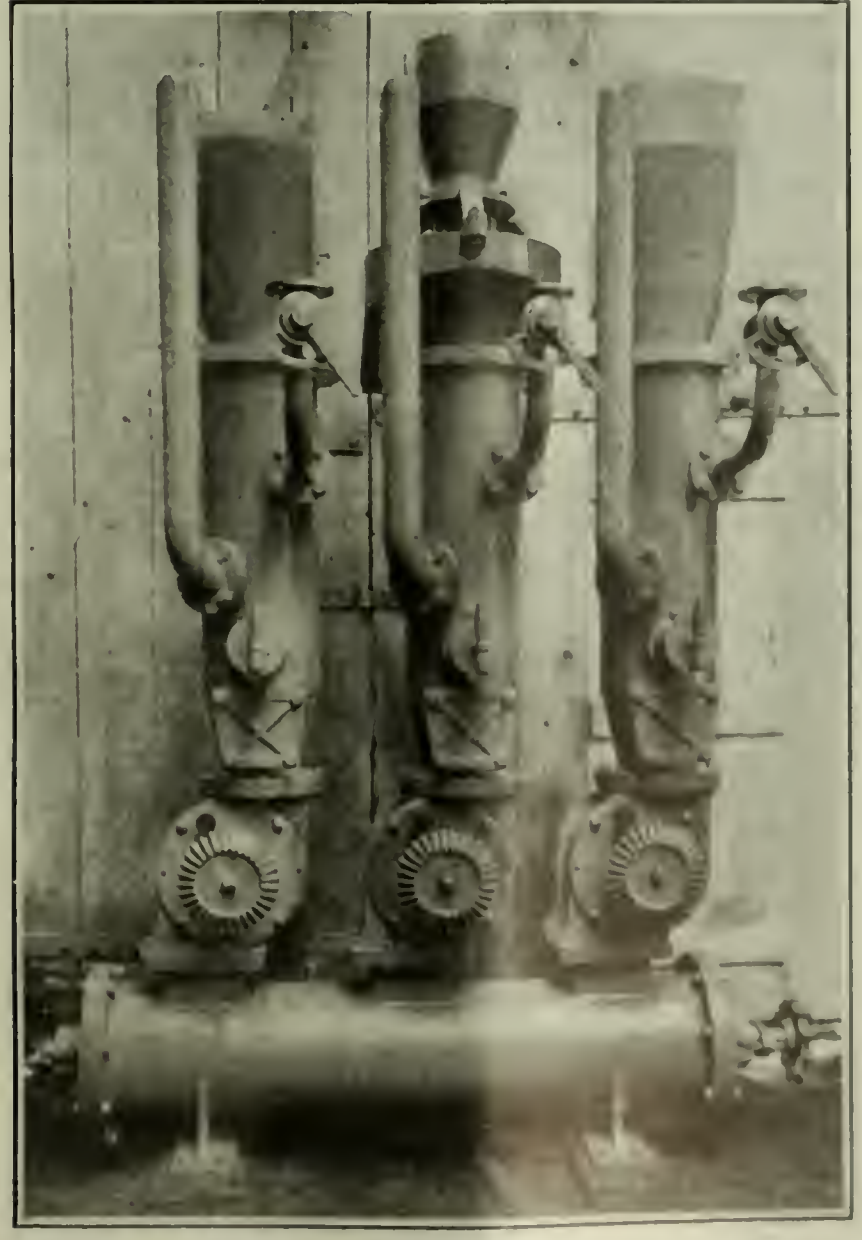


FIG. 1—EXTERIOR VIEW OF THE DRAPER WASHER

Water comes in by the index valve at the small pipes to the right of the larger ones. The coal enters at the top of the large pipes. The coal is held up by the upflowing water and escapes with it by a chute in the rear. Valves [illegible] Just above the drum progressively empty out the waste material as fast as it collects.

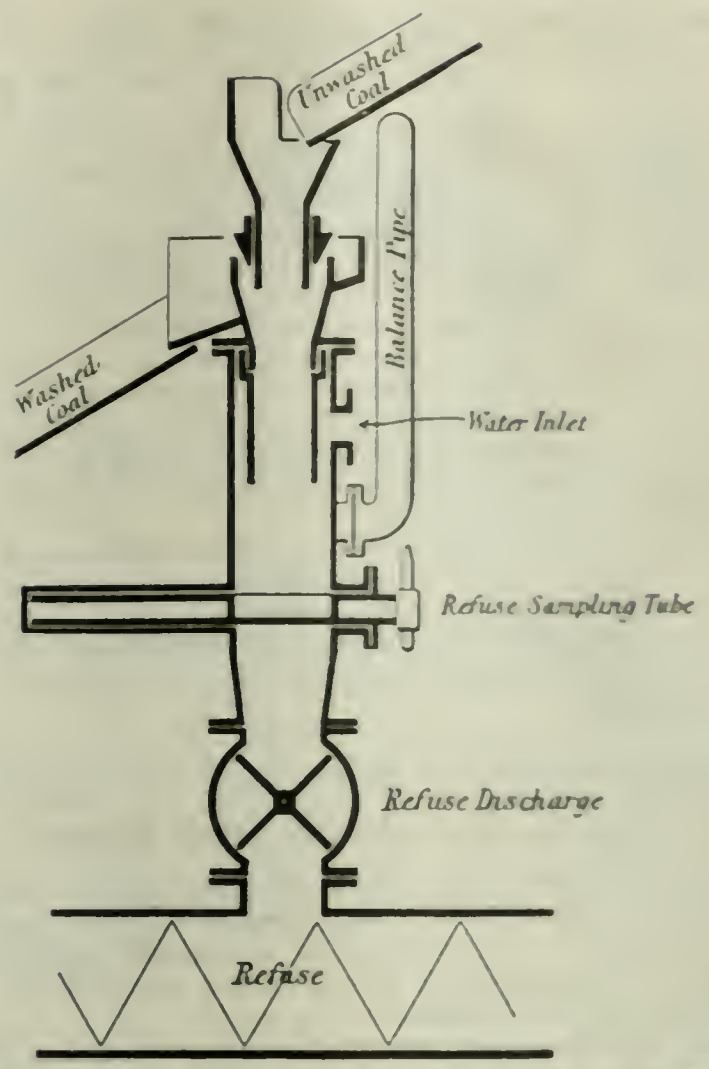


FIG. 2—WASHER ON THE PRINCIPLE OF THE RIFFLE

The riffle washer operates essentially on the principle that water on a grade on meeting a riffle is lifted up by it and that if light and heavy material are being carried along with the water the light will be carried with it and the heavy will stay behind. The trouble is that the riffles soon fill up, and so several are used to give capacity. Here the equivalent to the riffle is deep and also self-cleaning, so the one "riffle" will do the work.

valve which is built like one of the revolving doors which are installed at large buildings to keep out the cold air and yet admit visitors. This four-winged butterfly valve slowly revolves and removes all the refuse, with only a minimum of water, dropping it into a refuse drum.

In order to sample the refuse a hole has been provided through the walls of the 11-in. tube previously referred to. In this a sampling tube is placed, held in position by a short boxing on one end and a longer one on the other. The sampling tube is so made as to carry a box which normally is kept with its opening downward. When, however, a sample of the refuse is desired, the tube is revolved and the receptacle filled with the reject. The turning of the sampling tube unlocks it, and it can then be drawn out and the sample dumped into a tray for investigation.

Washer Will Not Break or Abrade Coal

It is claimed that the Draper washer will separate effectively shale from coal of all sizes from the finest dust up to 4-in. cubes. The washer is controlled by the index handle on the water inlet, which regulates the volume of the washing water and hence its velocity. The action of the washer is quite easy and consequently the coal is not broken or abraded by the treatment as it is apt to be in jig washing.

It is said that the water and power used is halved by this method of washing. Several of these washers are at work not only in Great Britain but in Spain, China and France, cleaning not only raw coal but ashes from boiler plants, coke, slack and the reject from other washeries.

Class 1 Roads Used 7,256,000 Tons of Coal In August; Cost, $4.87 Per Ton

During August, 1922, Class 1 railroads consumed 7,256,000 net tons of coal, as charged to account 734, compared with 6,246,000 tons in July and 7,279,000 tons in August, 1921, according to figures published by the Bureau of Statistics, Interstate Commerce Commission, covering 165 reports representing 172 steam roads. Coal consumption for the first eight months of the year totaled 58,925,000 tons as compared with 59,788,000 tons during the same period of 1921.

The delivered cost of the coal during August was $4.87 per ton, as compared with $4.86 in the corresponding month of last year. For the eight months ended Aug. 31, 1922, however, the cost per ton was only $3.82; in the same period of last year it was $4.31.

Fuel-oil consumption by the railroads continued to gain during August, when 126,957,000 gal. was used, as compared with 114,820,000 gal. in August, 1921. During the first eight months of this year 958,879,000 gal. was consumed, approximately 32,000,000 gal. in excess of last year's figures.

Utilities Consume More Coal in September Than in Any Month Since January

Electric public utility plants consumed 2,907,672 net tons of coal during September, according to a recent report of the Geological Survey. This is the largest tonnage consumed during any month since January and compares with 2,815,685 tons in August.

The average daily production of electricity by public-utility power plants in September again broke all records, this being the third time in four months that records of output have been surpassed. The daily production of electricity in September was 135,200,000 kw.-hr., 3 per cent greater than the August record and nearly 6 per cent greater than the June record.

The daily consumption of both oil and gas in the production of electric power also broke all records in August and September, the consumption of these two fuels in September being especially large in comparison with previous months of this year and of the other years of record, indicating an abnormal use of these fuels which has probably been brought about by the difficulty in obtaining coal.

More Mine Fatalities in September but Fewer In Ratio to Output Than in August

Accidents at coal mines in September resulted in the death of 153 men, according to reports from state mine inspectors to the United States Bureau of Mines. Nineteen employees were killed at anthracite mines in Pennsylvania and 134 were killed at bituminous coal mines throughout the country. In September last year 167 men were killed, of whom 45 were killed at anthracite mines and 122 at bituminous mines. The production of coal was 46,196,000 tons in September, 1922, and 43,329,000 in the corresponding month last year; hence, for each million tons of coal mined the fatality rate for September, 1922, is 3.31 as compared with 3.85 a year ago. During August, last, there were 98 fatalities, or 3.80 per million tons of production.

The average fatality rate for September during the nine-year period 1913-1921 is 3.65 per million tons and the average number of fatalities is 186. Thus the record for September, 1922, shows a reduction both in the actual number of lives lost and the fatality rate per million tons, when compared with September's record a year ago and the general average for the same month since 1913.

On Sept. 23 five men, shaft sinkers, were killed by a falling cage while cleaning out a sump at Raleigh-Wyoming mine No. 2, at Glen Rogers, W. Va.

During the nine-month period January to September of the current year, 1,186 men have been killed by accidents at coal mines, as compared with 1,485 killed in the corresponding months last year. The fatality rate per million tons is 3.98 this year as against 4.07 for the first nine months of 1921. Because of the general strike recently closed, the output of coal in 1922 has reached only 298,000,000 tons, while during the nine-month period last year the production was 365,000,000 tons.

COAL-MINE FATALITIES DURING SEPTEMBER 1922, BY CAUSES AND STATES

(Compiled by Bureau of Mines and Published by *Coal Age*)

State	Underground												Shaft					Surface							Total by States	
	Falls of roof (coal mine, etc.)	Falls of face or solid coal	Mine cars and locomotives	Gas explosions and burning gas	Coal-dust explosions (in burning gas and dust combined)	Explosives	Suffocation from mine gases	Electricity	Animals	Mining machines	Mine fires (burned, suffocated, etc.)	Other causes	Total	Falling down shafts or slopes	Objects falling down shafts or slopes	Cage, skip, or bucket	Other causes	Total	Mine cars and mine locomotives	Electricity	Machinery	Boiler explosions or bursting steam pipes	Railway cars and locomotives	Other causes	Total	1922	1921
Alabama	4							1					5	..	...				.						.	5	5
Alaska													..	...												0	0
Arkansas													...													0	2
Colorado	1	1						1					5											1	1	6	3
Illinois	3		4					2					11	2	.		2							..		13	14
Indiana	1											1	1	.	.	.	...							1	1	2	4
Iowa	1	1											2		.	.	...							..		2	3
Kansas	1		3										4		..	...	...							..		4	9
Kentucky	1						1						1			....	...							..		1	1
Maryland													..		...	.			.					..		0	1
Michigan																										0	4
Missouri	1												2													2	0
Montana													..													0	0
New Mexico	1												1													2	0
North Dakota	1												4								1			1	1	2	0
Ohio	1	1	3										5											1	1	5	6
Oklahoma													1													1	1
Pennsylvania (Anthracite)	1							1			1	1	31	.			....		..		..		1	2	3	34	35
Pennsylvania (Bituminous)	3		1					1					6													6	0
Tennessee	1											1	3								1				1	4	1
Texas																										4	0
Utah	1												1													0	0
Virginia	1												2				..	....								1	1
West Virginia	6		3	1			1	2	1				34			5		5	3	1	..			1	5	2	0
Wyoming	3							1					5								..					41	26
Total bituminous	29	3	11	1		1	1	14	1	1		3	114	2		5		7	3	1	2		1	6	13	134	122
Total anthracite	4												13			1		1	1	1	1			1	5	19	45
Total September, 1922	33	3	11	1		1	1	14	1	1		3	127	2		6		8	4	2	3		2	7	18	153	
Total September, 1921	37	3	14	1		1	1	14	1	1	1	3	154	2				2	1	1	3		4	2	11		167



Problems of Operating Men

Edited by James T. Beard



Conferences on Mine Safety Problems

Bureau of Mines Recommends the Certification of All Mine Officials Having Responsible Charge of Mining Operations—Experience Generally Gained Through Some One's Carelessness or Ignorance

AFTER reading a recent circular letter, issued by the Colorado Fuel and Iron Co. and posted on their bulletin boards, I am deeply impressed with the recommendations, which appear to come from the Bureau of Mines.

The bureau is composed of expert mining men and their recommendations should be given careful consideration by every man engaged in the work of mining coal.

The circular bears the caption:

"From U. S. Bureau of Mines,
Conference on Mine-Safety
Problems"

It draws attention forcibly to many of the points that have been widely discussed by readers of *Coal Age*. It is a satisfaction to know that these receive the endorsement of the Bureau of Mines. The safety of life and property, in the mining of coal, cannot be assured, unless the men in charge are thoroughly familiar with the dangers that surround the undertaking and adopt means of preventing accidents.

Certification of Mine Officials Recommended

Chief among the recommendations presented in the letter is the following: "All persons in responsible charge of the direct operation of coal mines, including superintendents, foremen, firebosses, and shotfirers, should be required to have certificates of competency, issued by the state and showing that the applicant has passed an examination clearly establishing his knowledge of what constitutes up-to-date safe practices in the branch or branches of mine operations under his jurisdiction.

"All such certificates should be revocable by the state, for cause, and should expire after five years and be renewed only on taking another examination. The latter requirement would compel all operating mining men to keep conversant with progressive safety practices."

In making this recommendation, the conferees have advanced one step in the certification of mine officials. I note that they recommend that mine superintendents be required to pass an examination before a state board of examiners and hold a certificate of competency issued by the board.

In discussing this question, I have heretofore contended that it was not necessary for a superintendent to be certified, provided the mine foreman holds a certificate. However, the Bureau of Mines engineers are in a position to know whereof they speak, and, as I have said before, if the certifying of superintendents will make our mines safer I am for it heart and soul.

Perhaps I have not given the outside operations sufficient thought. Undoubtedly, there is danger on the surface, as well as underground; and, viewing the situation from a broad angle, I frankly confess that the certification of mine superintendents would not be amiss.

Letter Recommends Limiting the Life of Certificates

Again, this circular letter recommends limiting the life of certificates to five years, after which they must be renewed through the taking of another examination. This suggestion has my heartiest approval. Few will deny that a large number of our certified men neglect to keep posted in regard to the requirements of the mining laws of their states; and technical questions, relating to the various branches of mining, receive little attention after a man has once been granted his papers and has started performing his regular duties.

If I am not mistaken, the purpose of these recommendations is to keep all mining officials, who are responsible for the safe operation of mines, thoroughly familiar with everything that pertains to safe up-to-date practices, regarding the ventilation of mines, danger of dust and explosives, and the use of electricity as employed in the various operations in and about mines.

Miners Should Read Mine Laws

Not long ago, I had the pleasure of listening to a paper on mine accidents. When suggestions were asked regarding their prevention, someone stated that every mine worker should be required to secure a copy of the state mining laws and read them. A few days later, one of the men said to me, "Why did Mr. —— suggest the reading of the mining laws by all mine workers?"

What prompted the question was probably the fact that the Colorado mining laws place the responsibility for the safe operation of mines directly on the shoulders of the mine owners, board of examiners, state and deputy inspectors, mine foremen and assistant foremen, firebosses and shotfirers. Of the 178 sections of our law, I believe only three relate to the responsibility of the worker.

The letter further recommends that every mine should be made the subject of special study, regarding its gas and dust condition. I believe this is already being done by our state and district inspectors. If the suggestion has reference, however, to the Bureau of Mines making such a special study of individual mines, there is little doubt but that they would always be welcomed and every assistance accorded them, in the mines of Colorado.

It was only a few days ago that I overheard a remark made by a mine official who, speaking of a recent mine disaster, said, "we always lock the stable door after the horse is stolen." It would seem true that our richest experience is only gained through disasters caused by the carelessness or ignorance of others. Let us, as mine officials, take to heart the lessons taught by these experiences and profit by them.

Robert A. Marshall.

Walsenburg, Colo.

Locating the Coal Beyond a Fault

Indications left along the line of fault showing upthrow or downthrow—Observations appear to upset generally accepted theory—Discussion asked.

WHILE making an inspection of a coal mine, a short time ago, I picked up an old file of Coal Age, in the superintendent's office. It was not long before my eyes rested on an article that interested me. It treated on the method of determining whether a fault of displacement, when found in a mine, was an upthrow or a downthrow.

The fact has long been generally accepted that Nature, in all her constructive phases, has left sure-or-indistinct evidences that enable us, at least, invite a close study for the purpose of determining the conditions under which certain observed geological changes have taken place.

Faults of Displacement Show the Direction of Movement

In respect to a fault of displacement, the belief is well grounded that she has left indications that point to the direction in which the movement or displacement of the strata took place. As the name signifies, a "fault of displacement"

or "dislocation," in a coal seam or other stratum, presents the appearance of the seam having been disrupted along a distinct line that makes a considerable angle with the plane of stratification.

It is plainly evident that the disruptive force has operated across the strata, causing them to break and slide up or down along the line of fracture. For the purpose in hand, we are not interested in the origin or nature of this force, but are concerned only in ascertaining the direction in which the slip of the strata took place.

Problem Presented on Meeting a Fault of Dislocation

The question for the engineer to determine, on meeting such a fault in the coal seam, is: Will the continuation of the seam be found above or below the seam being worked? In order to answer this question, he examines closely the indications that are to be found in the seam and the adjoining strata, hoping that these will point the way.

Referring to Fig. 1, I have illustrated a fault of displacement. Assuming

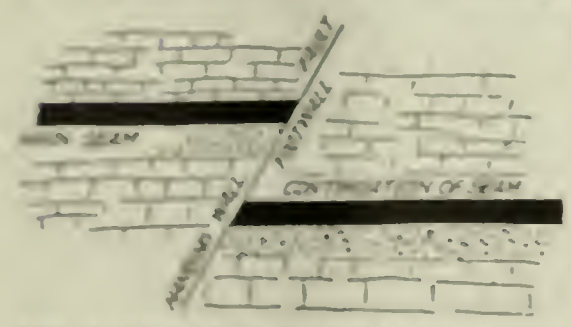


FIG. 1—SHOWING MANNER IN WHICH FAULTING TAKES PLACE

that the portion of the seam shown as lying on the left of the line of fault, marked "main seam," is the one that is being worked, this fault is evidently a downthrow, since the continuation of the seam shown on the right of the fault line, lies below the portion that is working.

Generally Assumed Condition Not Found in Observed Faults

In Fig. 2 is shown the condition that is generally assumed to result from the slip of the strata on each other when the fault occurred. As indicated in the figure, where the condition is purposely exaggerated, the ends of the strata forming the faces are bent downward and upward, respectively, as they were torn apart when the strata slipped.

In other words, the deflection of the cleavage planes are in the opposite direction from that in which the disrupting force acted on the two respective portions of the seam, throwing the one downward and the other upward, relatively. Thus, the deflection of the cleavages, in either portion of the seam, has been generally assumed to point in the direction in which the remaining portion may be found.

Having had occasion, as a coal mine, to cut a number of faults of displacement at different times, I have always made it a rule to closely observe the conditions existing on both sides of the fault line. In every instance, strange as it may seem, I have found the deflection of the cleavages, in the seam, close to the fault, pointing upward when the displacement was downward, and pointing downward when the displacement was upward.

Proposed Theory to Explain This Seeming Misconception

In my feeble attempt to explain this seeming contradiction of the generally accepted theory regarding faults of

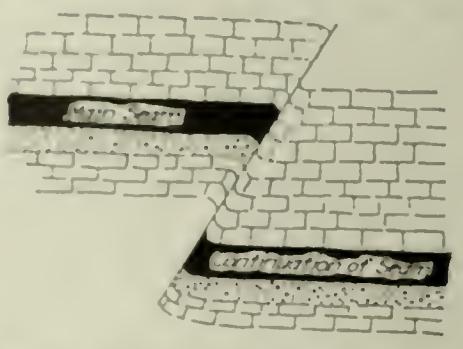


FIG. 2—SHOWING BENDING OF STRATA AS GENERALLY ASSUMED

displacement, I have assumed that, following the action of a disruptive force producing displacement in the strata, there is a tendency, on the part of the disrupted portions, to react or return to their former positions.

This is only a theory of mine that, if correct, would explain my finding of the cleavages, along the line of fault, deflected in the opposite direction from that in which the displacement has taken place. Allow me to present this theory of the action of faults of displacement to the readers of *Coal Age*, with the request that, before pronouncing it as "visionary," they will carefully inspect faults of dislocation that are available to them and give us the benefit of their observations.

Washington, D.C. I. C. Parfitt.

Economy in Use of Mine Timber

Much timber wasted in drawing pillars —Purpose of setting post timber— Conditions affecting the life and use of timber in mines—Greater economy required in its use.

LEADING the excellent article of William Allan, entitled "Where Coal-Mining Practice Could Be Materially Improved," *Coal Age*, Oct. 26, p. 675, one is not a little surprised to observe that he fails to mention the need of more economy in the use of mine timber.

Experience has taught me that there is a greater waste of timber, in the work of drawing back pillars than there is in the mining of solid coal. I have observed that, in nine cases out of ten, the miner is largely to blame for this waste. The average miner either gives little thought to the matter, or is guilty of lack of judgment in setting his posts, in robbing pillars.

Frankly, it is only right that miners should be provided with an ample supply of timber to make themselves safe. At the same time, it is imperative that he should use judgment in standing his posts. This is particularly true in the work of drawing back pillars, when no standard rule can be given regulating the setting of posts.

The practical miner realizes, of course, that posts are never set to support the weight of cover above them, but to safeguard the miner by warning him of an approaching squeeze. This is not saying that squeezes are not continually taking place where pillars are being drawn; but that is no sign of immediate danger. The observed condition of the posts set, however, is an index of the amount of pressure on the timber and the rate at which it is increasing, which is what the miner must know if he is to avoid danger.

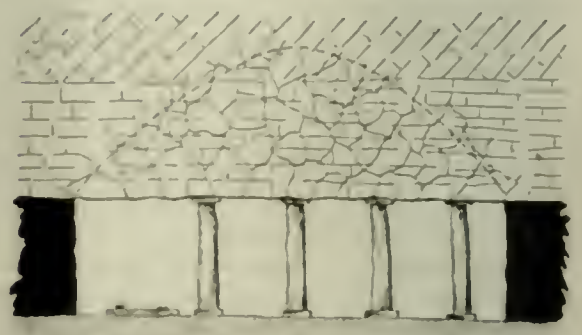
Economy of Timber Requires Close Study of Conditions

Many conditions in the mine affect the life of timbers set for the support of the roof. A study of these conditions, in their relation to timbering, is of the utmost importance in determining the proper use of mine timber.

When mining under a strong roof that is hard to break little timber is required in the first working. Under these conditions, the quality of the timber employed is not of the same importance as where the roof is more treacherous. It don't matter whether the timber is hard, soft, good or bad, when such a roof does begin to break all timbers are alike ineffective to resist the action.

Working Under Bad Roof Demands Strong Timbers

On the other hand, where the roof is bad and breaks readily the chances are that the chambers will have to be propped or retimbered, before the pillars can be taken out with safety. Under these conditions, the quality of the timber employed is of the greatest im-



OVERARCHING OF ROOF THROWS THE WEIGHT ON PILLARS

portance. The posts set must be strong enough to carry the loose material above the opening, while the weight of the overburden arches and rests on the pillars.

Statistics show that more accidents occur where the roof in a mine is good. This is probably owing to the fact that miners fail to keep as close a watch, or take the same precautions that they would when working under a roof known to be bad. The fact goes to show the need of taking every precaution, under all conditions.

Much of the timber used in our mines, today, could be saved if the coal was to

be worked out on the retreating system of mining. This system is too well known to need further explanation than to say that, in the work of development, the headings or entries are driven in solid coal and require far less timber to maintain them than when mining on the advancing plan.

Again, when retreating less timber is required in the chambers, under like conditions of roof and floor. The first chambers are opened at the inby end of the heading, or at the boundary of the property. As soon as these chambers reach the limit the pillars between them are drawn back.

Effect of Change of Seasons on Life of Timber

The life of mine timber is an important factor in economy. In this respect, much depends on atmospheric conditions and the physical surroundings in the strata. At one time, I worked in a mine where the ventilation was subject to change with the changes in the seasons. The intake airway in the winter became the return airway in summer.

In this mine, also, such were the roof conditions that the roadways required to be timbered so closely that one set of timbers could not be put in place, until the old set had been taken out to make room for the new timbers. Owing chiefly to changes in atmospheric conditions, however, the timbers on the main roads, in this mine, had to be replaced more frequently than on any other passageway.

Notwithstanding the increasing use of I-beams in place of timber in mines, it is very essential that more attention should be given to the need of economy in the use of mine timber. Each year, the supply of a good quality of timber for mining, grows less and less.

Cutting Timber to Required Length

Not long ago, a number of writers drew attention, in *Coal Age*, to the need of cutting timbers to the desired length, on the surface, before they are sent into the mine and delivered at the working faces. To my mind, this is an important suggestion and one that is worthy of careful consideration by all mine operators.

Miners have come to me asking for props, but were unable to tell what length they required. Frequently, they would specify a length that was a foot or two too long. In such cases, what they did not use for cap-pieces would be thrown into the gob and lost. A careful estimate of the waste, from this source alone, each year, is astonishing. Occasionally, it will happen that a miner will bury an extra heavy prop in the gob, rather than exert himself to stand it in place.

Allow me to suggest, in closing, that it would be well to frame a set of rules regarding timbering and post these in a conspicuous place at the mine. If this was done and the rule strictly enforced, it would go a long ways toward reducing the present unwarranted waste in mine timber.

Plains, Pa. Richard Bowen

Inquiries Of General Interest

Calculating Dimensions of Turnout or Crossover Switch

Need of Careful Calculation of All Dimensions of Switches—Track Gage and Size or Number of Frog to Be Used First Determined—Other Dimensions Calculated from These Data

SOME of the switches laid for turnouts in our mines have always given trouble; not so much by reason of derailment, for this has seldom happened in switching cars at turnouts. The chief trouble seems to be caused by lack of alignment and, as a result, the rails become worn and tracks need frequent repairs. After many trials, I have concluded that a track switch must be carefully calculated and laid out by exact dimensions.

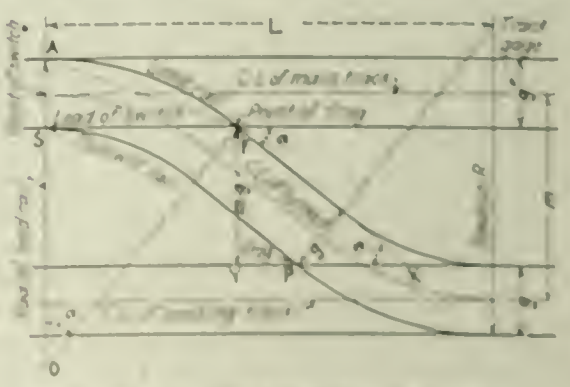
Kindly explain, through the columns of *Coal Age*, the essential requirements for making these calculations; and show the derivation of the formulas used. My purpose in asking this is to develop a standard switch and form of turnout, for use in our mine, where the track gage is 42 in. (3½ ft.). We are using No.-3 frogs in these switches and 30 lb. rails on the main road.

Trackman.

————, Ill.

From the information given by this correspondent, we judge that his conclusion is correct and that the fault lies in the dimensions of the switch not conforming to other fixed data, such as track gage, number of frog employed and distance between track centers.

In designing a crossover switch similar to that shown in the accompanying



PLAN OF CROSSOVER SWITCH

diagram, assuming a given track gage (g) and frog number (n), the first step is to calculate the radius (R) of the lead rail, the length of its chord (c) and the exact position of the frog measured from the point of switch to the point of frog on the straight rail of the main track. This distance (d) is called the lead of the switch.

But, the angle AOF subtending the lead rail is, evidently, equal to the frog angle, and the chord ($AF = c$) corresponds to the spread of the frog for a distance $OF = R$. Then, since the frog number (n) is the ratio of one arm of the frog to its spread, we have $R = nc$.

Again, the angle AFS being half the frog angle and AS the track gage (g), it is clear that $2g$ is the spread of frog for a distance $AF = c$; and $c = 2gn$; which gives $R = nc = 2gn^2$.

Applying this formula to find the radius of lead rail, for a track gage $g = 3\frac{1}{2}$ ft., and using a No. 3 frog, we have

$$R = 2gn^2 = 2 \times 3\tfrac{1}{2} \times 3^2 = 63 \text{ ft.}$$

For the length of chord subtending the lead rail ($AF = c$), we have

$$c = 2gn = 2 \times 3\tfrac{1}{2} \times 3 = 21 \text{ ft.}$$

Approximately, the middle ordinate (o) of the lead rail, in inches, is found by dividing three times the square of the chord, in feet, by twice the radius, in feet, which gives, in this case,

$$o = \frac{3c^2}{2R} = \frac{3 \times 21^2}{2 \times 63} = 10\tfrac{1}{2} \text{ in.}$$

For the lead of switch ($SF = d$)

$$d = \sqrt{c^2 - g^2} = \sqrt{21^2 - 3\tfrac{1}{2}^2} = 20.7 \text{ ft.}$$

Total Length of Crossover

The next step is to find the total length (L) of the crossover, from switch point to switch point, as measured on the straight rails of either track. Calling the distance between track centers m, the distance between the gage lines of the inner rails of the two tracks is $m - g$. Then, calling the frog angle a, we have

$$YP = YX - PX = \frac{m - g}{\tan a} - \frac{g}{\sin a}$$

To calculate the frog angle, assume the spread as unity, which makes the length of each arm n, and we have, for a No.-3 frog,

$$\sin \tfrac{1}{2}a = \frac{\frac{1}{2}}{n} = \frac{1}{2n} = \frac{1}{2 \times 3} = \frac{1}{6} = 0.1667$$

or $\frac{1}{2}a = 9^\circ 36'$ nearly; and $a =$ say $19^\circ 11'$; $\tan a = 0.346$; and $\sin a = 0.3287$. Substituting these values in the formula previously given and assuming a distance between track centers $m = 8$ ft.

$$YP = \frac{8 - 3.5}{0.346} - \frac{3.5}{0.3287} = 2.58 \text{ ft.}$$

Since the same dimensions answer for both ends of the crossover, using the same frog number in each track, the

total length of the crossover or distance from point of switch to point of switch, as measured on the straight rail of either track, is

$$L = 2d + Yl' = 2 \times 20.7 + 2.28 = 43.68 \text{ ft.}$$

At times it may be desired to use a fixed lead and find the frog number, or angle of frog, that will suit a given track gage. Then, since $c' = g' + d'$; and $c = 2gn$, we have

$$n = \frac{\sqrt{g' + d'}}{2g}$$

These are the essential switch formulas and by combining them it is possible to calculate the dimensions required to suit various conditions.

Examination Questions Answered

Mine Managers' Examination, Nova Scotia, 1922

(Selected Questions)

QUESTION—*How do you account for explosions frequently causing more damage in main intake roads than in returns and faces?*

ANSWER—A mine explosion, whether of dust or gas invariably produces the greater manifestation of violence in the direction of the intake air. The reason for this is that the combustion of the dust or gas requires air. On the return side of the explosion, the combustion is retarded, or may cease entirely for lack of air, the flame being extinguished in the products of the combustion, which always lack available oxygen. Because of the greater violence, due to the greater activity in the direction of the fresh air on the intake side, the damage is always greater in that direction than on the return side of the explosive wave.

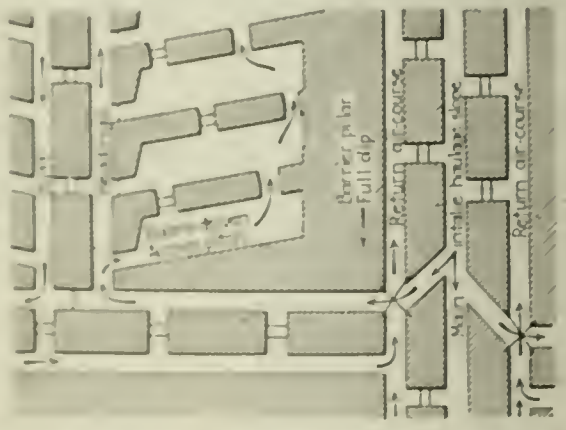
QUESTION—*Name as many as you can of the possible causes of underground explosions?*

ANSWER—An underground explosion results from the ignition of accumulated gas, or of a dust-laden atmosphere. The causes of the ignition are numerous and may be stated as: exposure to a naked lamp, or the flame of a firemans shot in blasting; or as the result of the sparking of electric wires; the blowing out of a fuse; or a spark struck by a miner's pick coming in contact with a sulphur ball or hard rock. There are instances recorded where explosions have resulted from gas being ignited by sparks due to certain flinty rocks falling from the roof. The ignition of gas at the open end of a miner's safety or falling rock is conceivable.

Frequent causes of the ignition of gas, or a dust-laden atmosphere, are defective safety lamps; or the improper use of a safety lamp, in the hands of an inexperienced person. A lamp that is improperly assembled, or the gauze of which is otherwise defective, or in which is seen flame through the gauze, or in the top gas or dust-chamber, any surrounding the lamp. When a lamp is exposed for too long a time to an explosive atmosphere the gauze becomes heated and the lamp is then unsafe and liable to cause an explosion if gas or dust is present in the air current. If a lamp is carried against a strong air current, or allowed to fall, or exposed to a sudden concussion of the air, it is liable to pass flame and ignite any surrounding gas or dust-laden air.

QUESTION—*Show, by a sketch, how you would arrange for the ventilation of a section of a gaseous mine pitching 35 deg., indicating by arrows the direction of the ventilating current in the airways and along the working faces.*

ANSWER—In the accompanying figure, is shown a section of a gaseous mine opened by driving the main slope headings three abreast, on the full dip of the seam. Cross-headings are then turned to the right and left of these slope headings and driven on the strike of the seam. Starting at a distance of 200 ft. from the main return air-course, butt headings are turned off the cross-entries and driven directly up the pitch, in pairs, leaving 100 yd. of solid coal between each pair of butts. As shown in the figure, rooms are driven to the right and left of each pair of butt headings, at a slight angle across the pitch, so as to assist the movement of the loaded cars on the rooms. The arrows indicate the direction of the currents.



QUESTION—*If you had a double-acting steam pump running at a piston speed of 90 ft. per min., the diameter of the plunger being 10 in., how much water per hour would it discharge; and what would be the size of the suction and discharge pipes to allow this pump to work at its best, assuming an efficiency of 85 per cent for the water-end of the pump and 231 cu.in. to the gallon?*

ANSWER—The sectional area of the plunger of this pump is $0.7854 \times 10^2 = 78.54$ sq.in. The plunger displacement, at a speed of 90 ft. per min. is $(90 \times 12 \times 78.54) \div 231 = 367.2$ gal. per min. The discharge of this pump, assuming an efficiency of 85 per cent for the water-end, is $0.85 \times 60 \times 367.2 = 18{,}727$ gal. per hr.

The diameter of the suction pipe, for this pump is $d = 0.35\sqrt{G} = 0.35\sqrt{0.85 \times 367} = 6.18$, say 6 in.

The diameter of the discharge pipe of the pump is $d = 0.25\sqrt{G} = 0.25\sqrt{0.85 \times 367} = 4.42$, say 4½ in.

QUESTION—*What would be the safe working load for a steel hoisting rope ¾ in. in diameter?*

ANSWER—The breaking strain of a 6-strand, 19-wire, cast-steel, hoisting rope, 1 in. in diameter, is 34 tons. Then, since the strength of ropes of the same kind varies with the square of the diameter of the rope, we have for the breaking strain of a ¾-in. hoisting rope, $34(\frac{3}{4})^2 = 26+$ tons. The safe working load of this rope will depend much on the depth of the shaft in which it is used. For depths not exceeding 100 yd., a factor of safety of 5 can be used, making the safe working load, in that case, $26 \div 5 = 5.2$ tons. For greater depths, a larger factor of safety must be employed, say 8 or 10, for depths of 200 and 300 yd., respectively.

QUESTION—*A pair of winding engines with cylinders 30 in. in diameter, 5-ft. stroke, running at 40 r.p.m., steam pressure 40 lb. per sq. in., what would be the approximate horsepower?*

ANSWER—The sectional area of one cylinder, in this case, is $0.7854 \times 30^2 = 706.86$ sq.in. The total pressure on one cylinder is, therefore, $40 \times 706.86 = 28{,}274$ lb. For a 5-ft. stroke and a speed of 40 r.p.m., the piston speed is $2 \times 5 \times 40 = 400$ ft. per min. The power of a single cylinder, in this case, assuming an efficiency of 85 per cent is $0.85(28{,}274 \times 400) \div 33{,}000 = 291.3$ hp. The total power for the two cylinders is, therefore, $2 \times 291.3 = 582.6$ hp.

QUESTION — *What circumstances would guide you in deciding as to the quantity of air necessary for the ventilation of a mine?*

ANSWER—The volume of air circulating in a mine must first be sufficient to comply with the requirements of the state mining law. In addition to this, the volume must be sufficient and the air current so conducted as to sweep the working faces, in every part of the mine, and keep them free from gas and safe for work. The factors that decide the quantity of air required to accomplish this are the size of the workings; sectional area of the airways; thickness of the seam, as affecting the area of the openings through which the air currents pass and determining the velocity of the current. The velocity of the air must always be sufficient to act effectually in removing the gases that would otherwise accumulate in the workings.

National Coal Association Suggests Investigation of Seven Fundamental Points by Coal Commission

By Paul Wooton
Washington Correspondent of *Coal Age*

In a communication to the U. S. Coal Commission dated Nov. 10, in reply to a recent letter asking for suggestions "as to the best means of ascertaining the facts pertinent to the investigation into the bituminous industry," seven fundamental points are suggested by the National Coal Association as subjects to which the President's coal commission should give particular attention. They are:

1. The effect on production and on the price of coal, to the consumer, of the monopolistic and absentee control of mine labor.

2. The opposition of organized labor to the introduction of labor-saving machinery.

3. The non-observance by organized labor of contracts made on its behalf.

4. The existing prices of mining materials and supplies and a comparison between them and the prices existing prior to the war.

5. The existing freight rates and a comparison between them and the rates existing prior to the war.

6. The effect of inadequate transportation facilities on the production and the cost of coal.

7. The character and quality of the different coals, the uses to which they are put and the demand therefor.

The most careful attention was given by the National Association to this document. It was formulated from separate drafts presented by the different groups of operators. John W. Davis, former Ambassador to Great Britain and former Solicitor General of the Department of Justice, who has been retained by the association as its advisory counsel, assisted in the preparation of the document.

Alfred M. Ogle, president of the National Coal Association, met with the Brydon committee when the report was approved. At the close of the meeting he declared that coal operators generally are convinced that the President's commission is going to do a constructive piece of work. He said that the National Coal Association is more than anxious to co-operate with the commission in the most cordial and effective way possible.

The gist of the reply of the bituminous operators' special committee, composed of J. C. Brydon (chairman), J. G. Bradley, Michael Gallagher, Tracy W. Guthrie, George B. Harrington, E. C. Mahan and H. N. Taylor, is as follows:

This committee of the National Coal Association, and the bituminous coal operators co-operating with it, representing a preponderance of the tonnage of the industry, has received your letter of Oct. 24, 1922, on the subject of the approaching inquiry and respectfully submits its reply. The committee appreciates this opportunity to present in advance the views of the bituminous operators and begs to assure the commission of its earnest wish and the wish of those whom it represents to lend to the commission every assistance in its power.

With this purpose in mind the committee comes without further preface to the task of making responsive answers to the concrete topics enumerated in the commission's letter, taking each by the number assigned to it and answering the committee's questions A and B with reference thereto, and thereafter turning to questions C, D, E and F.

1. *"Ownership and titles of the mine."*

We suggest that a list of all the coal operating companies, individuals and partnerships be secured from the U. S. Geological Survey and that a card be prepared and mailed to each of said operators asking them to fill out the same and return to the commission with the following information:

(1) List of mines operated, acreage of each and showing as to each whether operated as lessees or by owner of the fee, and if as lessee, the name of the lessor.

(2) Thickness and name of seam or seams and in what coal field and district located and served by what railroad and at what shipping points.

(3) Whether operating under contract with United Mine Workers of America or not.

Since the sources of information and the methods of investigation in the union and non-union fields will necessarily be materially different, it seems to us that the first classification of mines made by your commission will be "union" and "non-union" mines and we therefore recommend that this information be obtained by the first questionnaire sent out, and so we have no hope only with the request for information as to titles and ownership.

2. *"Prices of coal."*

This information may be obtained from each individual operator. We know of no common source which can supply it.

3. *"The organizations and persons connected with the coal industry."*

Literally speaking, this involves owners and all employees at each individual mine, the railway companies, selling agents, brokers, dealers, wholesale and retail, and delivery contractors, with the organization, personnel and employees of each, as well as ship and dock owners.

This information can be obtained in full only from the organizations and individuals above referred to. No doubt such organizations as the National Coal Association, the National Retail Coal Merchants' Association, the American Wholesale Coal Association and the United Mine Workers of America can be of assistance.

4. *"Cost of production."*

(a) Since the methods of bookkeeping obtaining at different mines are divergent, we believe that the detailed reports required under this head should be consolidated to as few items as possible, consistent with obtaining the desired information, and we suggest the following: Labor, material and supplies, royalty, depletion, depreciation, general insurance, workmen's compensation or employers' liability insurance, taxes, including federal taxes assessed against the year's business in which the cost was incurred, general expense or overhead, interest on invested capital and miscellaneous charges.

(b) This information will be complete only if secured from all mines and may be obtained by a questionnaire as outlined in the method suggested for obtaining information as to ownership, and to show the radical changes in cost, should cover a period of ten years. In coal fields where trade associations exist this information might perhaps be obtained through them.

5. *"Profits realized by operators or owners of said mines during the last ten years."*

(a) Transcripts of the profit and loss accounts appended as may be necessary to secure uniformity.

(b) Where not published, this information can only be obtained from the individual operator. To be of value it should be secured from all mines since profits realized depend not alone upon working conditions and physical surroundings but upon management, marketing and many other factors. One mine cannot fairly be taken in this respect as fixing a standard even for its neighbor.

No Suggestion on Obtaining Data on Profits

6. *"Profits of other persons or corporations having to do with production, distribution or sale of coal."*

(a) This would include the companies or individuals to whom royalties are paid. It would, also, include transportation companies, whether railroads or shipping, both on the lakes and in the coastwise trade, together with incidental services rendered them by others. It, also, includes general selling agencies and brokers, dealers, wholesale and retail, and persons engaged in the business of delivering coal from the cars to the bins of the consumers, as well as those rendering these incidental services.

(b) We find ourselves unable to offer any suggestion as to how the information may be obtained, except from organizations and individuals mentioned.

7. *"Labor costs."*

(a) This is one of the details under Topic 4, and need not be further discussed here.

8. *"Wages paid."*

(a) Rates of wages paid can be obtained from copies of the wage scales for the past ten years. The commission should secure payrolls showing actual earnings. The running time of the mine during the period covered by the payrolls secured should also be obtained, together with the time worked by each employee as well as the tonnage produced.

(b) The wage scales and payrolls can be secured from the operators direct or from secretaries of trade associations.

In the consideration of this matter the attention of the commission is particularly called to the frequent failure of the employees to avail themselves of the opportunity to work and steps should be taken to ascertain how much of the irregularity is voluntary on the part of the employee and how much of it is due to inability of the mine to run, either for lack of transportation or lack of orders, or mine disability. The commission is especially invited to make a careful comparison of wages paid in the coal industry with the wages paid for similar labor in other industries.

9. *"Wage contracts."*

(a) The commission should obtain copies of all wage contracts in effect during the past ten years. It should examine the provisions, the history of each contract, their bearing, observance and violation, and where they provide for the suspension of operations, methods of such suspension and the manner in which these large sums of money are collected have been paid.

(b) This information can be obtained from the secretaries of the various trade associations in the different coal fields where these contracts have been obtained or from the officers of the United Mine Workers of America, at Indianapolis, Ind.

10. *"Irregular production."*

(a) The commission should obtain the number and working time of each mine for a period of ten years, and the causes of all failures to work full time.

(b) This information may be obtained from the operators and from the records of the U. S. Geological Survey.

11. *"Waste of coal."*

(a) There are a broad economic question involving many different things, such as to production and consumption, such as for instance, mining loads, from standpoint and conserving seams, drainage from pillared area or waste, coal below drainage level, etc., which are sometimes entirely beyond the control of the operator, and the practical problems of handling in transportation and how far it is practical and important economy of use.

(b) As to mining losses, many operators have this information. Some information may be obtained from the U. S. Geological Survey and some from the coal trade.

families live better than other families of the same size on the same of a lesser income.

Undoubtedly men are entitled to an opportunity to earn a fair and honest support for themselves and their dependents. The cost of such a living can be standardized, however, only when all the factors which enter into it can be separately standardized as well, and when individual appetities and desires and habits can be reduced to a like uniform rule.

As to living conditions which must be supplied or offered, in order to surround the workman with reasonable comforts, it is respectfully suggested that, under present conditions and conditions existing for some years past, the competition among employers for capable workmen has been such that, even aside from their desire to furnish proper working conditions and surroundings, they have been obliged to do so, in order to obtain and hold efficient employees.

It is suggested, however, that the commission might well make an investigation of representative communities in the various coal fields and elsewhere in order to determine what the living conditions of the workmen are as compared with those in other industries and in other centers of population, having reference, among other things, to cost of domestic supplies, size and kind of houses, cost of rent, electric lights, coal, water, medical service, nursing, and to school, church and recreational facilities.

Much of the work in and around coal mines is piece work, and the prices paid therefor are to a certain extent, standards. As to other work, it is of such varied character and done under such diverse conditions that standardization of any kind, as to the amount of work a man should do, is impossible.

We fully recognize that proper surroundings and living conditions are indispensable to both the happiness and efficiency of the employee, and the industry will welcome any suggestions which the commission may make looking to this end.

Standardization Declared to Be Difficult

19. "*Standardizing a basis of arriving at the overhead cost of producing and distributing the coal including delivery at the door of the consumer, recognizing in this compilation that the standardized cost of living to the miners should be the first and irreducible item of expense.*"

The principle governing the determination of what may properly be included in "overhead" is that there shall be included therein those fixed charges which continue constant irrespective of the volume of the business. Such charges are not subject to the fluctuations which characterize the items of cost hereinbefore alluded to and are not affected by variations in production. They fairly embrace costs of management, office expenses, interest on borrowed money, insurance, taxes and expenses incident to the organization as such. Standardization of such items if not wholly impossible, presents obvious difficulties.

As to standardizing the cost of delivery at the door of the consumer, attention is called to the fact that the cost necessarily varies for many reasons even for identical service in different parts of the country, so that it seems to us impossible to approximate any standardization. The dealers of the country can undoubtedly give the commission light on this complex question.

We now take up your questions (c), (d), (e) and (f).

(c) "*What, if any, topics should the commission investigate, in addition to those already enumerated in the law, in order to give to Congress and the public complete information necessary to the proper understanding of the conditions in the coal industry?*"

Since the creation of this commission was, unquestionably, due to the recent interruption of the supply of coal to the consumer, and its effect on prices, which in turn was due to the enforced closing of many of the mines during the past summer, we respectfully suggest that, because they strongly influence these prices, the commission should make investigation, in addition to those prescribed by the statute, of the following subjects:

(1) The effect on production and on the price of coal, to the consumer, of the monopolistic and absentee control of mine labor in the United States.

(2) The opposition of organized labor to the introduction of labor-saving machinery.

(3) The non-observance by organized labor of contracts made on its behalf.

(4) The existing prices of mining materials and supplies and a comparison between them and the prices existing prior to the war.

(5) The existing freight rates and a comparison between them and the rates existing prior to the war.

(6) The effect of inadequate transportation facilities on production and cost of coal.

(7) The character and quality of the different coals, the uses to which they are put, and the demand therefor.

(d) "*To what extent are you in position to co-operate with the commission in securing necessary data in such manner as will eliminate, in the largest possible degree, any basis for criticism of the accuracy or the validity of the data when secured?*"

The National Coal Association by this committee as its representative desires to co-operate with you to the fullest extent in its power, and to that end will use all the influence which it has with those whom it represents. However, as a voluntary organization it has no power to compel the giving of information. It may be well to state in this connection that the bituminous coal industry is a highly competitive business. The individual operators have always carefully guarded from each other the details of their business and have been advised that under existing legal prohibitions the interchange of information and its compilation by a central bureau might expose them to criticism. The association, therefore, is without any statistical information immediately available for the use of the commission.

In the interest of accuracy all information should be collected and compiled by separate districts. In those districts where both union and non-union mines are encountered a separate classification should be made for each.

(e) "*What, in your judgment, are the elements that have caused, and are causing the acknowledged demoralization in the coal industry and which are working hardship alike upon the parties engaged in the production of coal and the consuming public?*"

In our judgment, the bituminous-coal industry cannot fairly be said to be in a condition of "acknowledged demoralization." In spite of the recent difficulties, the industry in the main is neither wastefully nor inefficiently conducted and the service rendered to the public will, we believe, compare favorably with that of other industries in the country. Undoubtedly the industry still suffers in common with the entire commercial structure of the country from the disturbances and dislocations caused by the war. Prior

to the war, while strikes had occurred from time to time, it is fair to say that the country had never known distress or anxiety concerning its supply of bituminous coal.

The regulations brought about by the war and the governmental control to which the industry was then subjected disturbed its normal functioning. Inevitable concessions were made to labor in the matter of wages and working conditions, which, while perhaps appropriate in the circumstances then existing, should not continue now that the country is adjusting itself to a peace basis. The realization of this fact not only by the operators but by the employees and by the public, as well, is indispensable to the health of the industry. Above all things else, the industry needs a period of tranquillity and freedom from governmental interference or control. Time and the natural operation of economic laws can accomplish more for all concerned than any artificial efforts, either statutory or otherwise.

Such difficulties as exist we believe to be primarily due to the following elements:

(1) The monopolistic control of mine labor by absentee union officials.

(2) Nationwide as well as local strikes brought about by an irresponsible and autocratic organization.

(3) Lack of adequate railroad service and transportation.

(4) Unnecessary and uninformed competition among the buyers of coal.

(5) Appeals by agitators and propaganda of different kinds designed to breed dissatisfaction and create unrest among the people at large. It is earnestly hoped that the report of this commission will terminate once for all the misrepresentations on which these appeals are based.

(f) *"What in your judgment are the practical remedies which would eliminate any or all of the elements which you feel are responsible for the conditions?"*

We note with reference to the above query, as well as to the one which preceded it, that the commission, in suggesting that it be answered at some date in the near future, and then only tentatively, appreciates the difficulties which surround any effort to make a categorical response. The undersigned are not prepared at the moment to return any other than a general reply, reserving the right with the consent of the commission to amplify their views as the investigation proceeds.

In any discussion of remedies, however, we believe that there are certain basic principles which cannot be ignored, and which must condition any consideration of remedies. Among these principles are the following:

First—That every man has a right to work without either interference or compulsion when, for whom and upon such terms as he may see fit.

Second—That while the right of workers to organize for legitimate purposes cannot be denied, such organizations have no right to impede or restrain those who do not care to join or to deal with them.

Third—That the right of private property is and must remain inviolable.

Fourth—That in the last resolve, the law of supply and demand always has and always will determine prices; that no legislation can long interfere with this inexorable rule; that any interference can only be justified, if at all, in time of war; and that at any other time it will inevitably produce greater evils than those which it seeks to suppress.

Instead, therefore, of seeking remedies of a character which are foreign to the genius and spirit of our American institutions, as well as doubtful from the point of view of economics, we submit that a discussion of remedies should be directed to the two things most needed in the coal industry.

These are:

First—Adequate transportation.

How far the questions here involved are within the scope of this inquiry is, of course, for the commission to determine. The coal industry in the United States cannot prosper without a continuous, regular and adequate supply of the means of transportation. The railroads of the country should be given sufficient freedom, independence and revenue to enable them to obtain the money necessary to provide proper equipment and other facilities to meet their increasing business. They should be regulated only to the extent necessary to insure the proper use and distribution of those facilities when obtained.

Second—Freedom from labor troubles artificially promoted.

No organization or combination of persons, either natural or corporate, should be permitted to hold itself above and superior to the law. There is no room in this country for the doctrine of irresponsible power. The United Mine Workers of America and all like organizations should be subject to all statutes passed for the public good, and, specifically, to those forbidding the unreasonable restraint of interstate commerce, and any action taken by that or like organizations, the necessary result of which would be to restrain, destroy or impede interstate commerce, should be presumed in their case, as in that of others, to have been taken with that intent.

In soliciting the right to make such further communication to the commission as may seem expedient we renew the offer of such assistance as may lie within our power.

Bituminous Shortage Now Thought Unlikely; Some States May See Anthracite Scarcity

The stock report issued by the Federal Fuel Distributor discloses an unexpectedly large accumulation of bituminous coal. It demonstrates that the country came through the emergency with larger reserves than even the highest estimates. The report carries rather impressive confirmation of the experience in 1920 that the market becomes panicky when stocks begin to reach the 20,000,000-ton level. It now is clear that stocks were reaching that mark this year when the situation became acute and H. B. Spencer was called in to handle distribution. With this confirmation, it is being assumed by federal officials that 20,000,000 tons is the danger line.

The report shows that stocks had increased to 28,000,000 tons by Oct. 1 and, according to Mr. Spens' estimate, aggregated 35,000,000 tons on Nov. 1. The general opinion is that this estimate is entirely reasonable.

The steady gain in the output of bituminous coal indicates that with good management the country will be able to go through the winter with no serious shortage of steam coal. The stock report shows, however, that the process of substituting bituminous coal for anthracite had not proceeded far on Oct. 1. Retailers had increased their deliveries of bituminous coal in anthracite-consuming territory, but the increase was not sufficient to make up for the decrease in the amount of anthracite that would be available. The figures showed that the total deliveries of both anthracite and bituminous coal were less this year than last. A careful study of the figures reveals that in some states the work of substitution had gone further than in others. Substitution was further advanced in Rhode Island, New York, New Jersey and the District of Columbia. This is believed to be a direct reflection of the policy of local fuel administrators to urge substitution. It is predicted that as a result of this forehanded policy those areas will be spared the difficulties certain to come in other areas during the next five months.

The problem of domestic supply in those localities which will not receive their regular quotas of anthracite is believed to be largely one for local solution, which must be worked out through co-operation of retailers with local authorities. This winter, it is generally believed, will give a splendid demonstration of the indispensable service which the retailers perform in the distribution of coal. Officials believe that an unusual opportunity will be presented for the retailers to do a great public service and demonstrate that much of the criticism which has been hurled at them is not justified.

Recrudescence of National Coal Association Seen in Joining of Indiana Operators

The Indiana Bituminous Coal Operators' Association has filed an application for membership in the National Coal Association. This will bring into the latter association all operations in the State of Indiana. Under the conditions existing previously when Indiana was represented in the National Coal Association by the three coal trade bureaus, 40 per cent of the state's tonnage was unrepresented.

This action, together with the fact that the Illinois operators and those in the Pittsburgh district recently have been co-operating with the association in important matters, leads to the belief that the National Coal Association soon will be stronger and more representative than ever before.

Some are of the opinion that the action of the Indiana operators foreshadows a similar course on the part of those in Illinois. It is known that the more substantial operators in Illinois are fully aware of the essentials of a truly representative national organization.

A new recognition of the importance of the National Association is in evidence in all of the fields which have membership. It is declared by association officials that an exaggerated importance was given the defections in membership which followed the Indianapolis conferences and the Supreme Court's decision in the Hardwood case. Since those developments affected adversely many of the organizations holding membership in the National Coal Association, there naturally was uncertainty until new bases of national representation could be worked out.

J. D. A. Morrow will be relieved of his duties as vice-president of the National Coal Association on Dec. 1 so that he may devote his entire time after that date to the newly formed coal-brokerage firm of which he is president. No successor for Mr. Morrow has been chosen as yet. Since the success of the organization depends to such a great extent on the vice-president in charge of the Washington office, the committee charged with the selection of that official expects to take whatever time may be necessary to find the best available man qualified for the position.

Three Central Pennsylvania Operators' Associations Amalgamate

The Central Coal Association, the Central Pennsylvania Coal Producers' Association and the Association of Bituminous Coal Operators of Central Pennsylvania were amalgamated at a joint conference of directors of the three associations held in Altoona Nov. 9.

The Central Coal Association and the Association of Bituminous Coal Operators merged under the name of the Association of Bituminous Coal Operators of Central Pennsylvania and all the members of the merged bodies became members of the Central Pennsylvania Coal Producers' Association. This action will give the operators in this region one of the strongest organizations in the United States.

The Producers' Association will have charge of such matters as traffic, car supply and the collection and dissemination of statistics and various information of interest to the members. It will have nothing whatever to do with matters pertaining to labor problems. The Association of Bituminous Coal Operators will have but one purpose, the negotiation of and the enforcement of wage agreements between the operators employing union labor and the United Mine Workers.

The general officers of both associations are the same under the terms of the amalgamation, as follows: President, B. M. Clark, Indiana; Vice-President, G. Webb Shillingford, Clearfield; Secretary-Treasurer, Charles O'Neil, Altoona; Commissioner, John C. Forsythe, Clearfield; Statistician, W. A. Jones, Altoona.

The executive board of the Association of Bituminous Operators will be B. M. Clark, Indiana; Rembrandt Peale, New York; J. R. Caseley and E. H. Robertson, DuBois; C. B. Maxwell, Morrisdale; H. B. Scott and J. William Wetter, Philipsburg; Thomas F. Kelley, Coalport; G. Webb Shillingford, Clearfield; J. S. Sommerville, Robertsdale; William Lamont, Elmora; J. A. Boucher, Beaverdale; Harry Boulton, Clearfield; S. T. Brown, Indiana, and M. J. Brecken, Johnstown.

The board of the Producers' Association is composed of the following: Tyrone group, J. W. Wetter; Clearfield group, R. H. Sommerville; South Fork group, M. J. Brecken; Barrensberg group, James H. Allport; Tioga group, E. H. Robertson; Broad Top group, J. S. Sommerville; Punxsutawney group, W. R. Craig; Directors at large, G. Dawson Coleman, Philadelphia; D. T. Price, Windber; Charles A. Owen and Rembrandt Peale, New York; B. M. Clark, Indiana; J. R. Cooley, DuBois; James B. Neale, Minersville; J. W. Shillingford, Clearfield; W. S. Blaisdale, Punxsutawney; Fred B. Kerr, Clearfield; C. B. Maxwell, Morrisdale; Harry Boulton, Clearfield, and S. T. Brown Indiana.

Toll of Lives in Reilly Mine Disaster, At Spangler, Pa., Is Seventy-Seven

Seventy-seven lives were lost in the Spangler, Cambria County, mine disaster of Nov. 6, according to the official figures announced by Seward Button, head of the state Bureau of Mines of Pennsylvania, who has been in charge of the investigation and who has completed an exhaustive checking up of the Reilly company's payroll and the weighmaster's list of miners.

Mr. Button's report states that 100 men entered the mine the morning of the explosion. Following the explosion, six escaped, twenty-one were rescued and taken to the hospital and seventy-three dead bodies were taken from the mine. Four of those taken to the hospital died and five more are in a critical condition.

Following a conference with the mine officials, who had requested him to put the mine in condition to enter in order to facilitate the work, Mr. Button appointed the following commission to make a thorough inspection: W. D. Wardrop, district inspector; Thomas Lawther, Johnstown; Charles Crooker and T. D. Williams, Johnstown; Thomas Mallon, Tyrone, and Joseph Williams, Altoona.

Thursday, Friday and Saturday were given over to the funerals of the deceased miners. Relief work for the families of the stricken miners has been started and is receiving whole-hearted support. The Red Cross has opened welfare stations and the people of Johnstown, Altoona and the smaller towns in the district and the various coal companies throughout the district are giving freely of money and other necessities. The United Mine Workers has contributed $10,000 for relief work at Spangler. Of this amount $5,000 came from the international organization at Indianapolis and $5,000 from District No. 2, at Clearfield.

The relief committee is composed of John Mayholtz, an organizer for the U.M.W.A.; James McGlenn, president of the Spangler local of the U.M.W.A.; A. E. Fox, president of the Spangler chapter of the Red Cross, and Mrs. Harry Blair and Mrs. W. R. Davison.

After a two-day investigation of the mine, Chief Seward Button attributes the explosion to methane gas. In a preliminary report, Mr. Button stated the actual explosion was slight and but few men were killed in that manner. Most deaths were due to the presence of after-damp and the inability of the men to reach fresh air. The inquest will be held early this week.

George S. Rice, chief mining engineer of the U. S. Bureau of Mines, and J. W. Paul will make a special investigation of the disaster for the Bureau of Mines.

Ohio Administrator Allows Advance of 50c. in Price of Domestic Sizes

Late last week the Ohio Fuel Administrator authorized an increase of 50c. in the fair-price schedule for "coal in sizes specially prepared and particularly cleaned for individual purposes." This increase is made in order to assure to Ohio users a fair percentage of the lump produced within the state which has been going to outside purchasers. According to Administrator Neal the former fair-price list took into consideration only actual cost of production without allowing for labor operations necessary for special preparations. The administrator also authorized the new Pocock Coal Co. and Howells & Fox, coal operators in the Massillon field, to raise their mine price from $4.86 to $5.11 because of high cost of production.

All specially prepared domestic coal coming within this order will be priced from $5.06 to $5.61 under the new ruling. The price in the Hocking Valley proper, including Hocking and Athens counties and Monroe township, in Perry County, will be increased from $4 to $4.50 while the Bailey Run, or No. 7, seam will be increased from $4.59 to $5.09.

Ohio Coal Companies Seek to Enjoin State Control of Fuel

A sweeping injunction which, if granted, will tie up all of the machinery of the State Fuel Administration and stop, temporarily at least, all efforts to enforce coal price regulation in Ohio, is asked in a suit filed Nov. 8 in U. S. District Court at Toledo. The Ohio Collieries Co. and the George M. Jones Co., two Toledo companies which control sixteen mines in the southern Ohio field, seek the injunction.

The bill of complaint attacks the constitutionality of the emergency act passed by the Legislature late in the summer providing for the appointment of a fuel administrator and state regulation of the price of coal.

The bill names Roy R. Stuart, prosecuting attorney of Lucas County; Governor Harry L. Davis and Attorney General John G. Price. After receiving the petition for the injunction, Judge John M. Killits announced that he would take no action relative to a hearing until he had conferred with the other District Court jurists as to the legality of the procedure.

As the bill attacks the constitutionality of a statute of the state, the hearing upon the application for a temporary injunction and the final hearing upon the merits must be before a court consisting of three United States Judges.

The bill declares that the Ohio Collieries Co. cannot operate its mines at a profit at the price fixed by the Ohio Fuel Administrator.

Operators Offer Two Wage Plans at Chicago Conference; Lewis Has No Definite Proposal

When the joint committee of operators and miners assembled in Chicago Tuesday, Nov. 14, to begin its efforts to work out a wage plan for the future it had before it at least one definite suggestion. Harry Taylor, of the Southwest Interstate Association, proposed a scheme whereby wages by districts could be varied from a "national base rate" according to local conditions, and setting up joint boards to adjudicate disputes and a supreme council for appealed cases. This plan put the outlying districts in the position of presenting something constructive as a contribution at the first national conference of the sort to which they had ever been admitted.

Preceding the conference there was a quite general sentiment that a strong national organization of operators to deal with the miners' union should be formed at once and steadfastly supported when the meeting started. Nobody knew what it would do after its organization nor how long it would run.

Every one of the fifteen districts represented at the Cleveland conference a month ago, which arranged the Chicago meeting, had its delegates in Chicago when the session opened. No other regions asked admittance after the Cleveland organization was made permanent with Phil Penna as chairman and William Green, of the miners, and E. G. Edwards, of the operators, as secretaries. Little was done at the morning session except receive credentials before adjournment at noon.

One dispute arose when both Joseph Purseglove and M. E. Watson, president of the Monongahela Coal Association, claimed to be official delegates. Purseglove was the man representing several large producers of that field at Cleveland but Watson put in his claim on the basis of his selection by the Monongahela Coal Association on Nov. 9. The dispute went to secretaries Green and Edwards. Mr. Purseglove was not in Chicago because of an accident suffered by his daughter but his case was put in by his brother, Sam Purseglove. The two secretaries, unable to reach an agreement, laid the case before the conference when it convened for the afternoon session.

W. L. Jenkins, of Fairmont, W. Va., read to the operators a plan for national agreements to be made by a nationwide conference committee.

At the afternoon session both Purseglove and Watson were accepted as delegates, each with half a vote. This was not expected to cause confusion because each district must vote as a unit.

The miners remained but three minutes in the afternoon meeting, retiring after President John Lewis said he had no definite proposal to make. The operators then spent all afternoon discussing the plans proposed by Mr. Taylor and Mr. Jenkins, reaching no agreement on them and giving no publicity to either but referring both to a committee to report Wednesday.

It was hoped Lewis would have something definite to propose by Wednesday's joint session. Tuesday night he said he was waiting for the operators. Thus the first day accomplished little. When Mr. Lewis was asked if the conference might wait for the Federal Coal Commission to produce a wage plan he smiled and said there wasn't much use expecting anything.

Preliminary Statistics of Production of Coal in 1921

(Exclusive of product of wagon mines)

Pennsylvania

County	Loaded at Mines for Shipment (Net Tons)	Sold to Local Trade and Used by Employees (Net Tons)	Used at Mines for Steam and Heat (Net Tons)	Made into Coke at Mines (Net Tons)	Total Quantity (Net Tons)	Total Value	Average Value per Ton	Number of Employees —Underground— Miners, Loaders etc. (a)	All Others	Surface	Total	Average Number of Days Worked
Allegheny	10,513,579	1,201,262	216,064	622	11,931,527	$34,877,000	$2 92	13,992	4,429	2,862	21,283	146
Armstrong	3,026,839	212,159	149,764		3,388,762	10,369,000	3 06	4,784	1,713	1,000	7,497	121
Beaver	121,073	40,306	30		161,409	413,100	2 56	180	27	79	286	195
Bedford	201,099	43,178	8,885	64,082	317,244	1,052,000	3 32	749	272	119	1,140	84
Blair	73,418	18,161	565		92,144	286,000	3 10	220	66	35	321	100
Bradford, Fulton, Lycoming and McKean	50,369	4,492	435		55,296	203,200	3 67	88	24	28	140	137
Butler	856,061	50,918	16,412		923,391	2,366,000	2 56	1,434	499	336	2,269	129
Cambria	14,541,992	1,061,642	212,839	522,755	16,339,228	49,769,000	3 05	16,871	4,912	2,793	24,613	160
Center	691,723	69,740	3,531		764,994	2,334,000	3 05	1,538	386	253	2,177	114
Clarion	1,151,474	79,749	17,071		1,246,294	3,495,000	2 80	1,917	556	346	2,819	151
Clearfield	5,486,633	209,543	115,540	42,206	5,853,922	16,691,000	2 85	8,705	2,442	1,477	12,624	141
Clinton	59,571	23,560	510		83,641	252,000	3 01	192	61	61	314	75
Elk	838,947	21,968	17,286		878,201	2,705,000	3 08	1,517	293	234	2,044	143
Fayette	13,799,565	234,090	630,965	4,596,158	19,260,778	46,041,000	2 39	11,960	3,121	1,051	16,132	110
Greene	2,228,672	20,956	45,173		2,294,801	5,935,000	2 59	1,414	356	127	1,897	104
Huntingdon	428,373	8,462	16,181	30,992	484,008	1,641,000	3 39	1,051	241	148	1,440	131
Indiana	5,964,908	108,353	153,562	131,148	6,357,971	18,431,000	2 90	8,859	2,700	1,735	13,294	131
Jefferson	2,318,151	74,490	142,294	172,959	2,707,894	8,160,000	3 01	4,045	1,137	781	5,963	132
Lawrence	174,157	9,601	9,899		193,657	584,000	3 01	189	90	42	321	214
Mercer	450,783	4,504	24,600		479,887	1,414,000	2 95	554	203	140	897	117
Somerset	8,623,857	195,061	156,891		8,975,809	26,021,000	2 90	8,710	2,732	1,629	13,071	128
Tioga	410,859	17,551	9,292		437,702	1,720,000	3 93	833	307	191	1,331	108
Washington	14,169,333	245,336	214,845	87,470	14,716,984	38,954,000	2 65	13,242	4,911	3,867	22,020	144
Westmoreland	15,843,904	360,508	389,738	1,472,248	18,066,398	48,825,000	2 70	14,752	5,240	3,889	24,879	184
Total	102,025,340	4,315,590	2,552,372	7,120,640	116,013,942	$322,518,300	$2 78	119,815	44,490	26,427	190,842	141

South Dakota

County	Loaded at Mines for Shipment (Net Tons)	Sold to Local Trade and Used by Employees (Net Tons)	Used at Mines for Steam and Heat (Net Tons)	Made into Coke at Mines (Net Tons)	Total Quantity (Net Tons)	Total Value	Average Value per Ton	Number of Employees —Underground— Miners, Loaders etc. (a)	All Others	Surface	Total	Average Number of Days Worked
Dewey and Harding	450	1,441			1,891	$4,800	$2 54	16			16	120
Meade and Ziebach		791			791	2,300	2 91	6			6	87
Perkins		4,137	34		4,871	14,100	2 89	21			21	135
Totals	450	7,069	34		7,553	$21,200	$2 81	43			43	129

Tennessee

County	Loaded at Mines for Shipment (Net Tons)	Sold to Local Trade and Used by Employees (Net Tons)	Used at Mines for Steam and Heat (Net Tons)	Made into Coke at Mines (Net Tons)	Total Quantity (Net Tons)	Total Value	Average Value per Ton	Number of Employees —Underground— Miners, Loaders etc. (a)	All Others	Surface	Total	Average Number of Days Worked
Anderson	317,207	8,944	7,245		333,416	$887,000	$2 96	399	240	173	1,000	117
Campbell	989,685	25,877	38,421		1,054,017	4,075,000	3 99	1,517	442	283	2,542	175
Claiborne	818,533	9,327	20,161		848,021	2,872,000	3 33	783	344	220	1,347	180
Fentress	380,493	4,933	8,466		393,894	1,116,000	2 93	408	84	41	533	140
Grundy	363,509	1,610	1,918	19,727	386,764	1,296,000	3 35	617	247	144	1,008	151
Marion	256,782	4,393	7,903		269,084	787,000	2 93	223	114	64	401	172
Morgan	261,321	1,200	13,984	21,300	296,418	1,043,000	3 51	389	219	146	754	138
Overton	153,164	1,166	1,189		155,953	543,000	3 46	179	61	54	294	110
Scott	106,034	7,212	990		114,836	422,000	3 67	203	53	48	304	107
Other Counties (b)	547,636	25,138	32,840	12,856	618,470	1,837,000	2 97	1,162	452	363	2,977	131
Totals	4,194,364	85,199	134,249	54,033	4,467,820	$14,912,000	$3 33	6,061	2,466	1,594	10,121	134

(a) Includes also shotfirers. (b) Bledsoe, Cumberland, Hamilton, Rhea, Roane, Sequatchie and White. Statistics compiled by L. Mayo, U. S. Geological Survey Oct. 28, 1922.

Union Miners to Be Assessed $2,000,000

A special assessment on members of the United Mine Workers of America which is expected to yield to the union's treasury at least $2,000,000 is announced by John L. Lewis, international president.

While reluctant to discuss the possibility of another strike, Mr. Lewis said that the miners would not accept any wage reductions on April 1, when the present agreement in the bituminous coal fields expires. The union demands continuation of the present wage scale for another two years.

Mr. Lewis said that coal production was being speeded up throughout the country and was being limited only by transportation facilities. Virtually all the miners in the unionized districts, he said, were working, but there were still 75,000 miners out on strike in the non-union coal fields.

"Never before in its history was the miners' union in better condition than it is today, although the battle with the non-union operators continues to be waged all around our borderland," said Mr. Lewis, "and all the fighting is being done on the enemy's territory.

"We are taking care of the financial situation by levying a special assessment of $4 per member, to be paid in two instalments of $2 a month."

Coal Miners Remain Idle Rather Than Work in Metal Mines

Metal mines in the Butte district are in urgent need of no less than 3,500 men, according to reports to federal officials. As there are several hundred men awaiting work at coal mines in Wyoming, an effort has been made to induce the unemployed in the coal fields to accept positions at Butte, but since the wages in the coal mines are so much higher, the men in most cases prefer to stay at the coal mines and take the chance of employment developing. Reports from Eastern coal mines indicate that men are applying for work in much larger number than they can be employed.

Much Legal Jockeying Marks Early Stages Of Trial in Herrin Massacre Case

Trial of men indicted for murder in connection with the Herrin massacre in Williamson County, Illinois, is getting under way amid difficulties. Most of the men in the venire of 150 avoided jury duty in the case on one excuse or another as a starter. When the Attorney General moved to *nol pross* the indictments against 41 of the 46 men the grand jury held for the murder of Howard Hoffman, A. W. Kerr, chief counsel of the defense, employed by the miners' union, insisted that a jury be impaneled at once and instructed to find the 41 "not guilty" and to release them. The objection was overruled and 5 men of the original 46 will stand trial for Hoffman's death as soon as the jury is chosen.

The defense moved for a continuance of the case to the next term of court, but Judge Hartwell insisted that as both sides originally said they would be ready now, the trial should proceed. Next the defense moved that all the indictments be quashed on the ground that the grand jury that returned the indictments was selected by sheriff's deputies instead of by the sheriff himself, that 26 jurors instead of 23 were summoned and that the jury had been unduly influenced during the deliberations by statements printed in the newspapers. Judge Hartwell reserved decision.

Attorney Kerr for the miners demanded the right to question the prosecution as to the source of the funds which private organizations have put into Attorney General Brundage's hands, in lieu of state funds which are not available because Governor Small cut so deeply into the Attorney General's appropriation. Judge Hartwell denied this motion. With the removal of all objections and motions tending to delay the trial, the case is ready to proceed. Early this week it was thought that the choosing of the jury would be resumed. How long it will take to impanel a full jury remains to be seen. Frank Farrington, president of the Illinois district of the United Mine Workers of America, and State Senator W. L. Sneed, a subdistrict president, are both in attendance at the trial.

Coal Roads Announce Further Plans for Improving Their Freight Facilities

The Louisville & Nashville R.R., which to Nov. 1 had reported contracts of over $20,000,000 placed this year for road improvements, cars, engines, etc., has since announced contracts placed for 3,000 more cars, including 2,000 coal cars, to be delivered by April, 1923, these to be all steel cars. The road contracts the 3,000 cars at $5,750,000. At present the L. & N. has 27,750 coal cars and 17,750 box cars. W. L. Mapother further announced that he plans to spend a total of $52,000,000 in 1922 and 1923 in improving facilities of the road for handling traffic, which should bring relief to many shippers.

On Nov. 6 announcement was made that the Chicago, Indianapolis & Louisville R.R. (Monon) was spending $725,000 for 300 steel coal cars, 7 locomotives and 4 steel coaches. The Illinois Central R.R. also has filed a trust agreement at Frankfort, Ky., under which a mortgage agreement is uncovered with the Commercial Trust Co., of Pennsylvania, whereby the road is to receive money for purchase of $8,310,000 worth of equipment, including 3,000 steel coal cars, 50 road engines and 15 switch engines.

Professor Willitts to Probe Wage Facts For U. S. Coal Commission

Fact-finding with regard to wages and earnings of mine workers will be done by Prof. Joseph S. Willitts, of the University of Pennsylvania, for the President's coal commission.

Since the commission has committed itself to await suggestions from the various branches of the coal business before formulating its own plan of action, no great amount of progress has been made during the past week in the formulation of its plans. The week has been spent, however, in informal conferences and consideration of the data which its staff already is laying before it.

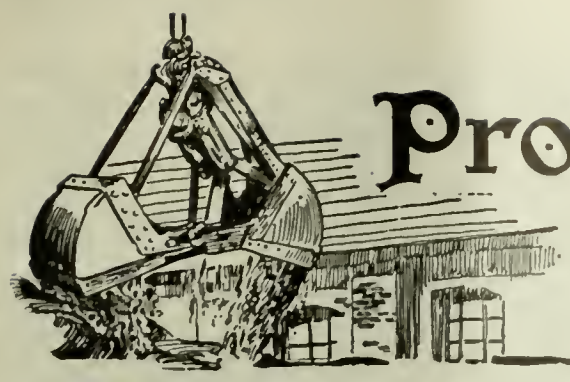
A plan is being worked out whereby all material submitted by outside sources will be carefully checked so that the commission will be in a position to underwrite any of the facts and figures which it may care to use.

Lake Coal Loadings During Season to End of October*

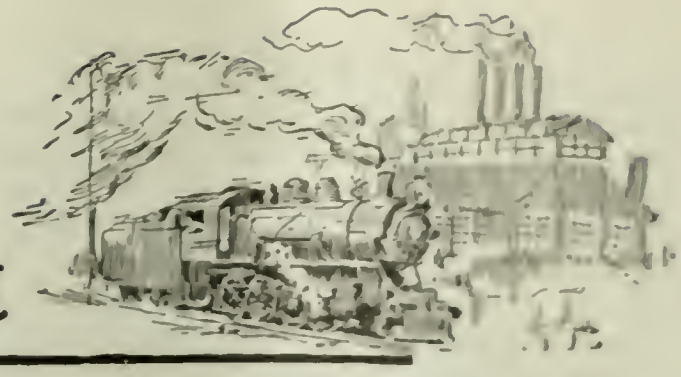
(In Net Tons)

Ports	1922 Cargo	1922 Fuel	1922 Total	1921 Cargo	1921 Fuel	1921 Total	1920 Cargo	1920 Fuel	1920 Total
[illegible]	[illegible]	[illegible]	2,082,274	4,079,150	107,350	4,186,500	3,344,832	73,820	3,418,652
[illegible]	[illegible]	18,325	649,776	1,027,438	29,667	1,057,105	1,508,792	56,183	1,564,975
[illegible]	[illegible]	[illegible]	2,547,945	2,354,369	72,016	2,426,385	1,337,880	38,948	1,376,828
[illegible]	[illegible]	[illegible]	1,552,971	45,076	1,598,047	1,418,843	21,775	1,440,618	
[illegible]	[illegible]	[illegible]	1,491,595	42,905	1,534,500	1,641,441	84,893	1,726,334	
[illegible]	[illegible]	[illegible]	2,393,742	97,034	2,490,776	2,735,633	171,290	2,906,923	
[illegible]	77,877	[illegible]	1,990,664	86,325	2,076,989	1,054,953	151,469	1,206,422	
[illegible]	[illegible]	[illegible]	359,981	12,782	372,763	364,048	17,486	381,534	
[illegible]	[illegible]	[illegible]	1,064,824	59,124	1,123,948	1,351,849	246,548	1,598,397	
[illegible]	[illegible]	[illegible]	2,213,665	72,753	2,286,418	1,662,618	83,858	1,746,476	
[illegible]	[illegible]	[illegible]	1,362,601	18,258	1,380,859	2,105,250	35,516	2,140,766	
[illegible]	[illegible]	[illegible]	979,869	61,103	1,040,972	564,688	90,402	655,090	
[illegible]	[illegible]	[illegible]	23,870,869	704,393	24,575,262	19,090,827	1,072,188	20,163,015	

* Compiled by the Coal Exchange, Cleveland, Ohio. [illegible], Secretary.



Production and the Market



Weekly Review

Conditions in the coal market are slowly improving. The trade shows an urgent need for a cold snap, but in spite of unseasonable temperature and other deterrent factors, prices are being held more and more firmly. *Coal Age* Index of spot bituminous coal prices dropped 4 points to 340 on Nov. 13, as compared with 344 in the week previous. This corresponds to an average mine price of $4.12 and is a decline of only 8c. since Nov. 1. During October the average spot price dropped 70c.

There are plenty of inquiries in the spot market and undoubtedly many users are quietly accumulating reserves. The heavier output is being sold with less difficulty, although the volume of spot offerings has not increased in like proportion. Much coal is moving to contract connections and the trade prefers to hold its free coal on the open market so but few new contracts are reported. High-grade fuels are eagerly sought, but the supply is very limited. Naturally this has improved the position of the medium and low qualities, although the market is still far from a "coal-is-coal" basis. The railroads are actively acquiring tonnage and much criticism is directed toward the carriers' system of preferential car supply for their needs. Operators assert that their commercial placements are so meager that they are unable to accept new business for delivery at an early date.

Rush Movement to Lakes Reduces Supply

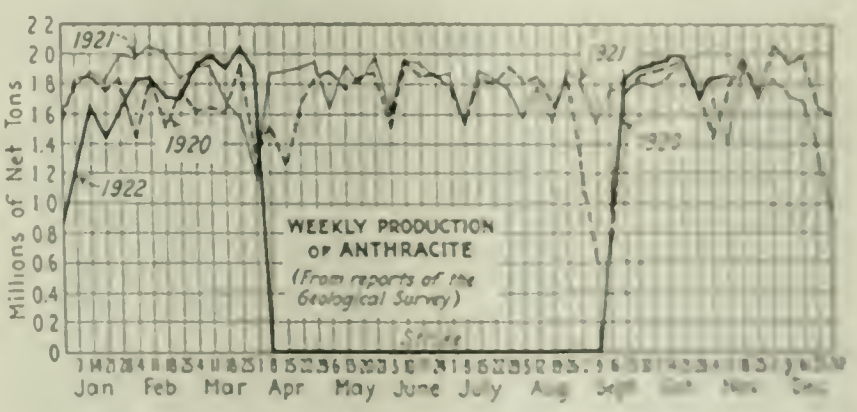
So much coal has been concentrated on the Lakes that the available commercial supply has been materially reduced in the Eastern Inland section. This shortage was apparent last week and prices firmed up. Prices for last-minute Lake shipments, however, have broken under the heavy volume of tonnage moving to the lower ports. Lake coal will move from the mines up to Nov. 20, when it is estimated that sufficient tonnage will be rolling and on hand to supply cargoes during the balance of the navigable season.

The Middle West market is flat. Warm weather has dealt the coal man a severe blow and domestic demand has been slowed. Steam coals are in heavy oversupply in this section and despite some movement, all-rail to the Northwest, the number of no-bills in Illinois and Indiana producing sections is increasing.

Light receipts in North Atlantic markets suffice to meet current needs. In this as in other sections further west, the close of Lake navigation is being awaited by buyers, who feel that the release of this tonnage will soften the market considerably. A turn in the weather, however, which would also affect transportation conditions, would soon absorb this coal, and it is also quite likely that the re-entry of a large number of these dilatory buyers will have the same effect.

New England presents a featureless market. The all-rail demand is only fair and Hampton Roads is still topheavy with coal. The plenitude of supply for this section is so apparent that buyers are not interested in adding to their seasonal reserves.

The Lake season is blamed for a curtailment of domestic anthracite receipts in the Eastern section. Retail yard supplies are running down. As the shortage becomes





Estimates of Production

(Net Tons)

BITUMINOUS

Week ended Nov. 13	[illegible]	[illegible]
Week ended Nov. 6	[illegible]	[illegible]
Week ended Oct. 30	[illegible]	[illegible]
Daily average	[illegible]	[illegible]
Calendar year to date	[illegible]	[illegible]
Daily average	[illegible]	[illegible]

ANTHRACITE

Week ended Nov. 13	[illegible]	[illegible]
Week ended Nov. 6	[illegible]	[illegible]
Week ended Oct. 30	[illegible]	[illegible]
Calendar year to date	[illegible]	[illegible]

COKE

Week ended Nov. 6	[illegible]	[illegible]
Week ended Oct. 30	[illegible]	[illegible]
Calendar year to date	[illegible]	[illegible]
Daily average	[illegible]	[illegible]

more apparent consumers are being urged to safeguard their needs with substitute fuel, although comparatively little of this is being sold. The acute domestic demand has aided the movement of pea and buckwheat, but the smaller steam sizes are still extremely draggy.

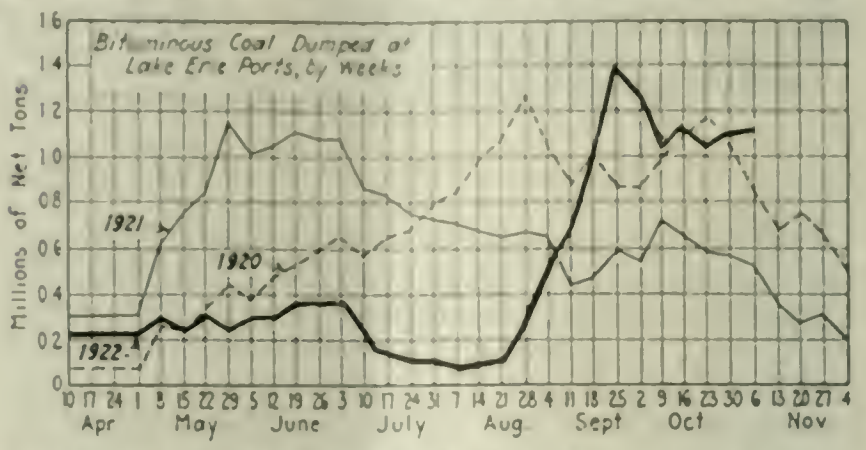
The coke market is more active, but spot prices have softened during the week. The amount of current offerings, however, is not large and coke users feel that it is not sufficient to encourage resumption of operations at plants now closed down.

BITUMINOUS

"Preliminary returns on coal loaded at the mines during the week ended Nov. 11 indicate a total production of 12,600,000 net tons, of which about 10,700,000 tons was bituminous coal and 1,900,000 tons was anthracite," says the Geological Survey. "Revised estimates for the week ended Nov. 4 show 10,617,000 tons of bituminous and 1,830,000 tons of anthracite. Thus a slight increase in the total coal raised is shown for the present week as compared with the week before.

"Loadings of soft coal on Monday, Nov. 6, as reported by the railroads, were 43,810 cars. On Tuesday, Election Day, loadings declined to 25,315 cars, but on Wednesday 33,875 cars and on Thursday 31,807 cars were loaded. The total for these first four days of the week is a little larger than for the same days of the week preceding.

"A canvass of commercial and industrial stocks of bituminous coal as of Sept. 1 and Oct. 1, undertaken co-operatively by the Bureau of the Census and the Geological



Survey, has shown that at the rate of production during the month of September consumers were able to add about 6,000,000 tons to their stocks. During October at least as much more was added to reserve piles."

Hampton Roads dumpings were 248,637 net tons during

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Oct. 16 1922	Oct. 30 1922	Nov. 6 1922	Nov. 13 1922†
[illegible]	[illegible]	$6 75	$6 60	$6 75	$6 50@$7 25
[illegible]	[illegible]	6 00	6 25	6 00	6 00@ 6 50
[illegible]	[illegible]	5 50	5 55	5 50	5 50@ 6 25
[illegible]	[illegible]	6 00	6 35	6 00	5 75@ 6 25
[illegible]	[illegible]	5 60	5 75	5 60	5 50@ 5 75
[illegible]	[illegible]	6 60	7 00	7 00	6 00
[illegible]	[illegible]	5 95	6 10	6 10	6 00@ 6 25
[illegible]	[illegible]	5 80	6 10	6 25	6 00@ 6 50
[illegible]	[illegible]	7 20	7 10	6 85	7 00@ 7 25
[illegible]	[illegible]	4 25	3 50	3 50	3 00@ 3 75
[illegible]	[illegible]	4 50	4 10	4 10	3 50@ 4 75
[illegible]	[illegible]	4 30	3 75	3 60	3 25@ 4 25
[illegible] (Navy Standard)	New York	5 25	4 85	4 85	4 75@ 5 00
[illegible] (Navy Standard)	Baltimore	5 40		4 50	4 25@ 4 75
[illegible]	New York	4 65	4 25	4 10	4 15@ 4 30
[illegible]	Philadelphia	4 35	4 30	4 30	4 00@ 4 65
[illegible]	Baltimore	4 60	4 00	4 00	4 00@ 4 25
[illegible]	New York	4 10	3 50	3 50	3 25@ 3 75
[illegible]	Philadelphia	3 60	3 50	3 50	3 30@ 3 70
[illegible]	Baltimore	4 35	3 35	3 60	3 25@ 3 50
[illegible]	New York	3 50	3 05	3 00	2 75@ 3 25
[illegible]	Philadelphia	3 25	3 15	3 15	2 90@ 3 40
[illegible]	Baltimore	4 10	3 25	3 15	3 00@ 3 15
High-Volatile, Eastern					
[illegible]	New York	3 85	3 50	3 35	3 35@ 3 60
[illegible]	Philadelphia	3 75	3 50	3 50	3 25@ 3 75
[illegible]	Baltimore	4 00	3 35	3 35	3 25@ 3 50
[illegible]	Pittsburgh	5 25	5 00	4 50	4 50
[illegible]	Pittsburgh	3 50	3 25	3 35	3 25@ 3 50
[illegible]	Pittsburgh	3 85	3 60	3 60	3 50@ 3 75
[illegible]	Columbus	6 25	6 25	6 25	6 25
[illegible]	Columbus	4 50	4 75	4 50	4 50
[illegible]	Columbus	3 90	4 10	4 10	3 75
[illegible]	Cincinnati	6 25	6 00	6 00	6 00@ 6 25
[illegible]	Cincinnati	4 50	4 35	4 35	4 25
[illegible]	Cincinnati	4 75	4 10	4 00	4 00
[illegible]	Cincinnati	4 60	4 50	4 00	4 00
[illegible]	Columbus	5 40	4 50	5 50	5 25@ 5 75
[illegible]	Columbus	3 80	3 60	3 60	3 75
[illegible]	Cincinnati	3 25	3 10	3 05	2 75
[illegible]	Cincinnati	3 81	3 81	3 81	3 81

	Market Quoted	Oct. 16 1922	Oct. 30 1922	Nov. 6 1922	Nov. 13 1922†
Pitts. No. 8 mine run	Cleveland	$3 56	$3.56	$3.56	$3.56
Pitts. No. 8 screenings	Cleveland	3 31	3 31	3.31	3.31
Midwest					
Franklin, Ill. lump	Chicago	5 35	5.35	5.35	5.25@ 5.50
Franklin, Ill. mine run	Chicago	4 50	4.10	4 10	4 00@ 4 25
Franklin, Ill. screenings	Chicago	3 25	2 60	2 60	2 25@ 3 00
Central, Ill. lump	Chicago	5 10	5 06	4 70	4.50@ 4 90
Central, Ill. mine run	Chicago	3.60	3.10	3.10	3.00@ 3 25
Central, Ill. screenings	Chicago	2 35	1.85	1 85	1.75@ 2 00
Ind. 4th Vein lump	Chicago	5 10	5.10	5 10	5 00@ 5.25
Ind. 4th Vein mine run	Chicago	4 60	3.85	3 85	3.75@ 4 00
Ind. 4th Vein screenings	Chicago	3 25	2.35	2.35	1.90@ 2 25
Ind. 5th Vein lump	Chicago	5.10	4.75	4.75	4.50@ 5 00
Ind. 5th Vein mine run	Chicago	3.75	3 65	3.60	3 50@ 3.75
Ind. 5th Vein screenings	Chicago	2 85	2.10	2 10	1 75@ 2 00
Standard lump	St. Louis	4 25	4 25	4 00	4 00@ 4 50
Standard mine run	St. Louis	3 35	2 60	2 60	2 50
Standard screenings	St. Louis	2.10	2.00	1.40	1.25@ 1 50
West Ky. lump	Louisville	5 05	5.00	4.85	4.50@ 5 00
West Ky. mine run	Louisville	3 00	2.80	2.50	2.35@ 2 75
West Ky. screenings	Louisville	2.85	2 00	1.85	1.50@ 2 00
West Ky. lump	Chicago	4 10	4.10	4 10	4 00@ 4 25
West Ky. mine run	Chicago	3 50	3.10	3.10	2.75@ 3 50
South and Southwest					
Big Seam lump	Birmingham	3.25	3.95	3 95	3 45@ 4 45
Big Seam mine run	Birmingham	2 75	2 60	2 35	2.25@ 2 50
Big Seam (washed)	Birmingham	3.25	2.75	2.60	2 50@ 2.75
S. E. Ky. lump	Chicago	6 25	5 50	5 50	5 00@ 6 00
S. E. Ky. mine run	Chicago	4 75	4.25	4.25	4.00@ 4 50
S. E. Ky. lump	Louisville	6 75	6.75	6.75	6.00@ 7 25
S. E. Ky. mine run	Louisville	4 35	4 00	4 25	4.00@ 4 50
S. E. Ky. screenings	Louisville	4 10	4 10	4 25	3 75@ 4 25
S. E. Ky. lump	Cincinnati	6 75	5 85	6 25	6 00@ 6 50
S. E. Ky. mine run	Cincinnati	4 10	4 25	4 00	3 50@ 4 25
S. E. Ky. screenings	Cincinnati	4 00	4 00	3 85	3.25@ 4 00
Kansas lump	Kansas City	5 75	5 75	5 75	5.50@ 6 00
Kansas mine run	Kansas City	4 25	3 75	3 75	3 50@ 4 00
Kansas screenings	Kansas City	2 50	2 50	2 50	2 50

* Gross tons, f.o.b. vessel, Hampton Roads
† Advances over previous week shown in heavy type, declines in *italics*

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

Market Quoted	Freight Rates	Independent	Company	Nov. 6, 1922 Independent	Nov. 6, 1922 Company	Nov. 13, 1922† Independent	Nov. 13, 1922† Company
[illegible]	[illegible]	$2 14	$7.60@$7 75	$9.00	$7 75@$8.15	$9 00	$7.75@$8.15
[illegible]	[illegible]	2 39	$7 [illegible] $7 50	7 75@ 7 85	7 90@ 8 10		7 90@ 8 10
[illegible]	[illegible]	2 14	7 [illegible] 7 75	7 60@ 7 75	7 75@ 8 35	9 25@10 50	7.75@ 8 35
[illegible]	[illegible]	2 39	7 25@ 7 75	9 25@ 9 75	8 10@ 8.35	9 25@ 9 75	8.10@ 8 35
[illegible]	[illegible]	[illegible]	7 75			12 50@13 00	6.92@ 8 25
[illegible]	[illegible]	[illegible]	6.90@ 7.40			9 25@10 50	8 00@ 8 35
[illegible]	[illegible]	2 14	7 [illegible] 8 25	9 25@10 50	8 00@ 8 35	9 25@ 9 75	8 15@ 8 35
[illegible]	[illegible]	2 39	7 [illegible] 8 10	9.25@ 9 75	8 15@ 8 35	12 50@13 00	7.14@ 8 25
[illegible]	[illegible]	[illegible]	8 0[illegible] 8 25			9 25@10 50	8 00@ 8 35
[illegible]	[illegible]	[illegible]	7 75			9 25@ 9 75	8 15@ 8 35
[illegible]	[illegible]	[illegible]	7.20@ 7.60			12 50@13 00	7.14@ 8 25
[illegible]	[illegible]	2 14	7 [illegible] 8 25	9 25@10 50	8 00@ 8 35		8 15
[illegible]	[illegible]	2 39	7 [illegible] 8 10	9 25@ 9 75	8 15@ 8 35	9 25@10 50	8 00@ 8 35
[illegible]	[illegible]	[illegible]	8 0[illegible] 8 25			9 25@ 9 75	8 15@ 8 35
[illegible]	[illegible]	[illegible]	7 75			12 50@13 00	7.14@ 8 25
[illegible]	[illegible]	[illegible]	7.20@ 7.60				8 15
[illegible]	[illegible]	2 14	5 75@ 6 45	7 00@ 8 00	6 15@ 6 20	6 00@ 8 00	6 15@ 6 20
[illegible]	[illegible]	2 39	6 [illegible] 6 25	7 00@ 7 25	6 15@ 6 20	7 00@ 7 40	6 15@ 6 20
[illegible]	[illegible]	4 70	5 6[illegible] 6.10			7 00@ 8 00	5.49@ 6 03
[illegible]	[illegible]	[illegible]	3 50	2.25@ 4 00	4 00@ 4 25	2 25@ 4.00	4 00@ 4 25
[illegible]	[illegible]	2 14	3 50	3 25@ 4 00	4 00	3.25@ 4 00	4 00
[illegible]	[illegible]	2 39	2 50	1 45@ 3.00	2 75@ 3.00	1 60@ 3 00	2.75@ 3.00
[illegible]	[illegible]	[illegible]	2 50	2 00@ 2 75	2 75@ 3 00	2 00@ 2.75	2 75@ 3 00
[illegible]	[illegible]	[illegible]	1 50	0 75@ 1 75	2 00	0 75@ 1 60	2 00
[illegible]	[illegible]	2 14	1 [illegible] 1 75	1 00@ 1.75	2 00	1.00@ 1.75	2 00
[illegible]	[illegible]	2 39	1.60	....	2 25	.....	2 25
[illegible]	[illegible]	[illegible]	2 [illegible] 2 50				

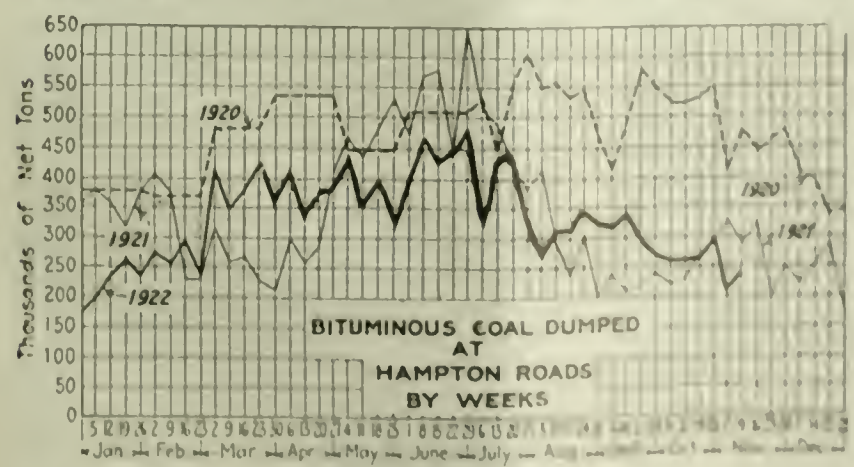
* [illegible] † Advances over previous week shown in heavy type, declines in *italics*



Coal Age, Index 340, Week of Nov. 13, 1922. Average spot price for same period, $4.12. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

the week ended Nov. 9, as compared with 214,874 tons in the preceding week. The coastwise market is sluggish, but so much of the Southern fuels are moving to the West that prices at the piers are firm. Receipts of British coals are dwindling.

The last-minute rush of Lake coal has reduced the estimated shortage in the Northwest. Dumping during the week ending Nov. 5, were 1,088,104 net tons as compared



with 1,026,388 tons in the week preceding. The movement for the season to date—15,577,786 tons—compares with 21,972,395 tons in 1921. Unless the winter is unusually severe Northwestern consumers of bituminous coal should

Car Loadings, Surplusages and Shortages

	Cars Loaded All Cars	Cars Loaded Coal Cars
Week ended Oct. 28, 1922	1,014,450	197,928
Previous week	1,003,759	196,771
Same week in 1921	951,384	210,630

	Surplus Cars All Cars	Surplus Cars Coal Cars	Car Shortage	
Oct. 30, 1922 ..	3,716	1,584	179,239	47,273
Oct. 23, 1922	4,409	1,776	166,349	46,575
Same date in 1921	80,000	38,000		

be in a fairly comfortable position. Although the docks are going to be short, Illinois and other nearby mines can undoubtedly make up the deficit.

ANTHRACITE

Production of anthracite during the week ended Nov. 4, was 1,839,000 net tons. Preliminary returns for last week indicate an output of about 1,900,000 tons.

Demand is acute but the unseasonable temperatures have cut down the shortage, estimated earlier in the season at 40 per cent. Lake dumpings last week were 99,000 net tons as compared with 94,200 in the previous week. Steam sizes are slow with the exception of buckwheat, which is being better taken in conjunction with the domestic grades. Smaller steam coals already at New York Tidewater are in distress and some barley in loaded boats has gone for the freight charges.

COKE

Beehive coke production decreased to 217,000 net tons during the week ended Nov. 4, as compared with 287,000 tons in the week preceding. Connellsville production, however, increased 5,000 tons during the week. Demand is rather light, both from foundrys and furnaces. Those furnaces now out are actively making inquiries for lower-priced contracts in order to produce salable pig iron, but operators are holding these prices firmly.

October witnessed an output of byproduct coke larger than the monthly average for any preceding year. The total production was 2,806,000 tons, an increase of 563,000 tons, or 25 per cent over August, and of 226,000 tons, or 9 per cent, over last June, the highest preceding month of the present year. Production of beehive coke also increased and reached 878,000 tons, an increase of 74 per cent over the monthly average for 1921, but a decrease of 15 per cent compared with 1920.

MONTHLY OUTPUT OF BYPRODUCT AND BEEHIVE COKE IN THE UNITED STATES
(Net Tons)

	Byproduct Coke	Beehive Coke	Total
1917 Monthly average	1,879,000	2,744,000	4,623,000
1918 Monthly average	2,188,000	2,502,000	4,690,000
1919 Monthly average	2,093,000	1,650,000	3,743,000
1920 Monthly average	2,580,000	1,945,000	4,525,000
1921 Monthly average	1,648,000	682,000	2,330,000
September 1922	2,244,000	504,000	2,748,000
October 1922	2,806,000	878,000	3,684,000

(a) Excludes screenings and breeze. (b) Includes coke for local consumption.

The quantity of coal consumed in the manufacture of coke during October was approximately 5,410,000 tons, of which 4,032,000 tons were used in byproduct ovens and 1,384,000 in beehive ovens. These figures indicate that the present consumption of coal for coke manufacture is about two-thirds greater than during the period of extreme depression in 1921, and about 8 per cent less than in the active year 1920.

ESTIMATED MONTHLY CONSUMPTION OF COAL FOR MANUFACTURE OF COKE
(Net Tons)

	Consumed in Byproduct Ovens	Consumed in Beehive Ovens	Total Coal Consumed
1917 Monthly average	2,651,000	4,116,000	6,767,000
1918 Monthly average	3,072,000	4,054,000	7,126,000
1919 Monthly average	2,940,000	2,618,000	5,558,000
1920 Monthly average	3,624,000	2,917,000	6,541,000
1921 Monthly average	2,315,000	1,023,000	3,338,000
September 1922	3,153,000	756,000	3,909,000
October 1922	4,032,000	1,384,000	5,416,000

(a) Assuming a yield in merchantable coke of 68 per cent of the coal charged in byproduct ovens and 63 per cent in beehive ovens. (b) Revised from last report.

Foreign Market And Export News

British Market Improves: Industry Reviving in France

Influx of Orders Comes with Passing of Strike Fear in Wales—Production at Peak—Meager Receipts of Coke from Germany—Acute Coal Shortage in Germany.

British market conditions are decidedly improved. The labor situation in Wales is more tranquil. This has caused an influx of orders, the strike fear now having practically passed. Prices are stronger and production is at the high mark for the year.

A slight industrial improvement in France has aided the steam coals, while domestic sorts are in strong demand. Meager and inadequate coke receipts from Germany under the Reparation Agreement are reported and French furnaces are demanding an early upward revision of the schedule.

Germany is still in the throes of an acute coal shortage. Purchases of foreign fuels are imperative but are further depressing the value of the mark.

British Secure Many Belated Orders. Output Again Breaks Record

British production has again broken the record for the year. The output during the week ended Oct. 28 was 5,288,000 gross tons, according to a table in Coal Age, as compared with the high figure of 5,255,000 tons in the preceding week. Best grades are well sold up through the balance of the year. Top-heavy supplies of lower quality coals are weakening their position.

The improved labor outlook in Wales has resulted in a renewed influx of orders. Since the men have practically refused to strike over the nationalization question the industry has become more settled. Shipments to Canada are still substantial and it is said that Canadian buyers will want Welsh coal throughout the winter. Continental buyers have been holding up orders till the labor difficulties were over, and the Welsh pits now find themselves well booked.

The north English collieries are, with few exceptions, sold out for the rest of the year. The best customers are Canada and Germany. Latest contracts are for lots varying from 25,000 to 40,000 tons for delivery monthly at 22s. f.o.b. One firm alone has contracts with Durham pits for 200,000 tons for delivery during next year at prices around 21s. Prices are firm, and several descriptions are quoted at higher figures.

BRITISH COAL INDUSTRY LOSING MONEY

Official statistics for the twelve months ended June 30, 1922, show that during that period the profits of the industry as a whole amounted to about £9,000,000, compared with £28,000,000 guaranteed by the government to the owners during the period of control and with an average pre-war net profit per annum of about £18,000,000. This profit of £9,000,000, however, is more apparent than real. As part of the settlement of the strike in 1921, £10,000,000 was granted to the mining industry, and about £6,000,000 of the £9,000,000 profit was made during July and August, 1921, when this subsidy was in effect. Furthermore, owners have had to surrender £3,000,000 of the £9,000,000 to the miners to guarantee the minimum wage under the agreement of June, 1921. Under the agreement the industry was divided into thirteen districts, and of the profits shown, £6,830,000 was made in two of these districts only—the Eastern Federated Area and the Lancashire, Cheshire, and North Staffordshire Area. The former area alone showed a profit of £5,501,586.

Rise in British Coal Exports

During September Great Britian exported 7,082,729 gross tons of coal, compared with 6,146,121 in August and 3,406,579 in September, 1921. In 1912 the average value of British coal exports was just under 13s. 8d. per ton; now it is 22s. 7d.

BRITISH EXPORTS NINE MONTHS ENDED SEPTEMBER 1913, 1921, 1922

	Gross Tons		
	1913	1921	1922
Russia	4,462,660	65,091	401,572
Sweden	3,275,151	604,820	1,680,133
Norway	1,688,549	169,426	1,153,190
Denmark	2,213,216	1,049,719	2,004,025
Germany	6,783,574	445,557	6,182,086
Netherlands	1,544,894	922,949	4,096,586
Belgium	1,546,636	174,925	2,095,931
France	9,567,410	3,248,523	9,660,182
Portugal	909,446	289,667	608,618
Spain	1,870,183	656,582	1,330,406
Italy	7,150,025	1,917,483	4,554,086
Greece	507,251	183,872	304,422
Algeria	952,241	265,514	761,684
Port W. Africa	190,082	86,638	144,518
Chile	457,641	12,496	67,005
Brazil	1,445,749	113,450	738,108
Uruguay	568,142	134,793	380,346
Argentine	2,725,303	472,295	1,320,654
Gibraltar	254,791	242,553	477,209
Egypt	2,259,230	495,047	1,287,152
Br. India	125,832	225,169	886,733
Ceylon	174,358	86,044	175,572
Other countries	1,169,766	853,939	4,323,151
Total	54,517,788	13,351,554	45,476,573

French Market Improves; Increased Reparation Tonnage Needed

Industrial demand is satisfactory, especially as regards gas and coking sorts, and stocks are decreasing. Several collieries have decided to start their coke ovens, and this will reduce available supplies of coking slacks. The rush for domestic continues unabated.

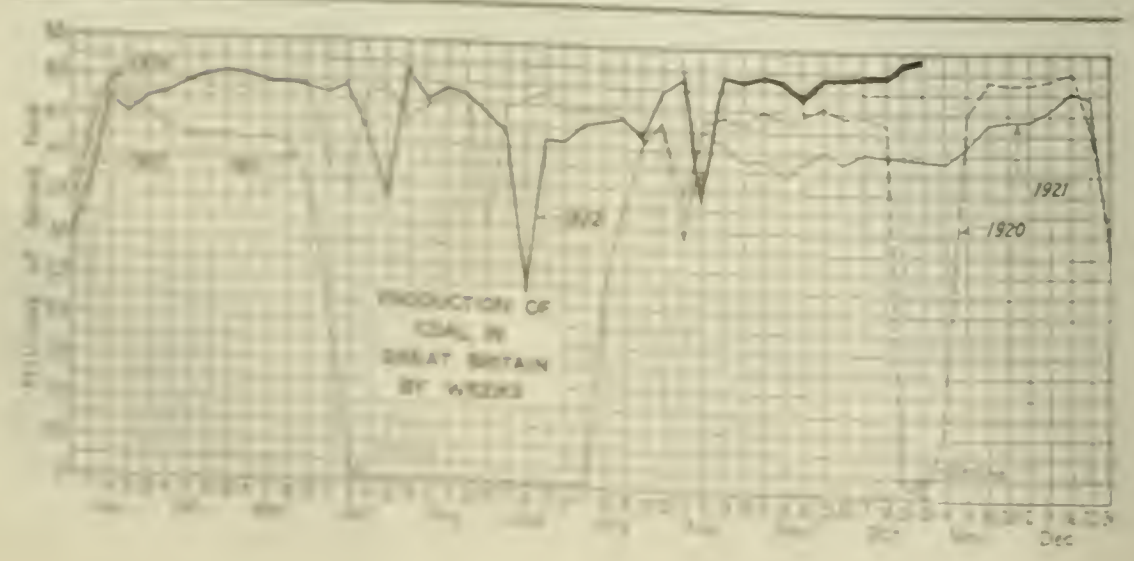
Belgian coalowners have caused a revision of outstanding contracts on the basis of the following increases: Nuts, 20 fr.; all other kinds of sized coals, 10 fr.; ovoid briquets, 18 fr. Parisian householders now pay, as from Nov. 1 270 fr. for Belgian nuts of half-fat coals; 183 fr. for French screened coal; 280 fr.@290 fr. for Belgian anthracite nuts; 370 fr.@410 fr. for Welsh anthracite nuts.

Newcastle or best Yorkshire coals are now quoted 34s. 6d. c.i.f. Rouen, which, at the present rate of exchange, is equivalent to 108 fr.@110 fr.

The output of the Lorraine and Sarre fields is increasing and a good part of it is absorbed by Germany. Loire and Center fields are aided by the present industrial improvement and stocks are decreasing.

The Commission of Reparations, which has provisionally moved to Berlin, will soon determine the future quantity of German reparation coal deliveries to the Entente. This had been fixed in August, at 1,725,000 tons per month for September and October, inclusive of 125,000 tons from Upper Silesia which Germany did not even attempt to deliver. It is probable that Germany will do her utmost to obtain a reduction and a very artful press campaign has been started to that effect.

After allowing for the present shipments to the Entente, the territories that now compose the Reich still claim for their consumption about 11,600,000 tons per month, while the corresponding figure in 1913 for the same territories was only 11,500,000 tons. As regards coke alone, the situation is still more favorable for Germany. The Entente demands now in force leave at the disposal of the present German territories a coke supply representing about 106 per cent of their pre-war requirements. At the same time, French blast-furnaces are only granted 79 per cent of the quantities of German coke de-



livered to them before the war, this proportion being still further reduced by the fact that Germany never delivers the whole of the tonnages due. French blast-furnaces, therefore, which cannot hope for a long time to obtain sufficient supplies of French coke, are forced to curtail their production, which is hardly 60 per cent of capacity.

FRENCH IMPORTS IN METRIC TONS

	September	1st 9 Months, 1922
Coal from:		
Sarre	332,861	2,625,656
Great Britain	886,327	8,622,680
Belgium	208,198	1,806,833
U. S. A.		23,255
Germany	232,563	2,856,703
Netherlands	31,617	485,861
Other countries	8	3,706
Total	1,691,574	16,424,694
Coke from:		
Great Britain	2,270	40,615
Belgium	37,159	370,057
Germany	351,664	3,149,461
Other countries	29,828	161,168
Total	420,921	3,721,301
Briquets from:		
Great Britain	6,461	109,696
Belgium	63,589	592,579
Germany	46,237	343,693
Other countries	715	3,743
Total	117,002	1,048,711

FRENCH EXPORTS IN METRIC TONS

Coal to:		
Belgium	103,755	229,989
Switzerland	11,600	358,785
Spain	208,430	413,640
Italy	410	20,201
Germany	55,441	246,589
Luxemburg	10,662	110,865
Austria	405	697
Other countries	18,933	100,011
Bunkers, French steamers	12,246	62,637
Bunkers, Foreign steamers	4,090	21,059
Total	425,972	1,564,473
Coke to:		
Switzerland	15,082	56,671
Spain	323	1,183
Italy	26,951	130,591
Germany	774	7,256
Other countries	3,830	141,556
Total	46,960	337,257
Total, patent fuels	7,805	68,730

FRENCH RECEIPTS OF REPARATION COAL

	Last 10 Days of September	First 10 Days of October
Coal	107,700	120,300
Coke	183,300	179,000
Lignite Briquets	15,400	16,700

Export Clearances, Week Ended November 9, 1922

FROM HAMPTON ROADS

	Tons
For Cuba:	
Dan S.S. Normannia, for Monati	2,515
Nor. S.S. Bowden, for Preston and Banes	1,032
For Ecuador:	
Br. S.S. Alvarado, for Guayaquil	549

German Prices Raised Again

Production in the Ruhr region during the week ended Oct. 28 was 2,005,000 metric tons, according to a cable to *Coal Age*. The output for the previous week was 1,989,000 tons.

Because of the large increase in the wage scale the coal prices have again been raised. Effective Nov. 1, an advance of 2,060M.@7,115M. per ton was made on unwashed fat coal.

The output of the Ruhr basin and Left Rhine collieries in September amounted to: Coal, 8 265,688 tons (8,336,773 tons in August) or 317,911 tons (308,769 tons) per working day; coke, 2,128,328 (2,176,208 tons) or 70,944 tons (70,200 tons per working day; briquets, 413,282 tons (375,191 tons) or 15,895 tons (13,896 tons) per working day, according to the *Colliery Guardian*. Only 52 per cent of the miners worked the overtime shifts in the latter half of the month, but the percentage has since increased to 77.5 per cent.

The Rhenish lignite district produced 3,234,961 tons of coal and 646,551 tons of briquets; and the Mid-German lignite mines, 8,074,105 tons of coal and 1,852 890 tons of briquets.

September Exports, by Customs Districts

Customs Districts	Gross Tons: Anthracite	Bituminous	Coke
Vermont	288	444	750
St. Lawrence	29,148	17,918	1,471
Rochester	14 737	43,586	23
Buffalo	41,948	233,036	10,743
New York	10	687	106
San Antonio	38	43	
El Paso	63	2,295	735
San Diego	6	10	
Arizona	1,151	2,358	3,951
Washington	1	674	
Alaska	2		
Dakota	907	749	1,406
Duluth & Superior	135	660	
Michigan	254	140,993	13,593
Philadelphia		3,550	
Virginia		48,836	1,864
South Carolina		4,151	
Mobile		3,410	
New Orleans		251	584
Ohio		671,356	73
Maine & N. H			173
Total	88,688	1,175,007	35,472

United States September Coal Exports

	Gross Tons: Sept., 1921	Sept., 1922
Bituminous coal:		
By rail to:		
Canada	1,034,816	1,110,794
Mexico	13,688	4,756
Total	1,048,504	1,115,550
By vessel to:		
British West Indies	6,305	5,113
Other West Indies	3,653	1
Cuba	31,748	31,709
Panama	9,606	19,163
Total	51,312	55,986
France	17,045	
Italy	17,898	
Total Europe	34,943	
Argentina	33,659	
Brazil	24,411	
Chile	1,455	
Total South America	59,525	
Egypt	5,916	
Other countries	11,410	3,471
Total bituminous exports	1,211,610	1,175 007
Total anthracite exports	285,468	88,688
Total coke exports	17,634	35,472

Coal Paragraphs from Foreign Lands

ITALY—The price of Cardiff steam first is now quoted at 40s. 3d. on the Genoa market, according to a cable to *Coal Age*.

A Milan note hints at a rise in coal prices, and advises consumers not to expect a reduction except such as may take place for a moment in consequence of a passing glut. This, on the other hand, may be easily absorbed by ready buyers.

Extensive development of power by utilization of the lignite deposits of Italy is being considered under the Government subsidy plan for making use of the national fuel resources, according to a report to the Department of Commerce by Consul Russell, Rome.

BELGIUM — The arrival of cold weather has still further increased the demand for domestic descriptions. Prices are firm and delivery periods are lengthening.

During September 1,751,210 tons of coal were extracted from Belgian mines as against 1,691,940 tons in August. On Sept. 30 stocks of coal stood at 758,070 tons, a reduction of 283,810 tons. Production of coke amounted to 239,260 tons compared with 245,040 tons in August and the production of briquets was 203,490 tons, as against 216,610 in August.

CANADIAN COAL IMPORTS for the first nine months of 1922 were 1,245,943 tons of anthracite and 5,417,975 tons of soft coal, as compared with 3,642 189 tons of the former and 9,896,760 tons of the latter during the 3-year average, 1919, 1920 and 1921, for the same period.

Featureless Market at the Roads

Continued dullness was apparent last week, with depletion in the coal supply. Shipments from the mines continued below normal, with supplies so scattered in the trade that no shipper had a normal quantity on hand.

Coastwise movement was still reduced, because of shipments to the West and Northwest. The trade was anticipating a decrease in this movement in the next two weeks, with a consequent revival of business here.

Hampton Roads Pier Situation

	Week Ended: Nov. 2	Nov. 9
N. & W. Pier, Lambert Pt.		
Cars on hand	571	611
Tons on hand	12,861	13,854
Tons dumped	66,167	72,423
Tonnage waiting	28,910	41,164
Virginian Ry. Piers, Sewalls Pt.		
Cars on hand	733	859
Tons on hand	43,258	44,716
Tons dumped	84,749	93,581
Tonnage waiting	28,443	41,912
C. & O. Piers, Newport News		
Cars on hand	432	566
Tons on hand	21,100	25,400
Tons dumped	48,862	58,102
Tonnage waiting	1,478	

Pier and Bunker Prices, Gross Tons

PIERS

	Nov. 4	Nov. 11
Pool 9, New York	$7 50@$7 75	$7 50@$7 75
Pool 10, New York	7 50@7 60	7 00@7 50
Pool 11, New York	6 75@6 75	6 75@6 75
Pool 10, Philadelphia	7 15@7 45	7 15@7 45
Pool 11, Philadelphia	6 75@7 15	6 75@7 15
Pool 1, Hamp. Roads	7 15@7 45	7 40
Pools 5-6-7 Hamp. Rds.	7 15	7 40
Pool 2, Hamp. Rds.	7 00@7 15	7 40

BUNKERS

Pool 9, New York	$7 00@$7 15	$7 00@$7 15
Pool 10, New York	7 15@7 40	7 40@7 75
Pool 11, New York	6 75@7 15	6 50@7 25
Pool 10, Philadelphia	7 15@7 45	7 15@7 45
Pool 11, Philadelphia	7 00@7 30	7 00@7 30
Pool 1, Hamp. Rds.	7 15	7 50
Pool 2 Hamp. Rds.	7 15	7 50
Welsh, Gibraltar	30s. 6d.	30s. 6d.
Welsh, Rio de Janeiro	32s. 6d.	32s. 6d.
Welsh, Bahia	33s. 6d.	33s. 6d.
Welsh, La Plata	30s. 6d.	30s. 6d.
Welsh, Genoa	40s. 6d.	40s. 6d.
Welsh, Algiers	35s. 6d.	35s. 6d.
Welsh, Pernambuco	35s. 6d.	35s. 6d.
Welsh, Bahia	34s. 6d.	34s. 6d.
Welsh, Montevideo	42s. 6d.	42s. 6d.
Welsh, Tenerife	35s. 6d.	35s. 6d.
Welsh, Malta	40s. 6d.	40s. 6d.
Welsh, Las Palmas	35s. 6d.	35s. 6d.
Welsh, Naples	40s. 6d.	40s. 6d.
Welsh, Rosario	32s. 6d.	32s. 6d.
Welsh, Singapore	32s. 6d.	32s. 6d.
Welsh, Constantinople	32s. 6d.	32s. 6d.
Welsh, St. Michaels	30s. 6d.	30s. 6d.
Welsh, Fayal	40s. 6d.	40s. 6d.
Welsh, Oran	35s. 6d.	35s. 6d.
Welsh, Funchal	35s. 6d.	35s. 6d.
Welsh, Dakar	45s. 6d.	45s. 6d.
Welsh, St. Vincent	42s. 6d.	42s. 6d.
Welsh, Mauritius	50s. 6d.	50s. 6d.

Current Quotations British Coal f.o.b. Port, Gross Tons

	Nov. 8	Nov. 15
Cardiff	30s. 6d.	30s. 6d.
Admiralty, large	32s. 6d.	32s. 6d.
Steam, smalls	18s. 6d.	18s. 6d.
Newcastle		
Best steams	32s. 6d.	32s. 6d.
Best gas	30s. 6d.	30s. 6d.
Best furnace	28s. 6d.	28s. 6d.

North Atlantic

Trading Suffers Doldrums: Inquiries Are Plentiful

Current Demand Satisfied by Light Receipts—Early Improvement Foreshadowed—Stiff Undertone on Scarce Good Grades—Transportation Gradually Improving—Southern and British Receipts Dwindle.

Trading is still slow although there are plenty of inquiries. The light receipts are sufficient to meet current demand but there are many indications of an early betterment. Prices show little change, but good grades are so scarce that a stiffening tendency is evident.

As in other markets buyers are defending their dilatory attitude by the statement that they expect freer offerings after the close of Lake navigation.

Transportation conditions are improving slowly. Railroads are more active in the market and considerable complaint is heard from operators who are attempting to run on straight commercial business that preferential supply for carriers' needs leaves them but little loading equipment. Receipts of Southern coal are dwindling, while British cargoes are now arriving only occasionally.

PHILADELPHIA

There is no appreciable change in the situation. The light amount of coal coming upon the spot market seems to be entirely sufficient for the demand. It might be said that requirements for small shipments are inclined toward betterment, as the moderate users show an inclination to put by a little more coal.

There is no lessening of the complaint of car shortage by the producers, some claiming that it has grown worse. One firm is advising their trade as to mine follows and their mines had been closed for the eighth successive day, stating "I see no new favorable signs in the railroad or distributing cars we intend to even out, as we cannot exist under present conditions."

A large share of production is still going to the railroads for supply fuel. Most of the lines in the Northeast remain ordering the market strongly.

At Tide there is very little activity, outside of bunkering and this is somewhat light. No foreign coal is coming in, although there has been a stray cargo of Southern coal. It is of interest, though, to note the recording of a charter for a cargo of British coal, delivery to be made sometime in November.

Price changes have been few and are at the same level as a week ago. It must be noted, however, that coals of Pools 1 and 9 grade are somewhat scarcer, with an occasional light price advance, and the whole market seems to have grown steadier.

CENTRAL PENNSYLVANIA

Production for October totaled 82,714 cars as compared with 74,039 cars for September. The maximum daily production for the present year was reached on Oct. 30, when 4,023 cars were loaded. On the following day it dropped to 3,104 cars and on Nov. 1, it dropped to 2,383. The drop was due to the car shortage, although some little improvement is noted.

Since the fatal disaster at Spangler on Nov. 6, production fell off, particularly in Cambria County, due to the miners helping in the rescue work at the Reilly mine and the concentration of fire and mine foremen at that point.

FAIRMONT

Car shortage is still interfering with production. The car supply on the Western Maryland is somewhat better than on the B. & O. Lake shipments have been appreciably increased. Prices for Eastern delivery are not on quite so high a level.

NEW YORK

If producers booked one-half the orders represented by the inquiries received the mines would not be able to produce the coal needed to meet the demand. This was the opinion of some local houses, while others contended there was little doing. The number of cars at the local docks were about the same as last week.

Buyers are apparently on strike. It is believed they are waiting for the close of Lake navigation. With this source of consumption cut off they believe larger shipments will come to this market, increasing supplies and probably lowering prices.

An embargo was reported as having been placed on Monongahela coals coming east. This action was taken in order to force the shipments of these coals westward.

The car shortage is becoming more acute. None of the roads can boast of more than 50 per cent normal supply while most of them are running from 10 to 20 per cent below.

Lake demand is stronger than Tidewater. Considerable Pennsylvania coal is going into New England with the result that the Southern coals are losing some of the market obtained during the strike.

British coal arrives in small quantities now. There is some in the harbor but buyers do not appear to take kindly to it. Welsh anthracite is being offered to consumers at around $15. Southern coals are not active here. Quotations were around $9 toward the end of the week.

UPPER POTOMAC

The advent of November found mines producing more coal on an average than during the year 1921. It is true that there is not a large tonnage being mined in some parts of the Georges Creek region but on the Cumberland Division of the B. & O. the output is increasing and in the Upper Potomac field it is larger than at any time in recent months. Market conditions are largely unchanged. The best demand was from the West.

BALTIMORE

The fact that Federal Fuel Distributor Spens announced from Washington that there was now approximately 35,000,000 tons of soft coal in storage has had a tendency to make fuel burners in Baltimore feel firm in their position of refusing to buy largely for storage. While Baltimore industries have been buying lightly and a review of the storage situation shows that there is not more than about a 40-day supply ahead, the situation as to demand and run of coal to this point is such as to leave a market without exciting features.

While most of the best grades of steam are under contract, there are some on the market and the offerings of intermediate and lower grade coals have been so free as to throw the trading into active competition. A renewed activity is noted on the coastwise movement. For the first ten days of November four steamers cleared with coal, two of the New England Fuel & Transportation Co. for Boston; one of the Munson Steamship Line for Portland, Me., and one for Searsport, Me. No further importation of English coal is noted, nor was there any shipment of American coal on export.

South

BIRMINGHAM

The cry for domestic coal continues to feature the trade here, with little or no improvement in supply. A survey of local yards recently revealed a total of approximately 15,000 tons on hand, which would last scarcely ten days in the event of a cool spell. The slack supply of domestic is due to two causes—shortage of cars and lack of demand for steam coal in such volume as should exist at this season of the year.

The commercial market is without change. Demand is comparatively light and there is some surplus of the low-grade coals. Commercial mines are operating from one-third to half time. Quotations have undergone no change in the past week.

Car supply is scarcely better than 50 per cent in the field, but the railroad shops are making better headway in repairing equipment and restoring it to service. The situation is expected to improve gradually.

VIRGINIA

Production has undergone a slight decrease, due largely to the loading slump on the Southern and the Interstate, offset in part by increased production on the N. & W. and the C. C. & O. Losses are due entirely to a shortage of cars and other transportation difficulties. Despite lack of briskness in the market, the entire output is being readily absorbed, though prices are low, the range on mine run being $3.50@$4.50, depending upon the market in which coal is sold.

Anthracite

Householder Loath to Order Anything but Anthracite

Substitutes Urged as Shortage Becomes More Evident—Pea and Buckwheat Moving More Freely — Producers Aided by Mild Weather in Effort to Satisfy Needs of Northwest.

Substitutes are being urged on consumers as the shortage becomes more apparent, but householders are still loath to buy anything but anthracite. The strong demand, however, is enhancing pea and buckwheat is also moving more freely. Producers are making every effort to supply the Northwest before Lake navigation ceases, which may account for diminishing receipts in the East. In this they are abetted by the mild weather, which has cut down the season's shortage, estimated earlier in the year at 40 per cent. Lake dumpings at Buffalo were 99,000 tons last week, as compared with 94,200 tons in the preceding week.

The smaller steam sizes are still a drug on the market. Steam coals are in distress at New York Tidewater and some barley in loaded boats has gone for the freight charges.

PHILADELPHIA

The week has been almost completely barren of shipments. Outside of fair independent receipts it can be taken almost literally that the companies have shipped no coal at all. The yard with coal is the exception now, even those large yards which have rarely ever been without stocks.

The public is surely favored by the weather, and it is just possible that the big producers are watching this phase, being ready to divert coal here the moment that normal November weather may arrive. The report is strongly current that the heavy shipments to the Northwest are being made by direction of the Federal Fuel Administration.

The dealers here argue if conditions are so severe there, they should use bituminous coal, which can be supplied to that district much easier than anthracite.

The best news the retailers have is a promise that a break in the shortage of coal here is to come soon. A few already advise they now have the first reports of shipments for weeks. The tip has been passed that by Nov. 20 coal will begin to roll along in better volume. So far the public is fairly calm over the situation, as very little fuel is needed, but despite this the retailers report that they are continually urged to make deliveries as soon as possible.

Steam coals are still lagging behind with a bit more improvement in buckwheat. Much of this improvement though is being made at the urging of producers who insist that some buckwheat must go with family sizes.

BALTIMORE

Anthracite dealers are having a most difficult time in attempting to meet even the most urgent demands of customers. It is estimated that, despite recent arrivals at the rate of more than 2,000 tons of hard coal daily, that there are still more than 40,000 homes not supplied with coal, of which probably 25,000 at least would have had a large part of their winter supply in by this time. There are also a large number of consumers using up to one- and two-ton deliveries which were made to them on account. Many dealers have not gotten around their customers even with the one- and two-ton deliveries. Fortunately the weather has been mild so far, but consumption has been heavy enough to cause quite a few consumers to start a call for additional fuel.

BUFFALO

The demand of course greatly exceeds the supply, but the weather has been so mild that nobody is very urgent, especially as the supply of natural gas keeps up well. Quite a good many have bought coke, soft coal or small sizes of anthracite and there certainly will be no distress right away, if at all.

Complaint is made that Buffalo has not received as much coal as was allotted to it. Still the shippers are predicting that there will be little or no difficulty. The independent operators are turning out only a small amount of coal, as they find it hard to get cars. They are still asking $12.50@$13 for it at the mines.

Lake shipments are not up to the average of former seasons, being for last week 99,000 tons, of which 41,200 tons cleared for Duluth and Superior, 9,200 tons for Ashland, 7,800 tons for Hancock, 25,500 tons for Milwaukee, 9,300 tons for Sheboygan, and 8,000 tons for Chicago. Rates are unchanged.

NEW YORK

Pressure is being used to induce users of the domestic sizes to revert to substitutes. So far these efforts have not been entirely successful but greater success is looked for as the winter advances.

The one thing that has prevented a serious situation has been the mild temperatures. Those consumers who have not yet obtained any coal are becoming alarmed lest they will have to be without furnace heat for some time to come. Retail dealers' books contain many orders which have not been filled, although the orders were entered some time ago.

Because of the scarcity of the larger sizes dealers are able to move more pea coal, and this is moving well for this market.

The steam sizes continue to move slowly. Buckwheat is the exception. This size is being taken by some dealers when they obtain the larger coals at the mine. Greater difficulty is experienced, however, when efforts are made to move the coal already at Tidewater and it was reported that some loaded cargoes had been offered as low as $5, alongside.

There is practically no call for rice and in many instances buyers have been able to name their own price. Barley is dormant. It was said that some of this size had been sold in loaded boats for the freight charges.

BOSTON

Shipments are coming along with exasperating slowness. By water there is delay in loading, and all-rail there is shortage of cars and locomotives. The producing companies, who are making a big effort to get coal to the Lakes before the close of navigation, are curtailing their shipments to New England and other sections. As a result, there is a lot of apprehension lest really cold weather overtake the volume of coal normally due this territory.

At retail there is constant pressure on the part of householders. The largest Boston distributor has at last advanced its retail price to $16, the mark set by most of the other dealers a fortnight ago.

West

SALT LAKE CITY

The car situation in Utah is still a troublesome problem. The carriers appear helpless to effect any noticeable increase in the slim supply of cars delivered to mines.

The recent cold snap continues, setting up in Salt Lake City exactly the condition which is expected to arise in every other market with the first real cold. The supply is low, people are beginning to scramble for fuel, and the tendency toward higher prices is difficult to restrain. However, the recent indictments of coal men is having a good moral effect on some of the less responsible ones. There is considerable worry in certain quarters over the danger of some people suffering soon for want of fuel.

Canada

TORONTO

Supplies of anthracite coming forward are not sufficient to fill all orders for the late and dealers are obliged to refuse further orders until those in arrears are filled. The standard price of $11.50 per ton is maintained by the larger dealers, but some of the others who are unable to secure immediate delivery from the mines and obtain supplies through brokers ask as high as $18. Little change is reported until navigation closes and some of the coal now going west by water is diverted to Ontario points.

Conditions as regards bituminous show little change. Supplies being rather more plentiful, but prices variable. Lump is carried into sellings for $8.75 and upward, and Pennsylvania soft coal at about $8.

Chicago and Midwest

Dull Trading Shows Few Signs of Improvement Yet

Yields All Thankful for Short Supply of Cars—Lump Prices Fairly Firm but Steam Sizes All Drag Bottom—"Oh for Winter!" Sighs Trade.

Demand is practically everything continues light with only one real prospect of relief—imminent winter. A thin trickle of steam demand which is keeping itself out of public sight is the only change worthy of mention since last week. This is so trivial as not to have lifted screenings out of the price dumps, but it indicates some buying must be done soon. Markets generally remain so lifeless that the producing fields can not but be thankful that car supply continues weak.

At St. Louis, market conditions remain as low as last week, with not a single sign of relief. Kentucky fields are glad they are averaging but 18 to 20 per cent car supply and are wondering whether they will lose even more of their market when the Lake shipping season closes. In all fields, business is largely on a day-to-day basis and price concessions on everything are made frequently.

ST. LOUIS

Continued warm weather has also ruined the local market. Domestic buying has practically stopped and steam users are playing the market for further reduction. Such coal as is moving to the dealers is being stored. There is nothing being stored in the way of steam locally, except by the Union Electric and Laclede Gas companies. The country demand for steam has suddenly dropped off on account of warm weather and the effort made by shippers to move a little has reduced prices. This has become a continuous performance.

Country domestic has mixed up and very little is moving. The entire Middle West hopes for and expects a reduction in prices, while operators are steadfast in their refusal to make any concessions. The Terminal congestion in St. Louis is bad as ever though there has been a little relief. Nothing comes in from the Arkansas district.

LOUISVILLE

Due to the fact that eastern Kentucky is not averaging much better than 18 per cent car supply production is at a standstill. Quiet conditions prevail on the Lakes, however, as the market is so small that the operators are able to maintain prices in spite of the fact that West Virginia is quoting lower figures. However, if the Lake movement does not last much after Nov. 15, it is believed that prices will break somewhat, especially as cessation of Lake shipping will perhaps result in more short hauls and better car supply.

Right now there is reported fair movement to Ohio points, to Detroit, and to the railroads, while Southern business to the textile districts has not been so keen.

It is claimed by operators and jobbers that some of the market quotations on southeastern Kentucky are being confused with non-gas coal, and that sizes are not being properly differentiated. Some of the mines are producing a 2-in lump which is selling for $6@$6.50, while they are asking $6.50@$7.25 for 4-in. block coal. Harlan gas is generally quoted at $4.25@$4.50 for mine run, whereas non-gas coal is $4@$4.25 and some is reported at $3.75. Screenings are generally selling at about the mine run price, although some quotations have been reported as low as $3.50. While talk is being heard of $3.75 mine run, jobbers say that they cannot get coal in sufficient quantities to supply open orders at $4.

SOUTHERN ILLINOIS

Warm weather and an indifferent public that still continues to expect a lower price have almost stopped the demand for high-grade coal. Lump and egg continues to move, but is not in any great demand. Nut is heavy and screenings are a serious problem. The day, however, has been saved by the car shortage. The railroad tonnage is below normal, principally on account of movement and no empties.

There is no market for Duquoin and Jackson county coal. Even the screened sizes in some of these districts have to be forced. The Mt. Olive field has carried no-bills of lump, egg, nut and screenings for several days and Saturday night saw about 150 no-bills on the Wabash alone. Part of the trouble in this territory is the hopper bottom cars which dealers are refusing to accept. Both steam and domestic are topheavy, although the prices on the domestic sizes have been maintained, but screenings are breaking, as well as steam nut.

In the Standard field mines get from one to three days a week. The L. & N. has perhaps the poorest supply of cars. This week the Wabash had a surplus one day on account of every mine on its rail having no-bills and this surplus was diverted to the L. & N. for loading. The market for this field has gone to pieces. Screenings are still $1.25, 2-in. lump, $3, 6-in. lump, $4, and steam, nut and egg, $2.25 and up.

CHICAGO

Trade seems ready to show an upward trend at any moment with the arrival of a colder wave, but throughout the week business remained sluggish, with wavering of prices which were already weak. The determination of southern Illinois and Indiana producers to prevent any general decline on lump continues uniformly successful. The $5.50 level rules the market on very best coal. There are concessions here and there but not enough to start a general cave in. Screenings remain an absolute drug in all fields. Many no-bills of this size are held overnight in almost all fields, it is reported.

Trading remains light in all coals. The demand for anthracite is considerable but not ravenous because winter has not arrived and because many a consumer apparently has decided he is going to burn soft coal and will buy in a little when the price drops. Cold will attend to prices.

Only one report in the market is encouraging. The news is circulating steadily that a number of the bigger buyers are at last beginning to take just a little more coal than they use from day to day. The increase in volume is small and purchases are covered up as neatly as possible. This movement by no means takes care of the volume of steam coal available but it counts for something.

WESTERN KENTUCKY

Operators selling their production on a day-to-day basis have been forced at times to release unsold coal in the late afternoon at slightly under the market, with the result that some of this cheaper spot stuff, which is twin brother to distress coal, is being confused in quotations as the regular market.

Some of the jobbers who have had some open orders at $2.50 a ton, have had trouble in locating much coal that could be sold at that price for mine run, and still allow them a commission, although there has been some talk of $2.25 mine run, and perhaps some low-grade stuff has sold that low, other than loaded coal that the operator had to dispose of. However, really first-class mine run is fairly firm at $2.50@$2.75 in quantities, as production can't be very active when car supply for the first several days of November has been but 25 per cent on the L. & N. and 30 per cent on the I. C.

The field in which western Kentucky coal is moving, has been materially reduced since mines north of the Ohio got back into operation. Movement by river has been very small also, due to continued low water in the Ohio.

Screenings have been weak in spite of comparatively small production, ranging $1.50@$2 for both pea and slack and nut and slack, while the pea and slack may be shaded by 10c. a ton. Lump is generally quoted at $4.75, with very little coal at under $4.75.

INDIANAPOLIS

Sunshine and balmy weather is a combination which promises to break prices on domestic coal. Steam prices have already softened, due to lack of demand.

The situation is without parallel in Hoosier mine operation. For five months the strike shut off much of the coal supply. Weeks have gone by since and yet there is no demand. Approximately half the mines are closed each day, either because of lack of cars or lack of demand.

Eastern Inland

Filling of Current Needs Leaves No Surplus Coal

Movement to Lakes Reduces Available Spot Commercial Fuel—Curtailed Supply and Increasing Needs Have Bracing Effect—Domestic Mine Price Up 50c. in Ohio.

Current needs are being met easily but there is no surplus left. Concentration of tonnage to the Lakes leaves little spot commercial coal available. The lack of abundant supply has firmed spot prices while the growing needs of consumers have had a strengthening tendency. Shipments to the Lakes probably will cease on Nov. 20, when, it is estimated, sufficient tonnage will be rolling to supply cargoes during the balance of the season.

The Ohio fuel authorities have raised domestic mine prices 50c. to safeguard home needs and prevent so much of this tonnage going to outside markets where prices are higher.

PITTSBURGH

Car supplies show no material change, running generally at about 40 per cent of rated mine capacity. Operators are maintaining contract shipments without much difficulty and have sold free coal for the open market, not enough to cause a decline in prices even though the demand is not particularly heavy.

The steel industry seems to be able to maintain its supplies of coal for gas, power and byproduct coking without much difficulty, and even to accumulate a little reserve. Steel production in October was at the highest rate since October, 1920. Demand for domestic coal is fair but not excessive.

Prices are a shade stiffer, although there is no important change in the quotable market. Fair grades of steam are $3.25@$3.50, ordinary byproduct, $3.75@$4.00, while high grade byproduct, may command up to $4.25. Youghiogheny gas is $4.50 for mine run, screened being $5@$5.50. Domestic 14-in. is $4.50, in accordance with the recent arrangement between the fuel administration and operators of the district.

CLEVELAND

The supply in this city is making no appreciable gains despite the recent agreement between the fuel administration and Ohio coal operators, who were to get more cars in return for consigning more coal to points within the state. At the present time the bituminous coal trade is concentrating upon shipments to lower ports.

The Lake movement has outrun expectations. It is now thought that fully 17,500,000 tons will be shipped. This will be about 5,000,000 tons short of the normal movement. It will be sufficient to supply current needs, however, but will not permit of a large carry-over next spring. Under an order from the I. C. C. all mines shipping to the Lake are guaranteed a 50 per cent car supply. A 48-hour priority also put all open-top cars into coal service for delivery of coal to the ports.

Partly as a result of the lack of abundant supply and partly because of growing needs of consumers, the Cleveland coal market continues steady. There has been no further increase in price during the past week, however.

The demand for household coal continues to expand. Dealers report they are from five to six weeks behind on deliveries. Pocahontas lump is quoted at $12.34. Hard coal is coming in a little more freely. No price is quoted, the customer being billed the price at the time of delivery.

NORTHERN PANHANDLE

Since the opening of the B. & O. to Western shipments production is on a little larger scale. There is a fairly large movement to the Lakes, with the price ranging $3.25@$3.75. The demand for prepared grades is somewhat stronger. River shipments also have been increased somewhat. Buying by steel and iron mills on a large scale is also stimulating production.

DETROIT

Buyers are still looking forward expectantly to some miraculous development to provide them with coal at a lower cost. Buying is apparently being limited to orders required to provide for current consumption, while the matter of accumulating reserves is set forward.

Jobbers are of the opinion that for a few days after the closing of navigation on the Lakes there may be a more liberal supply.

Hocking lump is quoted $5.75, egg, $5.25, mine run, $3.75, nut, pea and slack, $3.25. Three-quarter lump from Pittsburgh No. 8 is offered at $4.75, mine run, $3.75, slack $3.25. Fairmount lump is $4.75, mine run, $3.50@$3.75, slack, $3.25. Kentucky and West Virginia lump is $6.50, mine run, $4, slack, $3.75@$4. Very little smokeless coal is reaching Detroit.

BUFFALO

Consumers say they are getting more coal than they need and they believe that the worst of the car shortage is over. That cars will not be in full supply for a considerable time yet is understood by everybody, but it is not now believed by the great part of the trade that anything short of a big snow blockade will cut out the supply.

The roads differ much in their car supply. Some of them are about as short as ever, while some are reported to have 100 per cent. Taken as a whole the shortage is not as menacing as it was and if it lets up much more the predictions now made that prices will go to $2.50 may be realized.

Quotations are: $5@$5.25 for gas lump, $5.25@$4.50 for steam lump; $3.50@$3.75 for mine run, with Allegheny Valley something less on account of lower freight rate; $3.25@$3.50 for slack.

COLUMBUS

With the weather rather mild and with the demand for domestic as well as steam grades somewhat saturated, there is a slight weakening in the Ohio coal trade. This is not sufficient to cause any demoralization, however, and will probably be lost at the first cold snap. Prices on certain grades have declined although prepared sizes are still at high levels.

No change has been made in prices fixed by the Ohio Fuel Administrator. The conference called in Columbus ten days ago relative to shipping Ohio-mined coal to Ohio users has not done much to relieve the situation. Retailers are buying both West Virginia and Kentucky grades and are finding a sale at rather high levels.

Steam trade is rather quiet. Reserves in many instances have been built up and users are not showing much anxiety over the future.

The Lake season is nearing its end. The trade has been fairly good although a reduced tonnage was shipped to the Northwest.

EASTERN OHIO

Operations continue at a minimum because of car shortage or transportation disability. During the week ended Nov. 4 this district produced 296,000 tons or only about 48 per cent of capacity. Cumulative figures indicate a production of 8,787,000 tons or about 35 per cent of capacity for the year.

Demand for current needs continues strong because the quantity of coal available in the open market is inadequate. Little storing is yet being done by consumers, and the majority are awaiting the close of Lake navigation. It is understood that the shipping of coal to the lower ports will be shut off Nov. 20.

Retailers are facing an active demand and are besieging operators to furnish them with lump sizes. An announcement of unusual interest was made by the Ohio Fuel Administration allowing the additional per ton above the previous maximum price on lump, effective Nov. 15, for domestic consumption. It is claimed this will have the effect of greater production in lump coal for Ohio consumers and will also curtail the shipping of Ohio mined lump to consignees outside the state who were offering and were willing to pay higher prices. Spot prices show little or no change from those quoted last week.

Bituminous coal receipts at Cleveland continue at a higher volume than at any time this year. Arrivals during the week ended Nov. 4 aggregated 1,347 cars. Divided, 1,241 cars for industries and 106 cars for retail yards. This is a decrease of 300 cars under the preceding week.

In the Lake trade the Ore & Coal Exchange figures indicate that up to Nov. 6, 14,967,844 tons have been taken by the fleet as compared with 21,254,280 tons during the same period last year.

Northwest

Apathy Continues With Northwest's Warm Weather

Hard Coal Still in Keen Demand in Face of Small Supply But No User of Soft Coal Is Worrying—Prices Stable

Warmth still prevails throughout the region around the Upper Lakes. It seems to be sufficient to keep bituminous coal in a sluggish condition. Very little stocking is going on and trade shows a decided need for a cold snap. Coal men are fretting a little about the distributing problems that will arise with the first icy wind sweeping out of the North. The only sign of life anywhere in the region is a little railroad buying down around Milwaukee.

Anthracite remains in keen demand with the supply as short as it was a week ago. Deliveries by rail are counted on to finish out the winter shortage. Some coal in rail that was tied up near the fields was reported to Fuel Distributor Spens and better deliveries have been promised. Prices generally throughout the Northwest remain stable.

DULUTH

General stiffening of the market is noticeable here this week and the anthracite market is also strong, although the increased levels quoted last week are not evident. The hard coal that was sold at an advance was some which came from mines which were outside of the general maximum price agreement and for this reason a higher price could be asked.

Official figures of shipments from the docks for October show that 10,317 cars went out. This compares with 16,178 cars in September of this year and 19,727 cars in October last year. Shipments were better than reports from private dock operators seem to indicate throughout the month and would have been better still if more cars had been available.

Receipts for the year at Duluth-Superior harbor are placed at 3,710,697 tons, which includes 1,664,193 tons of soft coal, 222,824 tons of hard coal and 11,672 tons of anthracite pennsylvania, which have been shipped here from Fort William, Ont., for transshipping purposes. Last year to Nov. 1 3,240,284 tons had been received, of which 1,968,464 tons was bituminous and 1,271,820 was anthracite. Receipts for October were approximately one-third of the total receipts for the season, 1,242,563 tons bituminous, 211,441 tons anthracite and 4,228 tons anthracite pennsylvania.

One more trip is as good as another's on the date of the closing of navigation, and whether that date is early or late depends whether there will be plenty of coal or just enough to go 'round. It is planned to lay up as many boats as possible at this port.

MINNEAPOLIS

Until there is a decided touch of cold weather, there will be no real activity in the coal movement. Consumers are still hoping for further reductions in prices. And it must be admitted that the successes which have attended their efforts thus far would seem to justify their hopes. Today steam coals of the different grades are selling at not over 50c. above the price of a year ago.

Conditions so far seem to extend a special dispensation of favor to the Northwest in the matter of fuel. Receipts of coal on the docks on Lake Superior have been about 40 per cent of those of last year, with hard coal only about 16 per cent of last year. Yet in the face of such an apparent shortage, the demand has been slack enough to force reduced prices right along on all soft coal. Hard coal is in a class by itself, when it comes to prices.

On the other hand, if cold weather shall prevail, as it may do at any time now, it would seem as though it would bring about an immediate scarcity of supply. For the retail trade has not been stocking soft coal to any extent, and has been unable to get much hard coal. The apparently sufficient stock of soft coal, seeming large in mild weather, will melt away very fast in zero days. So the problem now is wholly one of weather.

MILWAUKEE

The coal market remains quiet under continued fine weather. There is little anxiety in regard to the winter fuel supply, now that it is certain that there will be ample stock of soft coal. Anthracite is wanting, however, but dealers believe that railroads will be able to maintain a sufficient supply during the winter months. An appeal to Federal Fuel Administrator Spens released quite a number of cars bound for this market which had been stalled on sidetracks at Hazelton, Pa.

The shading in mine prices of Illinois and Indiana coal is not felt here. Only a sharp reduction of something like $1 per ton would force prices down here. Pittsburg, Hocking and Youghiogheny has been advanced 50c. per ton. Screened now sells for $10.25 wholesale and $11.75 retail. Pile run is wholesaled at $9.50. Pocahontas has also been raised 50c. per ton. Screened is now $13.75 wholesale and $15.25 retail, and mine run, $10.25@$11.75.

Cargo receipts by Lake thus far in November aggregate 41,500 tons of anthracite, and 88,738 tons of soft coal. If good weather prevails during the rest of the Lake period, the supply of both hard and soft coal will be greatly augmented.

New England

Little Change in Market; Inquiry Light and Scattered

Prices Show Tendency to Firmness—Large Plants Still Disinclined to Buy—Demand Uninfluenced by Car-Shortage Reports—Improvement Unlikely This Month.

The market shows no material change. Occasionally there are reports of better demand, but inquiry is still light and scattering. Both at the rehandling wharves and all-rail there is a slight firmness in price, but there has not yet been realized any price that would show more than a small advance over the market level of a week ago. The large corporations are still in comfortable position as to reserves and apparently there is no inclination to buy for the present.

Central Pennsylvania shippers are trying to impress upon regular customers the advantage of making purchases at present prices, but the most alarming reports of car shortage seem to have little influence upon current demand. The territory easily accessible to Tidewater is loaded up with British as well as Southern coals.

At Norfolk and Newport News there are still tonnages available far in excess of bottoms waiting, and while accumulations shift up and down from day to day there is still ample Navy standard coal offering at prices not much in excess of $7. Heavy movement West is followed almost regularly by embargoes that throw the bulk of current mining to Tidewater and the smokeless agencies are by no means relaxing their efforts to place coal in New England.

At the Philadelphia and New York piers there is still very little business on steam grades. Operators who are hardy enough to send coal down in the hope of making spot sales are almost uniformly disappointed and find themselves obliged to sacrifice.

Among retail distributors of anthracite there is developing a limited demand for screened bituminous of good grade, but in no section thus far is there any special interest in substitutes for hard coal. Not yet are consumers here convinced that they must take a leaf out of the Western book and use prepared sizes of bituminous. It is quite possible, however, that colder weather may have its influence on the market for these sizes.

Cincinnati Gateway

Bulk of Recent Activity Consists of Lake Business

Movement Improves Steadily—Domestic Buying of High-Volatile Coals an Encouraging Market Factor—Demand for Railway Fuel Quickens — Public Institutions Active.

Lake business handled through the Cincinnati coal offices has been closing with a rush, this forming the bulk of the activity here last week. The movement has been steadily improving and with the N. & W. placing its titanic cars in this trade the movement off that line has been accelerated. Domestic buying of high-volatile coals has been another bright spot, while the other points of activity have dropped down to a steady grind.

Demand for railway fuel has been picking up and some large buying orders are in sight for lines north of the Ohio River. Steel mill business is not so active and industrial plants have been less urgent in pressing their needs. Michigan and northern Ohio public institutions have been in the market stronger than for some time past.

HIGH-VOLATILE FIELDS

Kanawha

With the Western embargo lifted, mines in the Kanawha field are beginning to recover from the slump. Although it has been possible to increase production somewhat, it is still not much over 25 per cent owing to car shortage. There is a market for all the coal the field can produce, now that it is no longer necessary to ship the entire product of the region to the East.

Logan & Thacker

Logan mines have also been able to increase production slightly. Opening of Western markets stimulated the demand somewhat for Logan coal which had been diverted to the East for a time. Owing to the fact that production is so limited there is really little spot coal to be had.

Production in the Kenova-Thacker field is not fluctuating to any great extent. More coal is being produced proportionately in this district, however, than in other high-volatile fields owing to the fact that the N. & W. is somewhat better able to handle loads.

Northeastern Kentucky

Despite the effort of the general run of buyers to remain out of the market and "bear" prices, there is still a fairly brisk demand and little chance of prices declining any further. Much coal is going to the Lakes and some is also being marketed in Ohio.

CINCINNATI

With the Tidewater prices a shade better than they have been for some weeks past the N. & W. producers were inclined to look more keenly in that direction than to the Inland trade. Smokeless business, both from the Pocahontas and the New River districts, was holding around the $6 basis that had been established by Commissioner Spens, but the deliveries except to the Lakes were not as large as they might be.

Car reports at Cincinnati show that 1,682 less cars than the week previous had been sent back to the mines. Motive power on the C. & O. as well as on the L. & N. is in ticklish shape and the first flurry of winter is liable to spell an upturn to the prices. Southeastern Kentucky shows a slight increase in production with some mines working full two days a week. Logan County is offering more coal here than for some time past. This increase with other conditions has softened the market 25c. a ton in the past week.

Retailers found their prices cut 50c. this week by one independent company. Some of the others are holding to the old prices of the low level as follows: Smokeless lump, $10.50, run of mine, $8.75; splint lump, $10; slack, $7.50.

LOW-VOLATILE FIELDS

New River and The Gulf

New River producers are not making any progress in increasing their output owing to limited car supply, while better transportation conditions are still far from satisfactory. Inasmuch as the Western embargo was lifted about the first of the month, the region has a somewhat broader market. Mine run in the West has been bringing nearly as much as prepared grades in view of the price agreed upon for the latter. There is not a strong demand in the East.

In the Gulf region there has been a slight increase in production, which is now averaging a little over 100,000 tons a week, owing to improvement in transportation facilities. Virtually none of the coal is finding its way to Western markets. Although Tidewater demand is not active, nevertheless producers are finding a ready market for all the coal it is possible to produce.

Pocahontas and Tug River

Pocahontas production is on a somewhat lower level, a total of 231,000 tons only being the average within the last week or two. As only certain classes of equipment can be moved to Western markets, that is preventing mines from securing all the empties needed. The flow to Eastern markets is much larger than to points west of the Ohio River, notwithstanding the fact that there is a great disparity in the prices prevailing in the East and in the West.

Few Tug River mines are working more than two days during a week. Virtually all the product of this region, such as it is, is being marketed in Western points, with a fairly large volume moving to the Lakes.

Coke

UNIONTOWN

After having been in force for one day, an I. C. C. order directing 50 per cent of mine rating be shipped to the Great Lakes, the order was canceled as suddenly as it was issued. The ruling was made on Nov. 6 but did not get to railroads operating in the Connellsville region until Nov. 9.

The order was designed to get as much coal to the Northwest as possible before the Lakes closed, but operators here did not see the necessity of a mandatory order. They had found the Lakes trade a profitable market at a time when coal is not easy to sell and did not need a compulsory order.

Fairly large orders for railroad coal were placed this week but they in no way strengthened the market, which continues quotable at $3 for steam coal and $3.50 for byproduct. The car supply showed some improvement.

The coke situation is drawing most attention today because of the nearness of the furnace contracting period. The increased production is absorbed by the trade, but prices have not yet been stabilized.

CONNELLSVILLE

The coke market has experienced a sudden drop, practically overnight, about 50c. in furnace coke and $2 in foundry coke, the decline in foundry being chiefly by way of the unusually large spread over furnace coke being diminished.

At the same time that furnace coke prices declined a new alignment developed. Previously, the cheapest coke was spot coke, this being coke loaded and on railroad company track. It could be had at $7.50, while coke for regular shipment over a week or two commanded fully $8. There does not seem to be any distress coke now, yet coke for spot shipment is held at $7.25 @$7.50, while coke for shipment in a few days can be had at $7@$7.25. Foundry coke is now $8@$9, depending on brand.

Demand is rather light. Nearly all the furnaces now in blast that are dependent on purchased coke seem to be covered fairly well to the end of the year. Some Eastern blast furnaces now idle, are understood to have intimated that $6 would interest them, on the basis that they need to make pig iron at lower cost in order to make it salable. Operators, however, talk of weather troubles next month being likely to advance the market.

The *Courier* reports production during the week ended Nov. 4 at [illegible] tons by the furnace ovens and [illegible] tons by the merchant ovens, a total of 164,220 tons, an increase of 4,340 tons.

BUFFALO

Attention is turned mostly to the domestic supply. Prices have dropped steadily of late, being $[illegible] for 72-hr. Connellsville foundry, $7.50@$8 for 48-hr. furnace and $[illegible] for off-grades, adding $1.20 for freight. Some of the local byproduct ovens are selling stove for domestic use at $12

News Items From Field and Trade

ALABAMA

T. S. Ramsay, superintendent of the Tennessee at the Fruit Consolidated Coal Co., [illegible] Nos. 13 and 14 openings and the Clipper Mine, has resigned and will move to Bedford, N. C., where he has accepted a position as vice-president and general manager of the **Erskine Ramsay Coal Co.** **John Terry**, mine foreman at No. 13 mine, has also resigned and it is understood will be superintendent of the new operations of the Bedford company. **John H. Davidson** has been appointed to succeed Mr. Ramsay.

One of the largest coal mines in Alabama has been opened in Etowah County by the **Moffatt Coal Co.** of St. Louis. It is the Rising mine, which is producing between 250 and 300 tons a day and probably will reach 500 tons when it is fully developed. It is a slope mine with three passageways on the main slope at an angle of 45 degrees, one way is for mule, one for air and the third for haulage. This is the first venture of the Moffatt Coal Co. into the South.

CONNECTICUT

The Kimberly Coal Co., Inc., of New Haven, has been incorporated under the laws of Connecticut, to carry on a general coal business in that city. The firm will have a capital stock of $10,000. The incorporators are: Michael and Benjamin Krull, and Abraham Shalit, all of New Haven.

ILLINOIS

The Harrisburg Consolidated Coal Co., Chicago, has been incorporated to mine and sell coal by Thomas H. Cochran, William J. Brennan and C. W. Baltzer.

The Chicago Wilmington & Franklin Coal Co. announces the reopening of its mine 6, located near Herrin. The mine has been idle since Oct. 8, 1921.

Plans to make the Big Muddy River navigable to the Mississippi, making possible the trading of Franklin County's coal on barges to be towed to the Mississippi, are being considered. Such a move would be made to reduce the car shortage and would permit delivering of coal in Chicago and other points at $1 a ton cheaper than at present. It is believed **William Sackett**, state superintendent of waterways, will push it during the coming year and that it will be submitted at the next legislature with appropriations for undertaking the work. This is according to the plan of the reasons why the **Federal Illinois Power Co.** decided to develop at Grand Tower on the Mississippi rather than on the Big Muddy and won't coal barges can be handled.

Candidates for offices in the Illinois U. M. W. will be asked to file a statement showing [illegible] by failure of the report [illegible] not prepared. A report of the findings has been [illegible] to each of the local unions [illegible] with the recent [illegible] Australian [illegible] connected or prospective. Attention to the [illegible] report the fact that [illegible] **Frank Farrington**, the president, [illegible] a total of 351 [illegible] and a total of 112 for **John Hlad[illegible]**, who was [illegible] in the [illegible] Farrington and [illegible] Hladnesky and [illegible] Farrington [illegible] **Red Ring Coal & Mining Co.** with [illegible] at Red Ring, Ill. The [illegible] of the [illegible] and the [illegible] of Linn, and [illegible] A. Kimbel of St. Louis and [illegible] of Linn.

W. L. Walton of Chicago was in Williamson County mining fields recently visiting various mines near Marion. He is connected with the Lake & Export Coal Sales Corporation and on his return trip, visited the St. Louis offices of the company.

INDIANA

The Conveyors Corporation of America, Chicago, has appointed the **Geo. W. Fife Engineering Co.**, Indianapolis, its representative for the sale of American trolley carrier in the state.

Mayor John M. Grayson, of Vincennes, has announced he will **open a municipal coal yard.** Indiana mine run will be delivered in the basements of the domestic consumers at $5 a ton. Coal is to be procured from one of the largest mines in Knox County. Coal will not be sold in less than ten lots and must be paid for on delivery. Mine run is retailing there at $6 a ton. Members of the Vincennes Retail Coal Dealers' Association have protested against the opening of the yard.

The Peerless Coal Co., an Illinois corporation, has qualified to do business in Indiana. E. J. Suffel, of Indianapolis, has been named state agent.

Resolutions directed toward the **elimination of profiteering in coal through regulation of the assigning and distributing of cars at the mines**, were passed at a recent meeting of the directors of the Indiana State Chamber of Commerce. The need for the regulation of car distribution by federal and state boards was brought to the attention of the organization by its president. Copies of the resolution have been sent to the committee recently named by President Harding for investigation of the coal industry, as well as to the Public Service Commission of Indiana and all members and member bodies of the Indiana State Chamber of Commerce, representing more than 25,000 firms and individuals in the state.

The Jasonville Fourth Vein Coal Co., of Jasonville, and the **Busram Creek Coal Co.**, of Terre Haute, have filed final certificates of dissolution, while the **Bicknell Coal Sales Co.**, Indianapolis, has filed a preliminary certificate of dissolution with the secretary of state.

MARYLAND

Cumberland capitalists have organized the **Helen Coal Mining Co.**, the offices of which will be at Cumberland. This company has an authorized capital stock of $[illegible]. Chiefly interested in the new enterprise are Robert Grant, Sr., John F. [illegible], M. H. Grant, H. M. O'Brien and [illegible] R. Nesbitt, all of Cumberland.

MICHIGAN

And now Michigan enters the Ohio Fuel controversy. The Michigan fuel administrator has written to the Washington fuel administration protesting against any federal order which will hold Ohio coal within that state thereby preventing its normal flow into Michigan. The Ohio official's plan proposes a preferential treatment in the distribution of coal within Ohio zones to Ohio consumers but Ohio mine operators with [illegible] shipments of coal [illegible] rearrangement of cars [illegible] priority.

As a means of providing anthracite for [illegible] communities of the state which have been unable to obtain [illegible] the Michigan fuel administration [illegible] according to the state administration [illegible] that **purchase of a supply be made by the state** under authority contained in the [illegible] law, payment to [illegible] revolving fund [illegible] for fuel purposes. The [illegible] collected in the state [illegible] by the fuel administration [illegible] that have been [illegible] to the authorities.

In speeding up the applications received from the state's new [illegible] **Charles F. Dann**, fuel [illegible] for Wayne County is making [illegible] applicants who reported they had been in business about three weeks. His purpose is to guard against "snowbird" dealers taking advantage of the law.

NEW YORK

The newly organized **Morrow Callahan Coal Co.**, of Pittsburg, has opened an office at 1 Broadway, New York City, which will be headquarters for its pulp and paper mill department. **J. Floyd Massey** is manager of the department and others interested are **E. C. Woodruff** and **Wm. A. White.**

Victor T. Goggin and James H. Ripley, formerly contracting engineers of Dwight P. Robinson & Co., Inc., have formed under the name of **Goggin and Ripley, Inc.**, with headquarters at 350 Madison Ave., New York, a personal service corporation to assist business executives, bankers and engineers in conceiving, financing and developing construction projects.

The Simplex Wire & Cable Co., of Boston, has established a branch office in New York at 120 West 32nd St., with Joseph G. Brobeck as manager.

Before owners of buildings in New York City are permitted to **substitute fuel oil burning equipment for coal burners** they must conform to the stringent rules of the Fire Department and the Board of Standards and Appeals. So far fifty buildings have conformed to the rules and have been granted permits to substitute oil for coal. As many more applications are now in the hands of the authorities for action and some of the buildings are already equipped with the necessary apparatus awaiting action on the permits.

The twenty-fifth anniversary meeting of The Merchants' Association of New York, will be held in Madison Square Garden on the evening of Friday, Nov. 17.

The sixth annual industrial conference of the State of New York will be held in Buffalo, Nov. 21, 22 and 23, at the Lafayette Hotel. The central theme for the conference is to be **elimination of waste in industry.**

OHIO

Administrator Neal has secured the removal of priorities on West Virginia, Kentucky and Pennsylvania lump destined for Lake shipment. It was believed that the priorities would serve to further curtail the supply of coal cars in Ohio and would serve no beneficial purpose.

The Columbus municipal coal yard announces that no deliveries of coal will be made before Nov. 20, as all teams and apparatus are necessary for the street cleaning work previous to that date. Practically no coal is on hand at this time.

The Pfau Coal Co., Bolivar, has been chartered with a capital of $20,000 to mine and sell coal by C. J. Pfau, Hermine E. Pfau, William Daley, J. O. Peoples and H. L. Pfau.

The Speaks-Drais Coal Co., Columbus, chartered several weeks ago with a capital of $10,000, has taken over the retail coal business formerly operated under the name of the **S. S. Speaks Coal Co.** S. S. Speaks is president and Charles W. Drais, secretary and treasurer.

Ohio Administrator Neal is having an **extensive study of retail costs** in some of the larger cities in the state with a view of revising the list of retail margins allowed. Protests were made by retailers in Toledo, Cleveland, Columbus, Youngstown and Dayton. Expert accountants have been put on the books of certain retailers in the cities named and a new list will be announced as soon as the work is completed.

The complaint brought by the **Ohio Mining Co.**, and twenty-two other operators in the Hocking Valley field against the **Hocking Power Co., the Athens Electric Co. and the Southern Ohio Power Co.**, protesting rates charged for electrical power at their mines which has been pending in the Ohio Utilities Commission is still undecided but the commission has ruled that the last named concern was not a public utility and thus could not be brought within the jurisdiction of the commission. On this question the operators interested carried the case to the Ohio Supreme Court for a decision on that question. The Ohio Utilities Commission is still investigating the reasonableness of the rate and to that end has ordered an inventory of the assets of the two electrical companies.

The Lake Superior Coal Co., Cleveland, has been incorporated with a capital of $10,000 to mine and sell coal in Pittsburgh No. 8 field. Incorporators are W. F. Maurer, T. B. Belton, Norton McGriffin, John F. Wilson and E. R. Donlin.

The Salisbury Coal & Clay Co., Cleveland, has been incorporated with a capital of $400,000 to mine and sell coal as well as operate clay mines. The incorporators are: Joseph F. Rumsey, B. O. Young, Thomas H. Moore, Bess Allen and P. A. Berry.

Members of the Middletown city commission have decided not to establish a municipal coal yard owing to the uncertainties of the coal business and the expense necessary for such a venture. City Manager Kenyon Riddle had proposed the establishment of such a yard.

The stripping operation of the **Piney Fork Coal Co.**, at Piney Fork, Jefferson County, is now going full blast. **The Panhandle Collieries Co.**, another one of the **Hisylvania Coal Co.**, interests is also being operated and a good output is reported. The latter operation is comparatively new.

W. D. McKinney, secretary of the Southern Ohio Coal Exchange, is out with a statement to the effect that transportation difficulties are the handicap which is keeping the production of coal in all Ohio fields to a low point. He claims that this is partly due at least to the use of coal carrying equipment for other purposes other than the transportation of coal and asks everyone to keep an eye on the illegal use of coal cars.

The Caledonian Coal Co., has been chartered with an authorized capital of $50,000 to take over the Caledonian mine near New Lexington which has been operated as a partnership. The incorporators are James Williamson, George Williamson, E. M. Blower, Charles Wallace and John Williamson. Headquarters are in Columbus.

OKLAHOMA

D. K. Hutchcraft, formerly vice-president of the Indiana Air Pump Co. has been appointed district manager of the Chicago Pneumatic Tool Co.'s branch office recently established at Tulsa.

R. J. Danford, president of the **Walker Coal Co.**, is still occupied with the installation of electrical equipment in that company's two shaft mines near Vinito. These operations are at the extreme southwest corner of the big coal field. There is much development at that end of the field and the new coal mining town Banzet is doing a thriving business.

The Warden-Pullen Coal Co. is making its first shipment of coal from its new No. 2 mine, opened earlier in the year. Its No. 1 mine continues to put out its capacity, and it is reported that the mines in the Henryetta district, about 54 in all, are working full force.

PENNSYLVANIA

Four men lost their lives and four others were injured, one perhaps fatally, when a charge of dynamite, fired in some unknown manner hurled tons of rock upon them, in the Birdseye slope of the Olyphant mine of the **Hudson Coal Co.** on the mountainside beyond Throop last week.

The Pennsylvania State Employment Bureau estimates that at the beginning of November there was a common labor shortage of 25,000 to 35,000. The most serious shortage is in the Pittsburgh district. The bureau gives as the number of unemployed at the present time 37,880, while the number of persons out of employment because of strikes is 92,273. The coal strike in the Pittsburgh district, the employment bureau states, is responsible for 80,000 persons being out of work.

The Pennsylvania State Forestry Commission is distributing 4,000,000 trees for re-forestration purposes and the coal companies and water companies of the state lead in the number of trees allotted. The coal companies are planting additional land for the purpose of growing mine props and the water companies are planting trees for protection of their water sheds.

The Pine Hill Collieries Co. has notified the State Department at Harrisburg of an increase in capital stock from $5,600 to $3,000,000. Edwin S. Dixon, Jr., Philadelphia, is president of the company.

Fifteen hundred miners employed at the No. 14 colliery, **Pennsylvania Coal Co.** near Pittston, went on strike last week when forty-seven carpenters employed at the colliery refused to join the union or pay their "two days' pay assessment" which was ordered during the five months' suspension. Company officials contend that the carpenters are members of the carpenters' union and do not come under the jurisdiction of the U. M. W. The leaders of the miners express a different view, however, and say that all men working in or around the collieries are qualified and should belong to the union.

Investigators of coal deposits in Lancaster County are being made by mining experts for the purpose of determining the possible commercial value of the product. A survey of the hills in which small deposits have been found at various times was made recently by representatives of the federal and state mine departments.

The Bertha Coal Co. recently acquired one hundred new seventy-ton steel hopper cars from the Ralston Steel Car Co., which have been placed in service between its Bertha Mine, Dinsmore, and the various plants of the General Motors Corporation in and around Detroit, Motors Corporation having arranged for a long-term fuel contract with the Bertha company.

Coal mining companies in Cambria County have filed appeals with the county commissioners from the tri-ennial assessment on the grounds that the real estate was not assessed at the actual value thereof, being assessed without due regard to the valuation and assessment made of other similar properties in the country, but was assessed in excess of the value and assessment of such other properties. The following companies filed appeals: Holding of the **Wilmore Coal Co.**, Richland and Adams townships and Scalp Level borough and Conemaugh, Croyle and Stonycreek townships; **Berwind-White Coal Co.**, Richland and Adams townships and Scalp Level borough; **Maryland Coal Co.**, Richland, Croyle and Adams townships.

The general offices of the **Mon-Scott Fuel Co.** will hereafter be located in Pittsburgh. Offices have been established in the First National Bank Bldg. The Pittsburgh office will be in charge of W. H. Davis. The company will keep its offices in Morgantown, W. Va., for use as a branch and selling agency. Through the Pittsburgh office the products of the **Hess Coal & Coke Co., Shamrock Fuel Co., Bear Mountain Gas Coal Co.** and the **Winstead Coal Co.** will be handled. General offices of the company have been located at Morgantown since the company was formed about three years ago.

Citizens of the Borough of Taylor have requested Attorney General George E. Alter to suspend the provisions of the Kohler mine cave law so as to insure full time coal mining operations by mines at that town. **The Glen Alden mines** are the principal source of employment for the community. The company was ordered to suspend operation a year ago when its operations threatened a portion of Scranton and the Taylor citizens say the company will not begin at Taylor until assured of the suspension of the mine cave law. The Attorney General has no power to suspend laws.

Raymond K. Bowden, of Niles, Ohio, has been appointed instructor in metallurgy, for 1922-23, at Carnegie Institute of Technology, Pittsburgh. The Department of Metallurgy at Carnegie Tech was recently selected by the United States Naval Academy as its graduate school of metallurgy. Beginning this year, two officers from the Naval Academy have been assigned to take up advanced work in metallurgical subjects at the Pittsburgh institution.

A decision of importance to the shovel trade was recently rendered by the Circuit Court of Appeals for the Third Circuit in the case of **John S. Surbaugh and Pittsburgh Shovel Co. vs. Hubbard & Co.**, No. 2838 March term, 1922. The opinion found the Surbaugh patent in suit No. 1,212,582 to be valid and infringed as to all claims in suit. The litigation is conclusive as to the validity of the patent. Under the decision the manufacture and sale of three, two and three prong shovels is controlled by The Pittsburgh Shovel Co.

VIRGINIA

The Willard Sutherland Corporation after announcing the closing of its Norfolk office Nov. 1 has reconsidered and decided to continue the business here under the management of **Chester R. Koontz.**

WEST VIRGINIA

[illegible] applications for certificates as mine foremen and fire bosses were received recently at [illegible] under the direction of H. M. Lawson, Chief of the West Virginia Department of Mines assisted by Inspector J. F. White and four other district mine inspectors. The examination covered a wide range of subjects and was said to be very [illegible] a practical one. Examinations have also been held in other sections of the state from time to time during the summer.

Control into ownership a few weeks ago the **Boulder Coal Co.** has secured 155 acres of coal land adjacent to Indian Creek in the Monongalia County field and is planning to develop the tract so acquired at the earliest time practicable.

It is reported in coal circles in the Pocahontas region that **Henry Ford** has purchased the **Twin Branch property** of the **Dex-Cur Pocahontas Coal Co.** and has already taken over the control of the property so purchased. It will be recalled that Mr. Ford recently abandoned the operation of mines at Nuttallburg because he found they could not be successfully operated in competition with other mines in the same section. It has been understood for several weeks that Mr. Ford has been negotiating for the purchase of one of the largest undeveloped tracts in the Pocahontas area. This tract is in Tazewell County, Va.

The Midland Smokeless Coal Co. is the name of a new concern launched with a view to operating in the Greenbrier smokeless field, this company being capitalized at $50,000. Headquarters are to be at Rainelle. Leading figures in the new company are: L. E. McClung, B. M. Higginbotham of Rupert, Guy B. Montgomery and C. H. Thompson of Rainelle; Ernest Reynolds of Glasbow, Va.

Organization of the **Clay County Coal Co.** with a capital stock of $[illegible] presages the development of coal land in Clay County on a fairly large scale. Huntington people, for the most part, are interested in this company, but its general office will be at Clay. Interested in this concern are: A. D. Callihan, J. Frank Grimm, Morris Hansford, of Huntington, H. L. Nye and C. A. Parcell, of Clay.

Charleston capitalists have organized the **Alpine Coal Co.**, with a view to operating on a fairly large scale in southern West Virginia high-volatile territory. Headquarters are to be at Charleston. Actively identified with the new company are: W. E. Wright, E. L. Michie, S. G. Smith, Thos. W. Hill and Arthur B. Hayes, all of Charleston.

Further development of coal property in the Williamson field is promised by the organization of the **Waugh-Longley Coal Co.**, headquarters of which will be at Williamson. This company has a capital stock of $10,000 and interested in it are: C. E. Waugh, M. E. Waugh, R. O. Haines, Jr., all of Williamson, F. L. Longley and Ira Longley, of Bluefield.

The Talisman Coal Co. is the latest to enter the Monongalia field, this company just having been organized with a capital stock of $10,000. Offices are to be at Morgantown. Identified with the new enterprise are: Robert L. Brock, John A. Wade, John H. Gross, Charles G. Baker and E. S. Wade, all of Morgantown.

The Brown Coal Co. of [illegible] has purchased from **Cole Brothers**, of Morgantown, 104 acres of Pittsburgh coal in the Star Mountain section of Harrison County, the purchase price of $[illegible] being paid in cash. It is said [illegible] section has only been in the process of development during the last year or two and is still to a great extent a virgin field. The purchasers are making preparations to drive an opening immediately and to erect a modern plant on the property. The Brothers were the contractors who built a line of railroad about seven miles from the Star Mountain field to the Main branch of the B. & O. which serves the Simpson Creek field.

Having sold coals to the amount of [illegible] to the Union Trust Co., of Clarksburg, the **Fairmont & Cleveland Coal Co.** will not only extend its business but will enlarge the Chesapeake plant at Barrackville recently purchased from the Chesapeake Coal Co. by the Fairmont-Clarksburg Coal Co. The purchase [illegible] the company of 2,000 feet in [illegible]. It is stated by [illegible] the capacity of the Chesapeake mine to 2,000 tons a day.

CANADA

The Scotia coal production [illegible] compared [illegible] corresponding [illegible] 1921 [illegible] 1,000 tons [illegible] 18,000 tons [illegible] the [illegible] and the output [illegible] 1922 [illegible] loss of [illegible] current [illegible] month.

Work [illegible] to be a coal mine of some **importance** [illegible] **Joseph Walker** [illegible] the town of [illegible] development [illegible] on the [illegible] of the seam [illegible] the day when [illegible] age [illegible] and [illegible] coal [illegible] to the Kettle Creek [illegible] a good [illegible] from [illegible] mine [illegible] the Nordegg Mine.

WASHINGTON, D. C.

The most extensive development of a **good road areas of certain Western states** [illegible]

One finished the cost of the **byproduct coke production** of the country as reported to the **reports being furnished the U. S. Geological Survey.** All producing companies are making monthly returns. The Survey's record of the monthly output of byproduct coke is complete for 1917 and 1918 and for 1922 and 1923, but the figures were not compiled during 1919 and 1921. In order to fill that gap in the statistical record of the industry, schedules have been sent by the Geological Survey to the producing companies on which they are asked to submit the production figures for those years.

Sales of explosives during September [illegible] 387. A permissible explosive is an explosive which is similar in all respects to the sample which has passed certain tests prescribed by the Bureau of Mines to determine its safety for use in gaseous dusty coal mines, and when used in accordance with the conditions prescribed by the bureau. While permissible explosives are designed especially for use in gaseous and dusty coal mines, they are suitable for use in other coal mines and for many other blasting operations. Serial 2402 may be obtained from the Bureau of Mines, Washington.

The issuance of Bulletin 167, **Coal-dust explosion tests in the experimental mine 1913 to 1918,** by George S. Rice, L. M. James, W. L. Egy and H. P. Greenwald, is announced by the United States Bureau of Mines. This bulletin describes the second series of coal-dust explosion tests conducted by the Bureau of Mines in its experimental mine. It covers a period of more or less consecutive testing, during which many important conclusions were drawn regarding the way a coal-dust explosion may originate, the mechanism of an explosion, and the methods of preventing explosions and of limiting incipient explosions.

Owing to the expense involved in publication, the entire distribution has been entrusted to the Superintendent of Documents, Washington, D. C., who sells the report at a price of $1.

A little **booklet entitled "War Surplus,"** [illegible] issued by the sales promotion section of the office of the director of sales, of the War Department. This booklet explains in a general way the methods of sale resorted to by the War Department in the disposal of its vast stocks of surplus property, and tells what these stocks consist. A loose leaf insert lists the more important sales scheduled for the near future with information as to where the sale is to be held.

Fact-finding with regard to wages and earnings of mine workers will be done by **Prof. Joseph S. Willitts,** of the University of Pennsylvania for the President's coal commission. Prof. Willitts is an economist of established reputation, who has done successful work in connection with wage scales. Since the Commission has committed itself to await suggestions from the various branches of the coal business before formulating its own plan of action no great amount of progress has been made during the past week in the formulation of its plans. The week has been spent, however, in informal conferences and consideration of the data which its staff already is laying before it. A plan is being worked out whereby all material submitted by outside sources will be carefully checked so that the commission will be in a position to underwrite any of the facts and figures which it may care to use.

Tests conducted at the experimental mine of the Bureau of Mines at Bruceton, Pa., hold out the hope that wireless waves may be used in the future **as a means of effective communication** between rescuers on the surface and miners entombed in mines following fires and explosions. These preliminary experiments of the bureau, made in co-operation with the Westinghouse Electric & Manufacturing Co., while failing to develop any practical method of using wireless waves for underground communication, nevertheless indicate clearly that electromagnetic waves may be made to travel through solid strata. In the Bruceton experiments, signals were heard distinctly through 50 ft. of coal strata, although the audibility fell off rapidly as this distance was increased. The absorption or loss of intensity with distance is very great for the short wave lengths used in these tests. Details of these experiments are given in Serial 2407, "Experiments in underground signalling with radio sets," copies of which may be obtained from the Bureau of Mines, Washington.

Federal Fuel Control Notes

The fifteen naval officers designated to act as field representatives of the Federal Fuel Distributor in as many districts into which the territory east of the Mississippi River has been divided for administrative purposes in connection with the present coal emergency, have resumed their duties at their respective posts, following a conference with Federal Fuel Distributor Spens in Washington, Nov. 6. The car supply situation, especially as it affects the Southern railroads, complaints of which were regarding the **failure of connecting lines to return coal-carrying equipment.** This particular situation, however, seemed to be improving. Use of other equipment, especially for the transportation of grain, sugar and other building material was reported and it was stated that the situation of coal cars was being investigated by the Federal Fuel Distributor. In general practice for the movement of coal have been almost entirely eliminated. The co-operation of coal operators with the government's coal representatives was [illegible] Conferences on the matter of prices will probably be held by the Federal Fuel Distributor in Washington in a few days with representatives of the operators from the coal districts. Operators from Kentucky fields and the Kanawha and Logan fields of West Virginia.

Operators from the Kanawha field discussed the price situation with representatives from Washington on Nov. 14. The operators expressed a unanimous desire to reduce prices but insisted it must be accomplished when their costs are being increased by a [illegible] mining costs are not increased, can work.

A party of Virginian Railway officials and members of the board of directors visited the Winding Gulf Field of West Virginia about the middle of November and held an extended conference with President E. E. White of the Winding Gulf Operators' Association. The potentialities of the Virginian territory were fully gone into and it was clearly shown in the conference that the coal tonnage in the section traversed by this railroad had been barely scratched. There is a feeling among operators that in the near future further appropriations covering the purchase of additional equipment for the needs of the Virginian will be forthcoming.

Publications Received

[illegible] Mines and the Purposes of Coal Utilization in the Fiscal Years 1916 to 1924, inc., a Preliminary of a Series of Coal Economic Papers, U. S. Bureau of Mines, Washington, D. C. (Technical Paper 333. Pp. 30. Illus.)

Operating Values and Rates, With Special Reference to the Utilization and Preservation of the Atlantic Seaboard, by Wilbur J. [illegible], Bureau of Mines, Washington, D. C. (Technical Paper 333. Pp. 30. Illus.)

[illegible] regarding operations, tonnages and charges in the permissible list of explosives [illegible] Bureau of Mines, Washington, D. C. (Serial 2402. Pp. 3.)

[illegible] engineer, just issued by the United States Bureau of Mines. The [illegible] which are intended to [illegible] Washington, D. C.

Traffic News

Not only is the sale of the **Morgantown & Wheeling,** a short coal-carrying road in Monongalia County opposed, but a special judge in the county court has entered an order [illegible] upon **Samuel Pursglove,** well-known coal man and receiver of the road, to secure the stock certificates of the **Monongahela & Ohio,** which are said to be in the possession of the **People's Natural Gas Co.** These stock certificates are said to be the property of the Morgantown & Wheeling [illegible]. It is contended that the stock certificates were never issued by the gas company although voted by that company in voting directors and in voting a mortgage of $[illegible]. Counsel for the M. & W. claim that the sale was unlawful and illegal, part of the road is objected on the ground that when the road became insolvent and was taken over by a receiver, its valuation was set at the figure of $[illegible], but that owing to the development of the Scott's Run field the road now has a value of approximately $[illegible].

The I. C. C. refused to authorize the **West Virginia Northern Ry. Co.,** owned by J. W. Mercer, to take over two small [illegible] from [illegible] owned by Weaver and [illegible] to the Eastern Mining & Power Co., on the ground that the West Virginia Northern's operation up to this time had not justified its existence as a railroad and because no public interest demanded the acquisition of the piece of track, less than [illegible] long, at a cost of $91,000 and the [illegible] a cost of $[illegible].

Association Activities

Northern West Virginia Coal Operators' Association

Representatives of the association held a conference with transportation officials of the Baltimore & Ohio late in October with a view to securing some relief from the situation, under which coal originating in northern West Virginia fields is debarred from Western shipments owing to embargoes. Operators called attention of the B. & O. officials to the fact that coal originating in Ohio was being permitted to go forward to the Lakes at a time when West Virginia coal was being debarred and it was inferred that the embargoes under such conditions were to be regarded only as discrimination. The railroad is said to have taken the position that more business can be handled from the Ohio mines than from West Virginia mines in a given length of time and therefore the shorter haul is to be preferred as a matter of dollars and cents, and officials of the railroad are said to have frankly stated that to representatives of the association.

Coming Meetings

The Illinois Mining Institute will hold its next meeting Dec. 1 and 2 at the Illinois Union Bldg., cor. Wright and John St., Champaign, Ill. Secretary, Martin Bolt, Springfield, Ill.

West Virginia Coal Mining Institute's annual meeting will be held Dec. 5 and 6, at Huntington, W. Va. Secretary, R. E. Sherwood, Kanawha Bank Bldg., Charleston, W. Va.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, *Editor*

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What of the Outlying Districts?

IT IS going to be difficult to explain to the average citizen why the operators of the old Central Competitive Field are so determined that the operators of the outlying districts shall not have a direct voice in making the next wage agreement for the country. The spectacle at Chicago last week of operators divided into a dozen "camps" but with practically all of the men representing the "four-state" region clinging together on the one issue of keeping others out of their councils raises all the questions to which Harry Taylor, of Kansas City, and C. H. Jenkins, of Fairmont, gave voice at the joint conference.

Why should producers of less than 50 per cent of the country's soft-coal tonnage set a scale which others with no voice in the setting must follow as best they can? Why is it not possible for a basic price on mine labor to be established for the whole country, with legitimate variations by districts—as the price of nails was once fixed? Why cannot a joint national wage board make adjustments of labor scales in districts hard pressed by non-union competition so that those districts can meet that competition on something like even ground? It might be arranged in some industries, why not in coal?

The average citizen hardly appreciates the strength or arrogance of the United Mine Workers of America. He hardly realizes how necessary it is for cohesion and unity of purpose among whatever operators are to deal with that union. He may not know, even after the exhibits of Cleveland in August and October, that it is always difficult to unite the operators even of a single section of the country on any program and that marshaling the operators of the whole United States to present a solid front seems impossible. He is too ignorant of the intricacies of coal diplomacy—spare the word!—to understand that the longer the operators' front, the greater the number of weak spots and therefore the easier it is for a powerful union to segregate the groups and pick off the softest of them when any emergency arises.

As for varying wages from a national basic rate, the experience of the past is sufficient indication of what would happen at every operators' effort to *reduce* a district level. The United Mine Workers of America would rather close up a union field than reduce its wage to compete with non-union territory. Its principal effort would be to unionize that competing open-shop territory—barring obstacles such as the injunctions granted by Judge McClintic against organizers in the southern West Virginia regions. And could any joint body of union miners and operators make district adjustments on a scientific basis? Wouldn't it invariably be merely a test of strength?

Even though some impossible proposals were made by the outlying districts at the Chicago conference, not all the seed planted there fell on barren soil. Proposals for the creation of closer community of interest among operators won attention. Suggestions for the establishment of various services of mutual value to operators throughout the land caused more than one delegate to say: "What that really means is: The National Coal Association ought to be stronger." And perhaps the National Coal Association is stronger in certain minds because of the thought which some of the Chicago discussion provoked. Perhaps an element or two of a better national consciousness in the industry was introduced.

The participants in the Chicago conference seem to have appraised aright the functions of the new coal commission in relation to their difficulties. That is to say they are not counting on that body to solve their mutual problems of a wage scale to replace the contract now in effect. The coal commission is the ear and voice of the public. It is not even indirectly charged with the problems facing the joint conferences of miners and operators.

The commission will, however, be much concerned over the failure or success of this joint conference in preventing a strike in 1923. The public is looking to the commission to tell it the facts about the situation. There is no more serious or important responsibility imposed on Mr. Hammond and his associates than this, particularly because it calls for the exercise of judgment, the picking of the wheat from the chaff, even before the commission will have had opportunity to familiarize itself with the huge task that confronts it.

Shall We Weep or Think?

IT IS seldom that so much plain talking, straight thinking and common sense about coal are found in one place as in an editorial article in the November *Survey Graphic*, entitled, "What Lies Before the New Federal Coal Commission." It is all the more surprising that such a broad statement, which, while directed at the commission as suggestions and advice, may be taken to heart by all interested and connected with the subject, should be found in this publication. Perhaps the answer is found in an editorial in another part of the same paper, where in respect to the coal commission and its work it is noted: "Or shall we too try to use our minds—the thinking part of our minds, not the weeping part, not the merely emotional parts, not the merely volitional parts? Shall we try to understand our way through this coal problem? It might be the beginning of the new age."

The *Survey* must be using the thinking part of its mind, not the weeping part. It is a good sign. It is good advice also that the *Survey* suggests to the commission—"devoting more effort to disclosing wastes than to running down profiteers, more thought to laying foundations for peace and a stable supply of coal than to finding who shot somebody in Mingo County."

We would like to emphasize by repetition two main thoughts conveyed in that article. They are that "the

Why Wonder?

JUDGMENTS are relative. They are based not on the facts themselves but rather on comparisons with the usual or with what in our lack of systematized and statistical knowledge we regard as usual. We cannot demand of anyone or any industry to be much better than the normal. We waste our time if we try for perfection in one place while in another grosser imperfections exist. Yet in many cases the self-appointed judge, the public, all unknowing, is not one whit better than the culprit that it judges.

The Fact Finding Coal Commission, representing in its august person the American public, will do well to keep in mind this important fact lest it condemn the coal industry for faults which the public both within and without industry has in common with it. In fact, unless the commission has a chart to guide it, it may go grievously astray by failing, as most of us do, to evaluate rightly just what is usual and what unusual. To this no reference is made to moral obliquity, for no industry is justified in breaking the law. Only such matters as overcapitalization, overmanning, irregularity in operation, inefficiency, waste and the frequency of accidents are referred to in these reflections.

It might be well to elaborate on the last and see if the hands of the public are so clean that they can rightly assail the coal industry. On the face of things the showing of the coal industry is bad. About 2,000 lives are lost per year in the coal mines of the United States. Everyone understands that some lives must be lost in industry and elsewhere, inevitably or as a result of carelessness, but why so many in coal mining?

The Committee on Public Accident Statistics of the National Safety Council, in a pamphlet entitled "The Trend of Public Accidents" declares that 76,000 lives were sacrificed by "accidents" in 1920. Would anyone imagine that it was anything like so many? Our idea of the usual, that usual on which all our judgments are unconsciously based, whether we know it or not, evidently is erroneous. It is necessary that we be given a yardstick as a basis for our calculations or we shall go grievously wrong.

Do we know, for instance, that the fatal accidents from falls throughout the continental United States were 12,557 in 1920 and that automobiles killed 11,067, each considerably over 30 per day? Do we know, for example, that 8,088 people died of burns and 7,769 from railroad accidents? To put it another way, almost as many people throughout the United States are daily killed by falls and automobiles as perished recently in the terrible explosion at Spangler.

To shift to another phase of the same subject, it is altogether likely that the commission will frame a more effectual indictment, based this time on a comparison and therefore more capable of sinking deeply into the public consciousness. If it does not it will be unlike every other body of inquirers that has canvassed the coal situation. It will compare the record of the mines of the United States with those of Great Britain and other European countries. The comparison, at first sight, is one calculated to make the coal industry squirm, for the European accident figures are much below our own. In 1920 the fatality rate in Great Britain was 0.88 per thousand employees and in the United States it was 2.98, or roughly three times as many.

The rate per million tons of output, it is true, told a different tale. It was 4.60 in Great Britain and only 3.51 here. But stress inevitably will be laid on the loss per thousand lives, forgetful that in America a larger percentage are exposed to hazards than in Great Britain and that the hazard of actual coal extraction is comparable to that which menaces trainmen in railroad work. It is the real hazard of the mine as is train service in railroading.

As, however, no reference to the tonnage per fatality or to the fatalities per million tons are likely to move the public and as the other consideration is a technicality too puzzling for the man who wants his thinking made easy, it would be well to refer again to "The Trend of Public Accidents" and learn from it that we "have in this country nearly 37,000 accidental deaths in excess of what we would have if the accident experience of England and Wales were to prevail here" and that "in proportion to population the United States reports nearly twice as many accidental deaths as England and Wales. The mortality from falls, transportation and vehicular accidents and burns is greatly in excess of that prevailing in the older country. The railroad accident death rate of the United States is more than four times that of England and Wales! Automobile accidents in the United States show more than twice the death rate in England and Wales! Four times the number of fatal street-car accidents and injuries!"

Clearly then, it is only the British, or rather the European, and not the American public who can criticise our mine death rate, for it is merely a reflection of our general attitude toward safety.

When the Fact Finding Commission makes its report and points out how much greater is the death rate in mining in the United States than in Europe we hope that it will add with all due emphasis that all fatality rates in industry and public life have a similar trend, that intoxication of action or some other characteristic makes the American venturesome beyond most others of his kind and exposes him to sudden death. Why wonder that what is found true in all other walks of life is true also in mining?

Wire Rope Is Tough, but Faulty Installation and Careless Operation Quickly Destroy It*

By J. F. Howe†
Worcester, Mass.



Reverse Bending and Overlaying of Laps Are Costly—Frequent Inspection of Rollers Profitable—Relation of Drum to Rope Diameter —Where Wear Is Severe Large Wires May Be Used Exteriorly

ALMOST every coal mine is using haulage systems of one sort or another. Where the grades are light and electrical power is available, wire rope is not employed. When the grades are steeper, however, rope haulage is found to be more economical than electric traction. Two general systems are employed: (1) Endless and (2) tail-rope haulage.

The endless-haulage system consists of a rope with the ends spliced together and actuated by wrapping it several times around a pair of drums driven by either steam or electricity.

The tail-rope haulage system consists of two separate ropes, one a head rope attached to the load to be pulled and the other the tail rope which is attached to the rear end of the load. This latter rope is used to pull the empties back into the mine.

In the endless-rope system, grips are employed to attach the mine cars to the rope in groups of one, two or three cars, several such groups being thus attached. As fast as the coal cars are emptied they are connected to the return side of the system by grips and are hauled into the mine by the same rope that pulled them out. One or two men at the mine entrance with a similar number of men in the mine attach and detach the cars. Endless ropes up to about three miles long and ranging in size from ¾ in. to 1¼ in. in diameter are frequently found. The rope construction usually employed in sizes from ¾ in. to 1⅛ in. inclusive is known as "haulage rope" and consists of six strands each of seven wires wound around a hemp core.

The grade of rope used depends largely on the friction, or wear, to which it is exposed. Crucible, extra-strong crucible and plow steels are ordinarily used.

For sizes as large as 1¼ in. the construction is frequently modified from the 6x7 to what is known as 6x19 Seale Patent, this depending on the size of the drums and the bending to which the rope is subjected.

For the driving mechanism the best practice is to thread the rope around the two drums in an elliptical path. This prevents any reverse bending of the rope, which is a bad feature and which should be avoided wherever possible. At some places where the design was originally not sufficiently liberal to prevent slipping, the rope is threaded from drum to drum in the form of a figure eight, but this way of obtaining a large contact of rope with the drum and greater frictional stress is destructive and shortens the life of the rope. It is not to be recommended. Each groove of one of the two drums should have a slip ring so that the tension may be equalized and the accumulation of strain on the ropes while passing around the drums may be prevented.

On endless-rope systems the customary practice is to use regular lay rope, because this is more readily spliced in a satisfactory manner and can be operated with less trouble for that reason.

Drums for endless-rope systems will give good results if proportioned to the diameters in Table I.

TABLE I—RELATION OF DRUM TO ROPE DIAMETER, ENDLESS ROPE HAULAGE

Rope Diameter, Inches	Drum Diameter — 6x7 Rope	Drum Diameter — 6x19 Seale Patent	Drum Diameter — 8x19
¾	54	48	42
⅞	54 to 90	48 to 72	42 to 60
1	60 to 84	60	48 to 66
1 ⅛	72 to 84	66 to 84	54
1 ¼	84 to 96	72 to 96	60 to 78
1 ⅜	96	84 to 108	72 to 90
1 ½	108	96	84

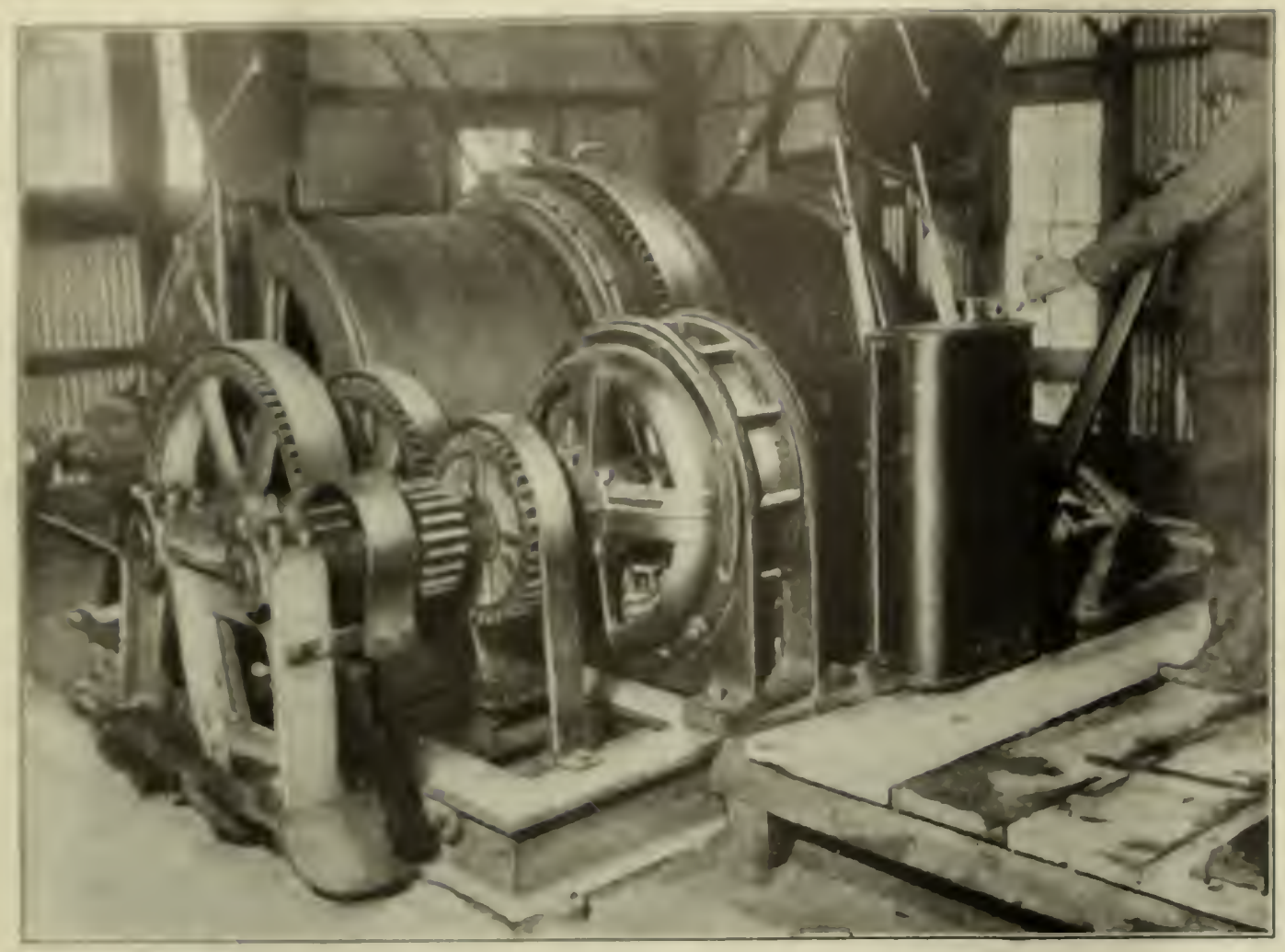
The figures in Table I represent practice in successful systems and coincide with theoretical values for low bending stresses. A suitable number of wraps of rope around the drums is necessary in order to produce sufficient friction to drive the rope. If the diameter of the drum is reduced, then it becomes necessary to use more turns to obtain the tractive effect or to increase the tension on the rope by adding to the counterweight. This method of increasing the tractive effect is not advisable if it increases the load so that the safety factor is reduced below what should be considered safe practice—i.e., 6 or 7. It will be found that the splices hold much better if the tension is not too severe.

In the tail-rope system two drums are employed, one for the head rope and the other for the tail rope. In general, the head rope is the larger of the two, for it has to pull the loads up out of the mine and the tail rope has only to let the empty cars down the same grade.

In a few cases where the grades are reversed the tail rope is made as large as or larger than the head rope. In the tail-rope system, particularly when the distance to be traversed is long, the rope frequently has to be

*First instalment of an article from a paper entitled "A Discussion of Wire Rope as Applied to Mining ..." read at the autumn meeting of the Rocky Mountain ... Association, Glenwood Springs, Col.

†American Steel & Wire Co.



Grooved Drums Save Rope

In the illustration the unoccupied grooves show on the left-hand drum. Where the angle of approach is not greater than 1½ deg., the rope winds into the groove practically without friction except for the slight wear on the sides of the channel and this is always far less damaging than the abrasion of a rope winding against the rough surface of the rope of the preceding turn, as it always does when the drum is flat. The grooves maintain a clearance between turns of at least ¼ in.

wound from four to ten layers deep on itself. The drums should be as large in diameter and as wide as possible to reduce this overlaying of the rope on itself, for when it occurs the effect on the rope is quite destructive. It is of great importance, also, to see that every layer of the rope winds smoothly and evenly on the drum, for if it starts to wind unevenly, the wear on the rope is increased materially and the rope may be injured at some one point as the result of its becoming wedged between the layers on the drum. It is therefore necessary in the installation of a new rope on such a system to see that from the outset it winds smoothly and evenly on the drum. If this is done the rope usually will follow its original winding and give no further trouble. If it does not, however, the life of the rope will be materially reduced because wear will set in at some one spot.

In using a tail-rope system the proper arrangement of supporting sheaves, turn sheaves, rollers and idlers is quite important. The upkeep of these will in a large measure determine the life of a rope. Wherever crossovers exist, for instance, suitable means should be taken to prevent the rope from coming in contact with the steel rail, because the rope, though hard compared to the face of the rail, contains a much smaller metallic section and consequently a slight wear of the rope from such friction involves the user in an appreciable loss.

In mail mines particularly lumps frequently drop off the cars onto the track and clog the rollers or at least prevent them from turning freely. Whenever a roller ceases to rotate it is rapidly worn by the rope and in turn will wear the rope. I know it is a difficult matter to keep every roller on a system of any considerable length always in condition so that it will turn when the rope comes in contact with it, but suitable supervision and regular inspection will eliminate the chronic cases which would otherwise produce bad results and excessive rope wear.

A few words with regard to rollers may not be out of place at this time. They should be light enough that they will start turning when the rope comes in contact with them. Some prefer chilled cast-iron, but others use wood. When the bearings of a roller get out of line due to wear or improper support it tends to bind and refuse to turn with the rope. A suitable frame with bearings rigidly attached and accessible for oiling, repair or renewal is a fundamental requirement. As far as possible, it should be designed so that dirt or material that may fall from mine cars will not cause it to clog.

Rollers should be wide enough so that the rope will stay on them. Where they are too narrow the rope jumps off them and rubs over the sides of the rollers or their bearings and suffers wear accordingly.

One type of roller for which special merit is claimed consists of two portions which taper toward the center. They are, of course, mounted on a spindle. The rope with such a roller always tends to travel toward the center, and here is placed a hardened steel sheave which will start up instantly when a moving rope comes in contact with it. A liberal bearing on the spindle reduces the wear to a minimum. Such a roller must be carefully lined if the best results are to be attained, but nevertheless this roller has its advantages, for its central sheave, being light, prevents wear of both rope and roller. It has been tried out in the South African mining fields and has been regarded with much favor. Operating tests of it are being made in this country.

Judging by the general experience of rope manufacturers and mining engineers, a more intensive study of the design of mine rollers would produce results of value to both. The bearings on rollers as a rule are not designed for the speed at which they will be run.

All that has been said about the rollers with the tail-rope system applies with equal force to those used with an endless rope, but with the latter the action and wear of the grip should be considered. It is important also that the grips be bell-mouthed on both ends so that there will be no sharp corners where they come in contact with the rope. Grips also should be smoothed out so that there will be no rough spots when a new grip is

put on. Such rough surfaces cause rapid wear on a rope, which does not stop until the grip has been worn smooth. The rope will always slip a little when the grip is applied or released. Summing up, the main need is to reduce the friction on the rope as far as possible, because friction means wear, and wear means shortened life.

In the tail-rope system the wear on the rope always is greatest on the end that is attached to the cars, for it is that end which travels the greatest distance and comes in contact with the largest number of rollers. It is the usual practice at mines employing the tail-rope system to cut off at regular intervals between 1,000 and 2,000 ft. of the end attached to the cars and to splice a new piece of equal length in at the drum end. This keeps the tail line in good condition. Another method is to use a head line for a certain period, then switch it over and splice it into the tail line, putting a new rope on the head line.

It is an open question which is the better of the two systems of haulage, endless or tail-rope haulage. The tail rope is of course intermittent in operation, and the number of cars in each trip will run from forty to sixty.

The ropes employed for head lines usually are ⅞ in., ⅞ in. or 1 in., and for tail lines, ½ in., ⅝ in., ¾ in. or ⅞ in. Head lines may run up to 10,000 or 12,000 ft.; the tail lines from 20,000 to 24,000 ft. Branch tail lines are used in entries further to enlarge the sphere of operation of this system.

On outside inclines, the pitch of which usually is fairly steep, ropes are employed ranging from 1 in. to 1¼ in. in diameter. In this case it is frequently found that a rope of a special construction will give better results than the ordinary 6x19 hoisting rope, for in this instance the important condition to be met is the wear on the rollers and not, as with a rope hanging in a vertical shaft, only the stresses due to the bending and the frictional wear at the drum and head sheave. Consequently, on an incline a rope should be made with wires of somewhat larger cross-section than are used in a rope for a vertical shaft. As such ropes are special, the mine that uses them must always carry a spare rope on hand ready for installation, for manufacturers are not likely to carry such ropes in stock.

There are, doubtless, many inclines where an improvement in rope service could be obtained by a close study of the conditions of operation. Certain points with regard to wear on ropes always should be borne in mind. The softest material used in rope manufacture (excluding iron, which is not now used in the construction of ropes for mines) is crucible steel. If we grade rope materials in accordance with hardness or wearing qualities, they are as follows:

(1) Crucible steel
(2) Extra-strong crucible steel
(3) Plow steel
(4) Monitor or improved plow steel

Plow steel and monitor grades are coming into use more and more for inclines and haulages, because these ropes have maximum wearing qualities.

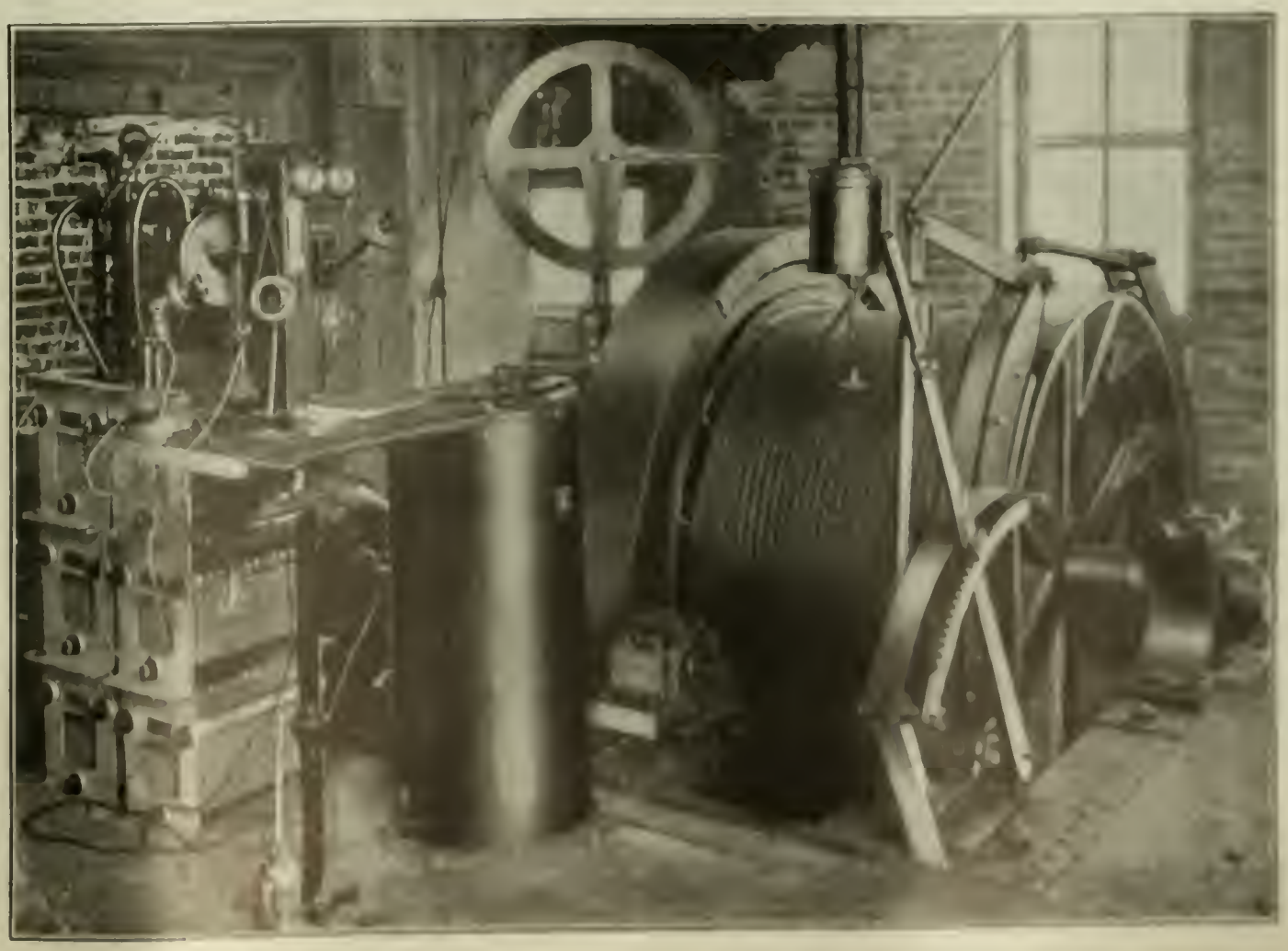
In foreign practice it is customary, after deciding on the size of rope, to calculate the construction which will give the best service in this diameter, and then proportion sheaves and drums to fit the size and character of rope. American practice, however, differs from this, as it proportions the sheaves and drums solely to the diameter of the rope. On haulages the drums as a rule should be designed for ropes of six strands of seven wires; on inclines and shafts, for ropes of six strands of nineteen wires, or some modification of nineteen wires such as in the Seale patent rope.

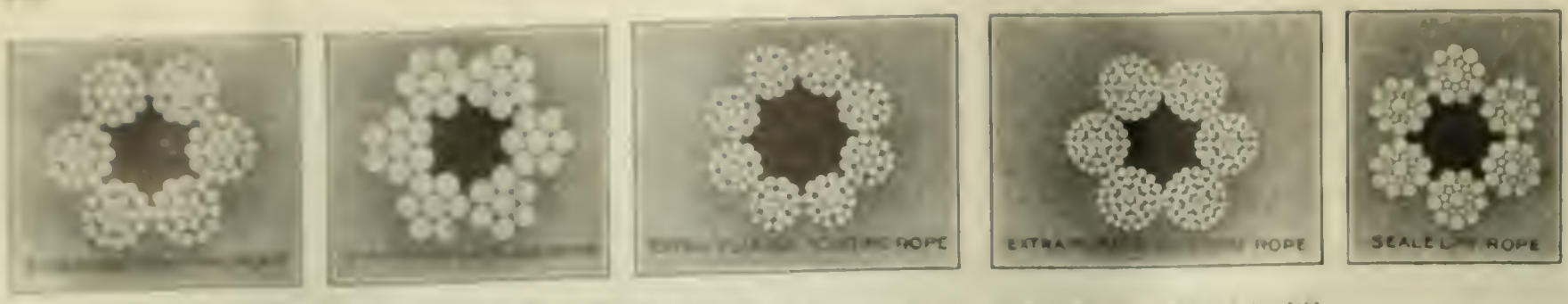
In considering ropes for shaft use, the term "shaft operation" will mean the raising of mine material to the surface either vertically or on what might be termed a steep incline. If the incline is less than 45 deg. it probably would be termed a slope; if more than 45, it would be termed a shaft.

The condition on a slope is identical to that on a gravity incline except that the load has to be pulled up in-

Overlaying Shortens Rope Life

By winding one layer over another a small hoist drum can be used, but the movement of one piece of rope on another will cause unnecessary wear and even injury to both. In a case of the kind illustrated here the only factor to justify so much rope on the drum is that the cost of a drum of proper size might overbalance the saving made in prolonging the rope's life by proper winding.





CROSS SECTIONS OF FIVE DIFFERENT MAKES OF HAULAGE AND HOISTING ROPE

...wires will not break too readily they ... of small diameter. The rope on the right ... are made of larger diameter than with hoist- ... has the wearing qualities of the haulage ... ing rope. This increases flexibility and ... rope and some of the pliability of the hoisting ... injures them when they are passed around ... rope. It wears down more than the other ... drums or sheaves, especially when these are ... rope without indicating it by broken wires.

...sired of being lowered. As on a gravity incline so also on a slope, a rope of special construction that will afford maximum wear frequently is needed. Even more careful attention should be given to the rollers on a slope or gravity incline than is necessary on a haulage system, for the speed usually is greater, and a roller either worn or refusing to turn would soon wear the rope out.

In a shaft operation the conditions which govern the life of a rope are the size and location of the sheaves and drums, the load hoisted, the speed of the hoist, its acceleration and such local conditions as corrosion by mine water.

As a rule the drums employed for shaft hoists are much larger than for any other type of operation. There are several reasons for this: In the first place, it is desirable to have the rope wind on the drum in one layer, because when so wound it is not subjected to the wear and crushing which is inevitable where overlaying is permitted. Where the shaft is deep, this, of course, requires a drum of large diameter as well as considerable width. It also is desirable that the drums be grooved to fit the diameter rope to be used, the grooved drum giving a support to the rope which a flat drum does not.

Furthermore, the grooved drum assists in the winding of the rope evenly across the entire width. If conditions are such that a rope must wind on a hoisting drum in more than one layer, it should be borne in mind that the service obtained can never be as good as if the overlaying could be eliminated. Extra wear usually comes where the rope starts to make the overlay, due to the slap as the direction of wind is reversed.



A TWO-THOUSAND-FOOT HAULAGE PLANT

Drum or sheaves to be used in shaft mining should be of at least twice the diameter designated in the trade catalogs, for such literature must cover a wide range of uses, and although the sizes recommended are larger than are used in some places, they are smaller than those usually obtaining at mining operations. A rule that is used abroad to a large extent is to base the diameter of the drum or sheave upon the diameter of the wire in the individual rope, the practice being for rope of 1¼ in. diameter and 6x19 stranding to use a sheave or drum not less than 7 ft. in diameter, that size corresponding to about 800 times the diameter of the wire. This minimum, however, is not considered good practice. The value of 1,000 times the diameter of the wire corresponding to a sheave or drum diameter of 8½ ft. is considered desirable and an even larger one corresponding to 1,200 times the diameter of the wire would be preferable if it could be arranged. This would mean a sheave or drum 10 ft. in diameter. I think the practice in the United States frequently is to use larger than this, drums and sheaves up to 12 ft. in diameter being used for 1½ in. 6x19 rope.

TABLE II—PROPER DRUM DIAMETER FOR 6x19 ROPE

Rope Diameter, Inches	Drum Diameter, Feet	Rope Diameter, Inches	Drum Diameter, Feet
1	8	1⅝	13
1¼	9	1¾	14
1⅜	10	1⅞	15
1½	11	2	16
1⅝	12		

Sheaves or drums of large diameter will lengthen the life of rope by decreasing the bending stresses to which it is subjected. Where the drum or sheave is too small, wires begin to break and when a certain number have broken it is necessary to remove the rope. With a large drum or sheave the rope wears out slowly and has a far longer life.

Did Not Have Bureau of Mines Approval

H. FOSTER BAIN, director of the U. S. Bureau of Mines, corrects the statement taken from the report of the official investigator of the explosion at No. 4 Mine of the Canadian Collieries, Ltd., and quoted on page 669 of the Oct. 26 issue of *Coal Age*, to the effect that the coal-cutting machine in the workings where the explosion took place was of a type approved by the U. S. Bureau of Mines.

He states that "the Sullivan Machinery Co. advise that this was a totally enclosed machine of a type especially built for use in foreign countries and in Canada, and differing in design from the Sullivan machines approved by the Bureau of Mines. The company further advises that this equipment did not bear the Bureau of Mines approval plate, which indentifies all permissible equipment approved by the Bureau."

How to Make Babbitted Bearings That Will Last Long And Run Cool and Smoothly

Dried Clay Solution on Mandrel—Ladle with Round Spout Preferable —Avoid All Dampness—How to Gage Correct Temperature—Casting Base and Cap in One Operation—Providing Oil Holes and Grooves

By Gustav H. Radebaugh*
Urbana, Ill.

BABBITT metals are divided into three classes: (1) Alloys of tin, antimony and copper; (2) alloys of tin, antimony, coppper and lead, and (3) alloys of tin, copper and zinc. The name "babbitt" is derived from that of the man who invented the lining of bearings with soft metal, Isaac Babbitt. The term "babbitting" has been applied to the process of applying soft anti-friction metals inside a hardened shell for the purpose of producing a smooth and cool-running bearing.

Babbitt metal is extensively used. It can be purchased from most dealers in machinery and from repair or jobbing shops. It is marketed in the form of small blocks or pigs. One of the difficulties in the use of this metal is the formation of blowholes if the bearing is not properly cast. It has been found that these can be avoided if the mandrel, or shaft, while heated is lightly covered with a solution composed of one or two pounds of Jersey red clay to three gallons of water.

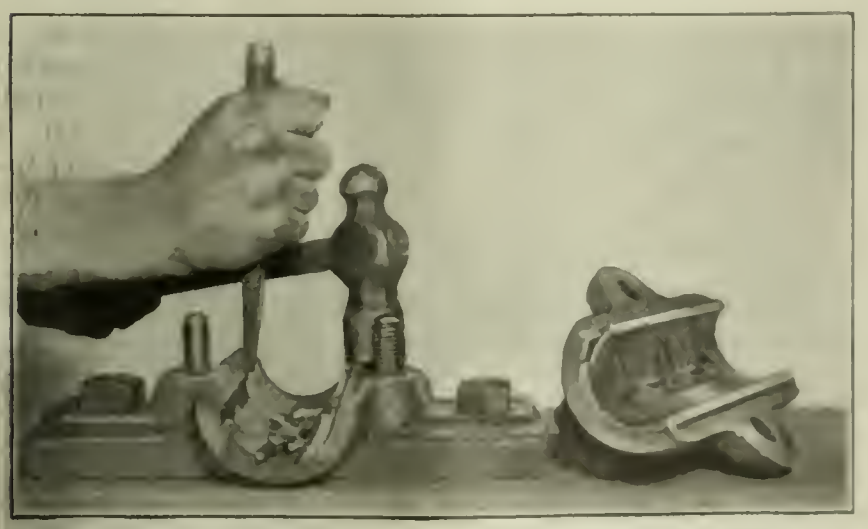


FIG. 1—REMOVING OLD LINING FROM BEARING
A flat cold chisel is driven into each side of the box between the babbitt lining and the cast-iron shell, thus causing the former to break loose. Oftentimes it will be removed in a single piece.

This will prevent the formation of bubbles and the lining, in consequence, will have a smooth surface. Oil causes the babbitt to blister.

It is important that the metal always be poured from a ladle that has a rounded spout rather than one that is flat and sharp, for the latter tends to produce a porous area or blowholes in the solidified metal. Putty is preferable to clay for luting or sealing the ends and sides of the bearings, as the moisture in the clay tends to cause sputtering. Exercise caution when pouring babbitt into a box; be absolutely certain that the inside of the box is dry. If damp it causes the heated metal to sputter and sometimes it explodes with force enough to scatter molten masses and particles over a wide range.

*University of Illinois.

Prior to pouring the babbitt the bearing should be heated to prevent the molten metal from becoming chilled and sluggish. The common method of determining the pouring temperature of babbitt metal is by



FIG. 2—ANCHOR HOLES KEEP BABBITT IN PLACE
If no anchor holes have been provided they should be drilled and if the babbitt has not come out of them when the lining is removed care should be taken to see that they are clean so that the new lining will not slip.

testing it with a dry pine stick. If it chars the wood, the metal is at the correct temperature for pouring. Never heat the babbitt to red heat. This will destroy its usefulness. When heating the babbitt in a forge fire be careful that none of the metal is scattered in the fire, for it will find its way to the tuyere iron and close up the blast openings.

The old babbitt is removed from bearings by taking a flat cold chisel and driving it into each side of the box between the babbitt lining and the cast-iron shell. The old babbitt will break off in the manner shown in Fig. 1. This is not a difficult operation, as in many cases



FIG. 3—LINING AND LEVELING MANDREL OR SHAFT
Round wedge blocks bring the mandrel up to position. When these is done the blocks are poured solid with babbitt and paper shims are used to give the final adjustment. Before this is done the center line of the shaft will be set to correspond with that of the box.



FIG. 6—CUTTING GROOVES TO SEPARATE BASE AND CAP
Adjacent arc shown at right that will in time cut both. Small cutting are run along the inside edges of the liners so that the babbitt poured into the cap will run down and fill the holes with-out. Reinforced backing shows a solid retaining lining as will make

the entire piece of babbitt is removed intact. The old metal can be remelted and used again. If the box is covered with oil and muck, place the base and cap in the forge fire and heat it until the oil burns off.

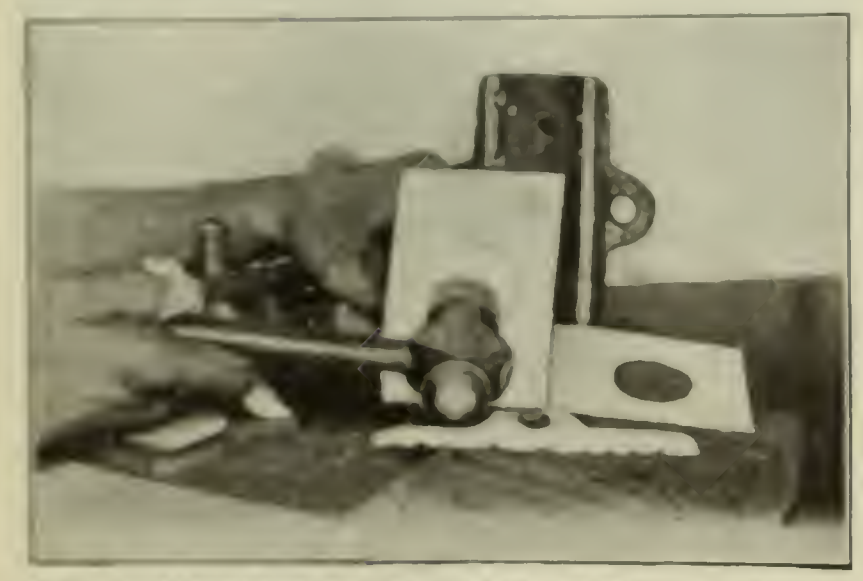


FIG. 5—PAPER STRIP KEEPS BABBITT FROM CLAY DAM
Babbitt metal if coming in contact with moisture creates steam an explosive gas of intense heat is instantaneous in an explosion. After joints have been ladled to know out water and to dry the bear-ing thoroughly it should be thoroughly dried out the babbitt runs. In ordinary work clay or putty, as an exception, or at least blowholes, would result. The paper strip serves as a protection.

The anchor holes in the base and cap of the box are shown in Fig. 2. These anchor holes are used to hold the babbitt lining in place. Cast-iron shells are rarely ever lined, though this is a common practice where the



FIG. 3—PLACING THE PAPER LINERS IN POSITION
Before these liners are placed the cardboard box is heated on an oil stove or over some other heating device to remove the moisture and dry it out. A gas heating stove is made a good thing and a gas or alcohol torch can be used to

shells are of bronze, like those used for automobile engines. If these anchor holes are not in the box and no other method is provided they should be drilled, as it is important that the babbitt lining be held in place by some such means. When removing the babbitt the anchor holes sometimes remain filled. They must be clean before the shell is reabbitted. One of the best ways to remove the metal left in the holes is by heating the box in the forge fire.

After the box has been thoroughly cleaned from all



FIG. 7—CLAMP CAP WITH BOLTS; SEAL WITH PUTTY
The bearing is now ready for pouring; liners, clamps, paper ends and clay or putty being all in place and the mandrel properly lined.

loose babbitt, metal and oil, the shaft, or mandrel, is then located and properly lined and levelled. A useful way of blocking it into place is by the use of the small wedge blocks shown in Fig. 3. After the shaft is brought to the proper position by adjusting the wedge blocks, it must be more securely held by placing flat blocks under each end. It may be necessary to use paper shims in this blocking operation.

Liners are constructed to separate the base from the



FIG. 8—TESTING HEAT OF METAL WITH PINE STICK
The babbitt should be slowly heated and to the precise tempera-ture at which the metal will char a pine stick, without actually burning it. Be sure you have enough metal to complete the job. The cast should, of course, be continuous.

cap of the box. By cutting the small notches along the inside edge of the cardboard liners both the top and the bottom of the lining can be poured at the same time. These notches are cut in the manner shown in Fig. 4. They are large enough to permit the molten babbitt to reach the base but small enough that the cap can be readily pried free after the babbitt has been poured and has become cooled.

Paper ends or washers, as shown in Fig. 5, are used to keep the hot babbitt from coming in contact with the damp clay or putty which is used for sealing the ends and sides. These dams are used to prevent the hot metal from escaping. If the hot babbitt comes in contact with moisture it tends to sputter. Before placing the liners, therefore, as shown in the next operation, the cast-iron box should be heated. This will insure a more even flow of the metal.

After the liners have been put in place and the shaft



FIG. 9—SKIMMING SLAG OFF SURFACE OF METAL

Babbitt metal tends to break up into its metallic constituents, therefore to keep the mixture up to standard throughout it should be stirred and the refuse that rises to the top should be carefully skimmed off, taking care, however, that this metallic scum does not get into the bed of the forge, for it will block the tuyere iron and close the blast openings.

properly lined up, the cap is ready to be placed on the base. It is good practice to clamp the cap in position with two bolts, as it insures its remaining in proper location. All the open edges are sealed with putty or clay as shown in Fig. 7. Good luting materials are putty, fireclay or ordinary clay. The bearing cap should be provided with a hole for pouring the metal through and one or two holes to permit the escape of gases. These holes on a bearing such as is shown should be $\frac{3}{8}$ in. in diameter.

The babbitt scrap that has been removed from the box with the necessary quantity of new metal is placed in a ladle and slowly heated until a dry pine stick will char when placed in the molten metal as shown in Fig. 8.

Do not heat the metal to a high temperature. If the metal is too hot the pine stick will fire. It is not good



FIG. 10—POURING THE BABBITT METAL INTO BOXING

The bearing cap should have a hole for the pouring of the metal and one or two holes about $\frac{3}{8}$ in. in diameter for allowing the escape of gases. The ladle should have a wide and rounded spout, as shown, if the metal is to be poured satisfactorily



FIG. 11—BREAKING BOND BETWEEN BASE AND CAP

After the metal has solidified, the clamp bolts are removed and with a chisel the base and cap linings are broken loose from each other. This should be done first on one side and then on the other so that there will be no tendency to loosen the weld of the lining on the cast-iron shell.

practice to leave babbitt on the fire longer than necessary. It should be poured as quickly as it comes to the proper heat. To obtain a serviceable bearing these principles must be closely observed.

Before pouring, the babbitt should be stirred thoroughly to insure a lining of uniform composition. The metals in the alloy have a tendency to separate and seek different levels in the ladle, but the stirring overcomes that tendency. Previous to pouring, the top of the molten babbitt should be cleaned off as illustrated in Fig. 9, taking care that the refuse is not permitted to fall into the forge fire.

The babbitt must be poured quickly. One of the secrets of good bearings is the manner in which the metal is poured into the box. Failures are caused by having the box damp instead of warm, as suggested, by using a ladle with a sharp or flat pouring spout instead of a round spout, by not having the box ends and sides



FIG. 12—BEARING SHOULD BE INSPECTED

The cap and mandrel should be removed and the bearing inspected to see if a smooth job has been performed. If not it will be necessary to start all over again, as [illegible] adding metal after the pour has been completed

properly sealed and by not having enough material in the ladle to fill the bearing.

After the metal has been poured it should be permitted to cool and the cap should not be separated from the base till the metal has hardened. This operation is performed in the manner shown in Fig. 11. The clamp bolts are removed, and a flat cold chisel is driven between the bearing cap and the base. This causes the metal to separate at the points adjacent to the small notches in the liners, where the metal ran down into the



FIG. 13—SMOOTHING BEARING WITH COARSE FILE

All the fins and sharp edges must be removed and the edges rounded off to a fine radius. The bearing surface of the babbitt lining is next smoothed to a smooth, even finish. New liners are cut and so fitted that they will lie snugly against the shaft for without shimming it

base of the bearing. This operation should be performed on each side of the box so that there will be no tendency to loosen the hold of the bearing metal on the cast-iron shell.

In Fig. 12 the bearing cap has been removed, permitting the removal of the shaft, or mandrel. A close inspection can be made of the babbitt lining to determine if it will make a good bearing. It should be smooth and free from cold shorts. If defective, the babbitt lining is removed and the pouring operation is repeated.

When pouring a bearing the hot metal runs into the small crevice between the cap and base. This causes the babbitt lining to have fine and uneven edges. These should be removed by using the bastard, or coarse, file shown in Fig. 13. The edges of the babbitt lining should be filed to about a ¼-in. radius. The bearing surface of the babbitt lining should be filed and scraped to a smooth, even finish. The cap and base are fitted together, testing the fit of the bearing on a mandrel, or shaft. New liners are cut and fitted. They should be as thick as will permit the cap and the base to be bolted together with the clamp bolts without binding the shaft. In the cap of the box, oil holes should be provided. Holes used for gas escape are filled with babbitt during the pouring operation and it becomes necessary to remove this metal. One method is drilling with the breast drill as indicated in Fig. 14. Another effective method is to ream out these holes with wooden plugs, care being exercised that a free passage for air exists between the plug and the sides of the hole. After the metal cools these plugs are driven out and a clean hole is obtained, thus eliminating the use of the drill.



FIG. 14—DRILLING OUT OIL HOLES

Without oil holes many bearings would run hot. Holes are drilled in the babbitt lining with a breast drill. Care should be taken to keep the drill perpendicular to the surface of the bearing. Otherwise the oil hole will not be in the proper position for the passage of the oil to the shaft.



FIG. 15—CHISELLING OUT OIL GROOVES IN BEARING

These grooves are cut with a round-nosed goose-neck chisel and after they are made the bearing is smoothed with a half-round mill file and by scraping. They should be about ¼ in. deep.

The oil grooves are cut by using a round-nose goose-neck chisel as shown in Fig. 15. After the grooves have been cut, smooth the bearing down with a half-round mill file and by scraping. Grooves are cut in the surface of the bearing so as to distribute the lubricant evenly over the entire length of the journal. They are also cut so that they will collect the oil (which would otherwise run out at the ends of the bearings) and will return it to some point where it may be used again. The usual dimension of oil grooves is $\frac{3}{32}$ in. to ¼ in. in width and $\frac{1}{16}$ in. to ¼ in. in depth.

Using Rusted Sheet Iron as Side Plates for Chutes in Heavily Pitching Rooms

IN A certain anthracite colliery most of the mining is on the pitch and the grade is such that the car cannot follow the miner as the face advances, but must remain on the gangway. The pitches vary from 12 to 17 deg., so that the coal will not run without the introduction of chutes. These have a sheet-iron bottom and plank usually 2 in. thick on the sides. Thus the coal is carried from the face onto a platform or into the car.

The chutes that were left in the place when operations ceased on March 31 of this year were attacked by the acid water of the mine, with the result that when operations began again on Sept. 11 many of these chutes were no longer in fit condition to convey coal from the mine's face to the car.

Many chutes had been so badly attacked by the mine water that holes had been eaten through them. Some of the chambers are 250 to 300 ft. long and as each iron sheet is 8 ft. long the company had thirty or forty unserviceable iron sheets in each chamber. Just at this time much trouble was experienced in getting the necessary plank to complete the building of the chutes. So the problem was solved by the use of a sheet-iron cutter similar to that used in the breaker. This was brought into the mines and the sheet iron was cut lengthwise and used on the sides in place of plank.

Thus one unserviceable iron sheet 8 ft. long could be cut in two and made to take the place of a 16-ft. length of 2-in. plank. This was a big saving to the company, the only cost being that of buying the sheet-iron shears. Where there were any holes in the sheet iron the plates could be used with the damaged side down.

A Few Suggestions to Those Who Repair Mine Motors

Beware of Incorrect Connections Between Coils and Commutator —Be Sure That Both Bands and Coils Are Snug—Guard Against Bends, Twists and Blows That May Nick or Weaken Wire

By John S. Dean*
East Pittsburgh, Pa.

When the armature of a mine motor is damaged and has to be rewound, it is important that the connections between the windings and the commutator be made correctly. If the windings are not too badly damaged, the winder usually notes the throw of the leads from the coil to the commutator bar when he is stripping the windings, and in this way he gets the desired information.

Entire reliance cannot be placed on this method, as there is a possible chance that the winding may have been connected wrong when it was originally wound, either in the repair shop or in the factory. The only safe way is to get from the manufacturer of the motor this winding information, with a complete diagram of connections such as are shown in Figs. 2 and 3.

To be sure of getting the full life from an armature, extreme care should be taken to see that failure, from whatever cause, is guarded against in a satisfactory manner while the armature is being rewound. First of all, any sharp corners and any roughness in the slots that might damage the coils should be filed down and all chips and filings removed before the insulating material is applied to the core. In applying the insulating material on the coil supports it should be evenly placed and no thin spots allowed.

The coils should fit tightly in the slot and so that the tops of the coils are approximately $\frac{1}{32}$ in. above the outer edges of the grooves. If necessary, fillers should be used between the coils to meet these conditions. With the projection recommended there will be nothing to prevent the bands from being able to press the coils down tightly into place so that the former will rest finally on the iron core of the armature. Thus arranged the movement of the coils in the slots will be reduced to a minimum. If the coils are wound so that they come so high that the bands cannot be tightened enough to bring the coils flush with the iron core the bands will rest on the coils and not on the iron, and when the insulation dries out in service the bands will become loose.

The coils should not be twisted, bent or abused any more than is absolutely necessary to get them into place. Care should be taken not to get the wires or leads crossed in such a manner that when pressure is applied in banding, short-circuits will occur. The coils on the end windings should be down, so as to make a solid foundation for the bands, but care should be taken not to pound them to such an extent that the coils or leads are damaged.

Insulating protecting pieces should be placed at all points where the coils cross and where there is danger of short-circuiting. It is good practice to reinforce the insulation directly back of the commutator. This can be done by weaving braid between the leads or by taping the individual leads at this point.

The leads should be tinned back so far that there is no untinned copper in the commutator neck. The cotton sleeving on the lead should not be allowed to get into the commutator slot, as it may hinder soldering to such an extent that a poor connection will be made. The tool used in driving the leads into place should be free from sharp corners that might nick the leads, for a nicked wire is likely to break.

Mining motors usually are laid out for a wave or two-circuit type of winding. They may be wound with either a right- or left-hand coil. A right-hand coil is one where the leads come out on the right when the coil is held so that the portion to be placed in the bottom of the slot is toward you and the air-gap side of the coil is uppermost. A left-hand coil is one where the leads come out on the left when the coil is held so that the

*Motor engineer, Westinghouse Electric & Manufacturing Co.



FIG. 1

Armature Under Repair

The coils, properly insulated by their tape windings and by paper strips, are embedded in the core slots to such a point that when the completed job is bound with high-resistance wire the coils will come just flush with the slot opening.



FIG. 2—DIAGRAM AND DATA FOR ARMATURE WINDERS

portion to be placed in the bottom of the slot is toward you and the air-gap side of the coil is uppermost.

Armatures of the two-circuit type may be wound either progressive or retrogressive. A progressive wave of two-circuit winding is one where the throw of the coil lead is one-half a commutator bar greater than half way around the commutator. For example, with 135 commutator bars, a progressive winding has a coil throw of (135 — 1) ÷ 2 = 67 bars or 1 and 69. A retrogressive winding has a coil throw of (135 — 1) ÷ 2 = 67 bars or 1 and 68.

The wave or two-circuit windings always require an odd number of commutator bars. When an even number of coils per slot are used there will always be an idle, or dead, lead. When an odd number of coils per slot are used and there are an even number of slots on the armature there will always be an idle, or dead, lead. When the number of coils per slot is odd and there are an odd number of slots on the armature, there will never be an idle, or dead, coil. The alignment of the armature slots or teeth of the core with respect to the commutator mica or bar is as follows:

(1) With the coil throw even and the lead throw even, the center line of the tooth will line up with the center line of the mica.

(2) With the coil throw odd and the lead throw odd, the center line of the slot will line up with the center line of the bar.

(3) With the coil throw even and the lead throw odd, the center line of the tooth will line up with the center line of the bar.

(4) With the coil throw odd and the lead throw even, the center line of the slot will line up with the center line of the mica.

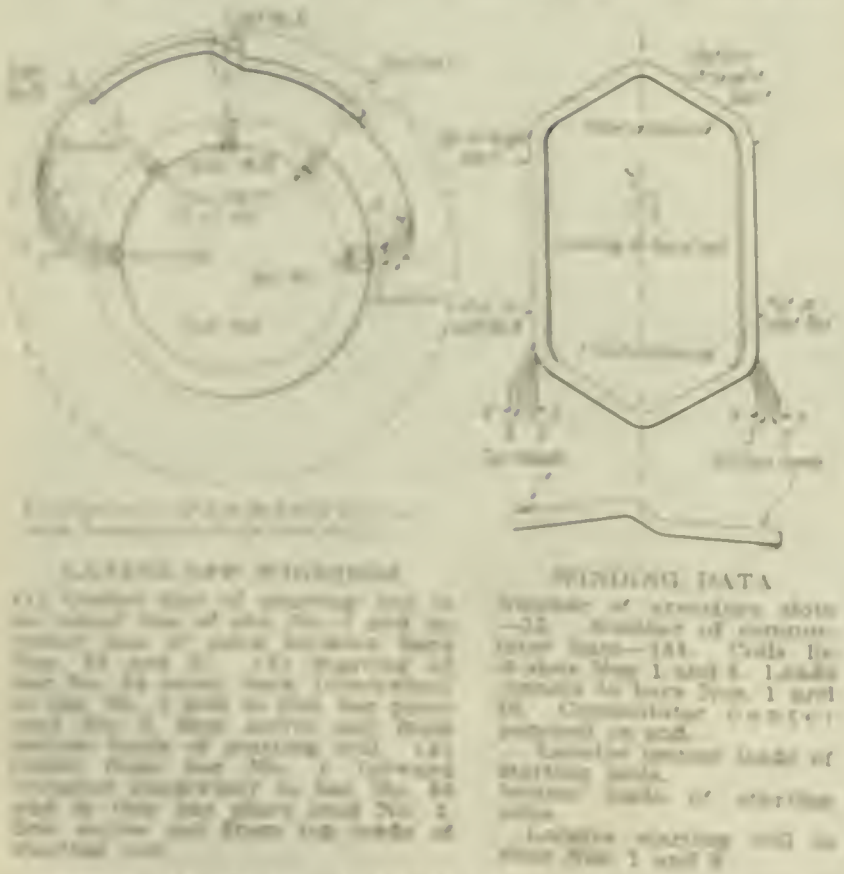


FIG. 3—ANOTHER DIAGRAM AND OTHER DATA FOR ARMATURE WINDERS

Sizes and Uses of British Anthracite

IN HIS little book on "Anthracite and the Anthracite Industry" A. Leonard Summers states that the recognized British standard sizes of anthracite are:

Selected large, for malting, hop drying and horticultural purposes.

Screened large, for export to crush to sized coals.

Machine-made cobbles (2½ in. to 4 in.), for central heating apparatus, Dowson and pressure gas plants, household and various purposes.

Machine-made "French" nuts (1¾ in. to 2½ in.), for practically the same purposes as cobbles and for open grates and large stoves.

Machine-made and washed stove nuts (1 to 1¾ in.), for suction gas plants and the majority of domestic stoves.

Machine-made and washed "pea-nuts" (½ in. to 1¼ in.), for "Economic" stoves and suction gas plants.

Machine-made and washed "beans" (½ in. to ⅞ in.), for suction gas plants and domestic stoves.

Machine-made and washed "peas" (¼ in. to ⅝ in.), for suction gas plants and steam raising.

Machine-made and washed grains (⅛ in. to ¼ in.), for specially constructed gas plants and under steam boilers with forced draft.

"Duff," the fine, small dust, for spelter and cement making, chiefly for mixing in small quantity with steam coals for making patent fuel, including boulets for domestic stoves and fires.

"Rubbly Culm," or the rough coal passed between longitudinal bars 1¼ in. apart, principally used for lime burning and steam raising.

Determines Ash in Coal with Milk Tester

A. M. Rodgers, a research worker in the School of Mines at the Pennsylvania State College, has devised a novel scheme for estimating rapidly the percentage of ash likely to be contained in a given sample of coal. By means of a centrifuge such as is used to test the proportion of cream in a given sample of milk, he has succeeded in making tests of coal in a few minutes whereas the previous method, which necessitated the burning of the coal, took nearly a day.

The coal to be tested is ground finely and poured into test tubes containing a liquid. When the tubes are whirled around rapidly by the centrifuge, the slate and sulphur go to the end of the tube and the combustible part of the coal is left near the top. Graduations, like those used in the milk and cream tester, show at once the proportion of waste in the coal.

Kentucky Mining Institute Discusses Loading Machine And Value of Business Associations of Coal Men

Suggested That Loading Machine Be Shifted by Locomotive and That Conveyor Be Made Telescopic, So That Loading Boom Before Operating Can Be Extended and Load Two Cars Without a Shift

THAT when properly managed the coal-loading machine has great possibilities is clear from the statement made by N. G. Alford at the meeting of the Kentucky Mining Institute, at the Seelbach Hotel, Louisville, Ky., on Nov. 3. He stated that the Pocahontas Fuel Co. had loaded with three machines 1,500 tons in one day with a force of men somewhere between twenty-seven and thirty-five, including those actually operating the loaders.

Brisk and businesslike was the meeting of the institute, which did not conclude till nearly midnight of the day of meeting. It had been intended to extend it until the following day, but at the request of some of the members who could not stay so long it was crowded into a single day and the report of the committee on the "Preparation of Coal" was omitted, as none of the members of that committee was at hand to read or discuss it.

The report of the committee on "Coal-Mining Machinery" was delivered by Alphonse F. Brosky, of Pittsburgh. As the subject seemed too large for a single session, the paper was limited in scope to mechanical coal-loading machinery and how it might be used to the greatest advantage. Interest was added to the paper by a number of lantern slides showing the different types of mechanical loaders.

Work of Loading Shovel Is Incomplete

F. P. Wright, of Bevier, Ky., opened the discussion, remarking that he gathered from the paper that mechanical loaders were complicated and cumbersome, and had not been so greatly simplified that the operator would be justified in adopting them as standard equipment. He also said that in the loading of coal by mechanical means more daymen would have to be employed than were required in the actual operation of the machines; otherwise, how could the rooms be cleaned up, fallen posts be replaced, track be maintained, and the many other jobs executed that always accompany room mining?

In reply to Mr. Wright's first remark A. F. Brosky said that we never could hope to develop a loading machine that would have a flexibility approaching anywhere near that of the human loader, but that the loading machine is being made more and more adaptable to mining needs. For the greater part of coal handling, electric power is cheaper than man power. Without question a straight loading machine will never be constructed that can be operated without some of the coal being shoveled in the final clean-up. But if the employment of a few daymen will make unnecessary the services of a far larger number of contract men, the cost of loading per ton will be lowered.

N. G. Alford recited what had already been achieved in mechanical loading at one of the mines of the Pocahontas Fuel Co. His statements seemed to convince the operators present that mechanical loading was far from a complete failure. In one of that company's mines three loading machines are said to have loaded out 1,500 tons in one day. The number of men required was somewhere between twenty-seven and thirty-five, including those operating the loaders.

Asked whether the conditions at this mine favored mechanical loading, Mr. Alford replied that they were exceptionally favorable, the seam being approximately 8 ft. thick. Interrogated by Mr. Jenkins as to whether the coal was soft and the roof unusually strong, Mr. Alford replied in the affirmative. Mr. Cockburn substantiated these statements by saying that few places had more favorable conditions for mechanical loading.

Suitable Time to Talk Motor Standardization

Graham Bright, of the Westinghouse Electric & Manufacturing Co., cautioned designers and manufacturers of mechanical loaders to decide upon a type of motor, preferably standard, and to allot sufficient room before going far in the design of other features, thus saving the great expense of designing and constructing a motor of unusual size and type.

Questioned as to what had been done by his firm to bring out an "explosion-proof motor" he said the term as applied to a motor to be used in a gassy mine is a misnomer. The term "permissible" might be adopted more appropriately. At the present time the demand for such a motor would not justify any manufacturer in spending a large sum of money to develop it. A permissible motor for the driving of the pumps has been available for a period of 5 or 6 years. The design in the early type provided wire-gauze screens to prevent explosions of gas.

Making Electric Motors Explosion-Proof

The Bureau of Mines never would pass favorably on this type of protection, yet at no time and under no conditions could the operation of the motor be made to cause an explosion of the gaseous atmosphere by which the machine was surrounded. The new type of permissible motor is built heavy, with wide flanges. It does not prevent explosions within the motor, but such explosions will not injure it nor extend to the air outside.

On being asked by Mr. Alford as to the most effective means of transporting a loading machine from place to place, Mr. Bright stated that he believed that in most cases the addition of self-propelling mechanism was a mistake. The simpler the mechanical loader the better, and for that reason it might be wise to eliminate the self-propelling devices on the truck and use a locomotive to pull the machine from place to place, providing it could be arranged so as to have one always on hand when the machine had to be moved.

F. P. Wright said that as the self-propelling cutting machine was regarded as essential why should it be expected that the loading machine would be satisfactory

without danger of moving itself, but Mr. Bright replied that the conditions in the one case might be entirely different from those in the other.

To Mr. Bright's remark that the addition of a self-propelling device might add too much weight to certain classes of mechanical loaders Mr. Wright rejoined that to propel the machine the same motor might be used as is utilized in driving the conveyor and in actuating the other moving parts. Mr. Alford was of the opinion that much of the moving is needless and might be overcome by paying more attention to the working of places in sequence.

Mr. Brooky suggested that the time expended in the shifting of mine cars might be cut in two if the loading boom on the loader were lengthened so that cars could be loaded in trips of two cars instead of one at a time. It should be possible to design a telescoping scraper conveyor that would not add to the height of the machine. With this extended the first car could be pushed under the conveyor and the second car placed under the discharge of the loading boom. After the latter car was loaded the other car could be pulled out so as to spot it and loading would resume. Before the loading machine was moved the conveyor could be telescoped and thus be fitted for maneuvering out of one room into the next. Several mechanical engineers have already expressed it as their opinion that the mechanical details of such an arrangement could be worked out.

Right to Balance Evil with Good Times

J. F. Callbreath, secretary of the American Mining Congress, being present, was asked to address the institute. He defended the coal industry from the charge of profiteering indefinitely and added that the operator should not be prohibited from making such a profit during favorable periods as will afford him a fair interest on his investment, not only for the period of prosperity but also for the slack periods that precede and follow the brief period of good fortune.

Mr. Callbreath then outlined to the institute the aims of the Southern, or Dixie, division of the American Mining Congress, now in process of making. He referred especially to the effect of the growth of mining on the future of the South, declaring that although the metallic ores in the Southern states were not nearly so rich as those of the West, the additional costs of recovery in the first-mentioned states would be offset by the reduced charge for carrying the products to Eastern markets.

After the coon roosts Graham Bright read a paper, illustrated by lantern slides, on "Gathering Locomotives for Coal Mines." In his paper he spoke of the merits of all-rubber cable for gathering locomotives, digressing for a moment to record the experience of the Pittsburgh Coal Co. in that respect. According to A. B. Kiser, chief electrical engineer of that company, the superintendents assert that all-rubber cable will outlive four to six of the braided cables. The men are not afraid to handle it, for when it is used the danger from shock is reduced to a minimum.

N. G. Alford started the discussion by asking Mr. Bright whether the principal use of the straight battery locomotive was in pulling coal from thin seams, where the cost of making headroom for any other type of locomotive would be prohibitive. Mr. Bright replied that approximately 50 per cent of all the straight storage batteries in use are found in thin seams.

Mr. Wright queried whether some new type of locomotive, the design of which would constitute a radical departure from those in common use, was under consideration. In reply Mr. Bright said that a caterpillar locomotive is now being developed.

Asked by Mr. Alford regarding the inherent operating difficulties in dynamic braking Mr. Bright replied that before adopting that principle for a locomotive one should make sure that the duty of the latter will be such as will permit of the economic use of a plan of that sort.

J. W. Reed, of the Consolidation Coal Co., wanted to know why in storage-battery locomotive design space was not allotted for an extra seat so as to accommodate a second rider. Mr. Bright informed him that such a provision was now being made. The space required, however, was obtained by sacrificing some of the room hitherto occupied by the storage battery.

Mr. Wright then asked the time-worn question as to when the mule and when the storage battery locomotive should be used. It was brought out that many mistakes have been made in the past, either because the operator chose the storage-battery locomotive for working conditions not suitable to it or else because the salesman taking orders for that type of locomotive foolishly led him to believe its adoption best. Where the working places are scattered the mule is just as economical as the locomotive. Mr. Wright finds that one mule will gather about 50 cars in a shift. Graham Bright said that under favorable conditions the locomotive should replace three or four mules and one or two drivers. He added, however, that figures of this nature are almost of no use to the other fellow, as blind statements without a knowledge of conditions of working mean little.

The second paper of the afternoon was entitled "What Good Roads Mean to Mining Districts," and was delivered by C. D. Franks, of Indianapolis, Ind. The change from mining to road making seemed to serve as a relaxation and to be appreciated by the institute.

Railroads Should Balance Car Borrowings

J. M. Dewberry, general coal and coke agent of the Louisville & Nashville R.R., spoke on "Present Coal-Traffic Problems and the Prospects for the Future." No discussion followed the reading of this paper. He regretted that the Interstate Commerce Act of 1920 is not enforced so as to compel a carrier to replace by another every railroad car that it borrows from the owning company. A few of the smaller railroads do not have enough rolling stock to handle the traffic which passes over their tracks. Consequently they attempt to hold cars that pass over their roads.

He condemned openly the inflation of mine ratings. He did not, however, recommend that the rates on the Louisville & Nashville R.R. be lowered to normal unless a corresponding drop were provided all along the line and on other roads. Orders for cars in the aggregate on this road are about 100 per cent in excess of the possible output from the mines which it serves.

After the committee reports had been read, Prof. Norwood, of the State University of Kentucky, read the constitution that had been prepared for the institute's action. C. J. Neekamp's paper on "How to Make an Operators' Association of Most Value" followed.

Mr. Butler said that many of the operators were lax in fulfilling their obligations to their association and lost interest during those periods when they are prospering and having no trouble. That is entirely wrong.

They should be "on their toes" at all times. He added that the operators must avail themselves fully of the publicity that was theirs for the asking. During the rail and coal strikes last summer the public made it apparent that they considered the main issue was the refusal of the miners and the operators to get together. If the operators had resorted to publicity the impression would not have entered the public mind.

Mr. Jenkins, vice-president of the West Kentucky Coal Co., maintained that the operators' side of the question should get at least as much publicity as that of the miners.

F. P. Wright well expressed his belief as to what an association of this kind should be when he said: "There is no better example of association, co-operation or co-ordination than the United Mine Workers." The members of that organization are loyal one to the other and to their society as a whole; nor do they at any time fail to give their leader their hearty support. He compared the operators to a team of horses pulling two ways.

The small operators always hesitate about coming into the operators' association, believing that it is controlled by the larger companies for their exclusive advantage. This is an erroneous idea, Mr. Wright said, as they may derive as much from it as the big fellow. It is the little company that really sets the prices, so why should he not come into the association?

He reiterated what was said by those who spoke before him on the need of publicity. Newspapermen come to the meetings of the operators and ask for information. Usually they are told "nothing doing." As they were sent for the purpose of getting information and are refused it by the operator, in self-defense they get whatever news they can possibly gather, regardless of the source, and then draw on their imagination. The coal industry should tell the public all about its business. There is no secret about it. Mr. Wright concluded by saying that the industry was up for trial before a one-sided tribunal and that it behooved the operator to make it two-sided by more co-operation and membership in the operators' associations and by more publicity.

Mr. Calbreath advocated publicity as a means of achieving a just settlement. This the coal operators have not yet succeeded in setting in operation. The public still believes, as a whole, that the operator gets most of the high price of coal whenever prices soar.

In the election of officers that followed this discussion Prof. T. J. Barr was elected president of the institute for the coming year, and Mrs. Elizabeth C. Rogers was again chosen as secretary-treasurer. It was almost midnight when the meeting, having completed its business, finally was adjourned.

North Carolina Again Among Coal States

By Bion H. Butler
Southern Pines, N. C.

THE Carolina Coal Co., of Southern Pines, N. C., has opened an interesting coal field in the North Carolina Triassic basin of Chatham County, not far from Sanford. It gives all promise of being an important addition to the power supply of that rapidly developing state. The development of the Carolina company includes a slope driven on a 27-deg. pitch 800 ft. into the bed, where it begins a series of headings and workings in a seam of excellent high-volatile coal about 4 ft. thick. Assays of the coal made by various agencies show a quality comparable with the best coals of Pennsylvania—low ash, low sulphur, high heating power and freedom from parting and impurities.

This field is by no means a new one, for before the Civil War the Egypt mine, two miles distant from the Carolina company's new mine, was operated by a shaft that had been sunk into the same coal seam. But the Egypt mine was at that time far from any market that needed coal in any quantity, and transportation consisted of an occasional wagon. Later a railroad was built into Egypt, but still the call for coal was slight and the method of operation was not very practical. An explosion ultimately settled the fate of the property. Later it was reopened, and it is now producing coal, with the prospect that it will become a valuable property under modern methods and facilities.

The Carolina Coal Co., with J. R. McQueen president, C. M. Reeves, general manager, Howard N. Butler superintendent, after extended investigation of the Deep River coal basin obtained 1,200 acres of land and drilled it with core drills, determining their deposit, and then proceeded to sink their slope and open a mine. They have about 3,000 ft. of underground workings exploring the coal, which runs regular, with hard sandstone roof and but little water. At the Carolina and the Cumnock mines about fifteen to twenty cars of coal are going out weekly now, with plans for increasing that as fast as conditions at the bottom will permit. The Carolina company's mine is planned for a daily capacity of 1,000 tons when fully developed.

The company has several thousand acres of additional land in reserve under option or lease or through the ownership of the stockholders and expects to develop further acreage as soon as the present property is brought into its intended activity.

The Deep River coal basin is a limited field in the Triassic rocks much higher up in the geological measures than the coals of the Carboniferous, but the coal appears to be identical with that of the lower formation. Three or four beds are present, only one of which will be worked by the Carolina company at the present time.

At the present time a geological survey is in progress under the management of K. K. Kimball and Maurice Campbell, of the U. S. Geological Survey. A preliminary survey a few weeks ago brought out such a favorable report that it was decided at Washington to make a thorough study of the coal basin that this coal deposit might be brought to the notice of the country and its resources made available for the expanding industries of the state.

North Carolina is fast becoming a prominent manufacturing state, being second to Massachusetts alone in the amount of cotton spun and foremost of all the states in the number of cotton mills. It is the leading tobacco manufacturing state of the Union and is close to the top in the production of furniture. All this takes power. An advantage which the Deep River basin has is that it is two or three hundred miles from competing coal and will have the inside track in its market.

The mines are seven miles out from Sanford near the village of Cumnock, on the Southern and Norfolk Southern railroads. It is believed the field will ultimately develop a capacity of several thousand tons daily, which will find a market within a limited radius.

Testing Materials Society Defines Coke

IN ORDER to standardize the methods of testing coke and to give it a nomenclature which will be of nation-wide acceptance the Society for Testing Materials in its annual volume of tentative standards has included a chapter entitled "Tentative Definitions of Terms Relating to Coke." It defines coke, beehive coke, byproduct coke and gashouse coke.

Foundry coke from beehive ovens it designates as coke which is physically and chemically suitable for use in foundry cupola practice. It may be either 72- or 48-hour coke. The principal difference between the two is the greater size of the 72-hour coke, due to thicker coal beds employed in its preparation. The breeze, or fine coke—smaller than approximately ½ in.—is forked or screened out.

Foundry coke from byproduct ovens is coke that is physically and chemically suitable for foundry cupola practice and which passes over a screening device having approximately 2½-in. openings. It is not produced in any standard coking time.

Furnace coke from beehive ovens is coke that is physically and chemically suitable for the reduction of iron ore in blast furnaces. The breeze smaller than approximately ½ in., as in foundry coke from the same source, is forked or screened out. The usual coking time is four 48-hour charges and two 72-hour charges.

Furnace coke from byproduct ovens is coke that is physically and chemically suitable for the reduction of iron ore in blast furnaces and which passes over a screening device with openings varying from ¾ to 1½ in., depending on local conditions at different plants. It is not produced in any standard coking time.

Domestic coke is coke of the smaller screened sizes, below approximately 2½ in., suitable for use in domestic stoves, heaters, etc. The standard sizes are quite generally sold under the names given in the table and the screened sizes are average, although locally varied somewhat.

SIZES OF DOMESTIC COKE

Name	Size of Screens	
	Passing	Retained on
Egg	2½ in.	1¾ in.
Nut	1¾ in.	1¼ in.
Pea	1 in.	¾ in.
Breeze	¾ in.	½ in.

The chapter also defines for purposes of analysis dry coke, moisture, ash, volatile matter and fixed carbon. Volatile matter is described as that part of coal or coke which on heating is driven off in the form of tars and gases and is determined as the percentage loss in weight, less the percentage of moisture, sustained on heating coke in a covered platinum crucible for 7 minutes at a temperature of 950 deg. C.

Obviously coal should be omitted in the first part of this definition if it is not to be classed in the last part. Certainly all the volatile matter driven off dry coal does not consist of tars and gases unless steam is regarded as a gas, which indeed it is, but it would seem that the words were put in purposely to exclude steam, for if it does not exclude it these words are entirely useless. The definition is faulty and misleading.

Dry coke is defined as coke which has been dried to constant weight at temperatures not less than 104 deg. C. nor more than 200 deg. C. in the case of lump coal and between 104 deg. C. and 110 deg. C. in the case of 60-mesh coke. This also is not as specific as it with advantage might be made. Why leave a range as great as that between 104 and 200 deg. C.?

Additions, Removals and Changes in List of Permissible Explosives

BY S. P. HOWELL*

A COMPLETE list of permissible explosives tested prior to March 15, 1922, was published in Bureau of Mines Technical Paper 307, entitled "Permissible Mining Equipment, Apparatus and Explosives, Approved Prior to March 15, 1922," by S. P. Howell, L. C. Ilsley, D. J. Parker and A. C. Fieldner. Since that date up to and including Sept. 30, 1922, the following additions, removals and changes have been made:

ADDITIONS TO LIST OF PERMISSIBLE EXPLOSIVES FROM MARCH 15 TO SEPT. 30, 1922

Brand	Weight of 1¼ x 8 in. cartridge, Grams	Smallest permissible diameter, Inches	Unit Deflective Charge, Grams	Rate of Detonation in 14-in. Diameter Cartridge When Fired With a Detonator, Preferably Electric of Not Less Efficiency Than No. 6, Ft per Second	Manufacturer
Apache Coal Powder A	137	1¼	222	11,710	Apache Powder Co., Benson, Ariz.
Apache Coal Powder B	158	1¼	241	8,210	Apache Powder Co., Benson, Ariz.
Black Diamond No. 7	172	¾	222	10,780	Ill. Powder Manufacturing Co., St. Louis, Mo.
Dunbel L. F.	147	¾	225	12,440	E. I. duPont de-Nemours & Co., Wil., Del.
Grasselli 2 L.F.	142	¾	221	10,870	Grasselli Powder Co. Cleveland, O.
Grasselli 5 L.F.	156	¾	223	7,680	Grasselli Powder Co. Cleveland, O.
Grasselli 6 L.F.	162	¾	218	9,210	Grasselli Powder Co. Cleveland, O.
Monobel No. 1 L.F.	176	¾	231	12,860	E. I. duPont de-Nemours & Co., Wil., Del.
Monobel No. 2 L.F.[3]	175	¾	252	10,760	E. I. duPont de-Nemours & Co., Wil., Del.
Monobel No. 4 L.F.	175	¾	252	10,760	E. I. duPont de-Nemours & Co., Wil., Del.
Monobel No. 5 L.F.	170	¾	249	6,400	E. I. duPont de-Nemours & Co., Wil., Del.
Monobel No. 6 L.F.	176	¾	220	13,630	E. I. duPont de-Nemours & Co., Wil., Del.
Monobel No. 9	137	¾	222	7,310	E. I. duPont de-Nemours & Co., Wil., Del.
Union D L.F.[1]	163	¾	223	11,100	Union Explosives Co. Clarksburg, W. Va.
Union E L.F.[2]	163	¾	233	10,220	Union Explosives Co. Clarksburg, W. Va.

[1] Same as Pa. Coal Powder B L.F. [2] Same as Pa. Coal Powder C L.F. [3] Same as Monobel No. 4 L.F.

In addition to the foregoing additions, the following changes have been made: Aetna coal powder A changed to Hercules coal powder A; Aetna coal powder AA to Hercules coal powder AA; Aetna coal powder B to Hercules coal powder B; Aetna coal powder C to Hercules coal powder C; Aetna coal powder 2 to Hercules coal powder 2; the smallest permissible diameter of Black Diamond No. 7 has been changed to ¾ in.; of Bituminite 5 to 1 in.; Grasselli Nos. 1, 5 and 6 all changed to ¾ in.

The following explosives have been withdrawn from the list of permissibles: Bituminite 8 L.F., Coal Special 1-A, Collier 6, Franklinite 1, Nitro low-flame Nos. 1 and 2, Big Red No. 6, L.F., DuPont permissible No. 1, Mine-ite A, Tunnelite No. 4, and Tunnelite No. 8.

*Explosives engineer, Bureau of Mines.



Problems of Operating Men

Edited by James T. Beard



Inspiring Self-Confidence in Miners by Example

All Have Much to Learn From Others—Gaining the Confidence of Men Is the First Essential Quality of a Good Foreman—Confidence Insures Trust and Obedience

EXAMPLE goes farther than precept. Nothing will inspire confidence in men for their boss quicker than the show of a like confidence on his part in them. Every man has much to learn from his fellows; and men are quick observers of the feelings of their boss toward them, and not slow to follow his example.

This was the thought that I attempted to express in my letter, a few weeks ago (*Coal Age*, Aug. 24, p. 290), in regard to gaining the confidence of men, which I see, from the letter of John Rose, page 636 of the last issue of *Coal Age*, was not fully understood.

It has always been a pleasure to read the letters of Mr. Rose, as I know that men of his stamp have been longer in the mining game than myself. I am a comparatively young man, having been mining coal about eleven years; but I am in the game for all it is worth and am always ready to gain new ideas from the many writers of experience in *Coal Age*.

In his excellent letter, Mr. Rose's main thought seems to be to inspire men to have confidence in themselves. I am sorry that he should have misread my letter enough to think that I had any other thought than that of inspiring men to act intelligently, by giving them safe instructions.

Confidence in a Foreman Inspires Obedience to His Orders

The first essential of a good foreman is to gain the confidence of his men. Until he has done that, his instructions to them, regarding safe practices and economical methods, will fall on deaf ears. On the other hand, men will listen and give heed to what a man says in whom they have confidence. That was my idea in writing that first letter.

The instance I then cited was that of overhearing the conversation of two miners, in the room adjoining my own. Miner No. 1 was telling Miner No. 2 that he (No. 2) was doing unnecessary work in setting some timbers back along the road in his place. The reply was, "Well, George, my boss told me to set them while I had time between cars. He said it would make my place safer and the work easier for drawing back the pillars, and he knows."

Here was a man who had confidence in his boss; and that confidence enabled him to profit by the instructions given him by an experienced foreman who foresaw that the setting of a few timbers, in the miner's spare time, would greatly assist the work of drawing back the pillars, later, when that had to be done.

Miner and Foreman Disagree

While I am writing, let me give an another instance when there was not the same confidence on the part of the miner in his boss. The illustration will also serve to show the danger that may result from an indifferent attitude on the part of a foreman who is willing to compromise his instructions, owing to objections offered by the miner.

Awhile ago, I chanced to be in a man's place when the assistant foreman came in. Observing a loose piece of slate that had no timber to support it, the assistant foreman said to the miner, "John, put up a post here and do it now." The reply was, "I can't stand a post there, as it will not give me room to work." "Well," said the foreman, "take the slate down then."

The miner then explained that taking down the slate would mean the taking out of other timbers on which it rested and would require much extra work. The result was that the assistant foreman compromised what he knew to be a dangerous proposition and told the miner to stand a temporary post there, until he could get away from the place.

Compromising Evident Danger Unsafe Plan to Adopt

This satisfied the miner since, as he said after the assistant had gone, he could stick up anything there for the time being and it would be all right with the boss. To my mind, this assistant foreman made a great mistake when he told the man to set a timber temporarily. He should have realized that the only safe plan to pursue was to take the loose piece down and avoid a probably fatal accident. My plan is, never defer dangerous work, but give it immediate attention.

What a foreman needs to impress on the minds of his men is to always do things in the right way. A foreman must show his men, the first time, and watch them, afterwards, to see that they understand how to do it themselves. Then, tell him it is good; but show him where he can improve by making some changes another time.

Encouragement goes a great ways in instructing men. Encouraging words show a foreman's confidence in the man's ability to perform work in the right way; and confidence, on the part of the foreman, is the first step in gaining the confidence of his men and securing their co-operation in making their work safe.

By teaching men to guard against present dangers, which are clearly seen and realized, they learn to accept and obey instructions that are designed to avert dangers, which may arise in the future. Future dangers are not so clearly discerned by the miner of less experience. Only in this way can we expect to establish self-confidence in men, by training them to foresee danger and play safe. In closing, let me thank Mr. Rose for his good letter, every sentiment of which I fully endorse.

G. W. Braeden,
Thorpe, W. Va. U. S. Coal & Coke Co.

Gathering Cars With Reel Cable

Practical difficulties encountered in the use of long cables in gathering cars —Expense of frequent renewals of worn cables—Danger of sparking by cable coming in contact with rails

THE inquiry that appeared in Coal *Age*, Oct. 12, p. 594, regarding the use of single and double cables for gathering cars at the working face, recalls to my mind experiences in the use of reel cables for gathering cars.

In common with others, we had long followed the practice of running out the cable, often to its full length, to enable the locomotive to reach the cars standing at the face of headings and rooms. It was some time before we learned by experience the difficulties and dangers attending the use of long cables for that purpose.

In the first place, there was considerable delay in unreeling and reeling the cables; but that was not the only and by no means the least objection to the continued use of long cables. The constant wear and tear shortened the life of the cable and required frequent renewals, which made the practice very expensive.

Of still greater importance, however, was the danger due to the sparking of the wire, which invariably occurred when hooking the cable to the trolley line. Again, it was impossible to avoid the cable's coming in contact with the rails as it stretched along the track. This was another cause of much sparking at points where the insulation had

[illegible] all so that the wire was exposed.

At one of our mines, we were using a rail for a distance of between three and four hundred feet, to pull cars out of those places that were running to the dip. Here it became necessary to change the rails every six weeks and the danger of fireworks kept these places lighted up continuously.

One suggestion finally taught us that, having one wire a rail, while all right on a straight road, is expensive and dangerous where the roads are crooked and the grades not uniform. We concluded that it was safer practice to keep the trolley wire within 50 ft. of the working face, and the result has been a saving of both time and repairs.

In the instance mentioned where the two places were running to the dip, a little room-hoist was installed, and, using a one-half inch steel rope, the cars were pulled out of those places easily and quickly. By this means, a trip was gathered in the same time that the locomotive was hauling a previous trip to the foot of the shaft; and there was no more trouble with the sparking of wires.

Before closing, let me mention one point that may be of interest to many readers. In order to avoid the frequent splicing of the trolley wire, we have adopted the scheme of not cutting the wire at the dead end. Instead, we have found no difficulty in carrying along a spool of wire holding, say 1,000 ft. The spool was hinged in a convenient place and moved along as often as it was desired to make an extension of the main trolley.

Notwithstanding the fact that the mining law, in some states, limits the distance of the dead-end of a trolley line from the working face, it is my belief that there is more danger in the use of long cables, than would result from a closer approach of the trolley wire to the working face. In other words, such a remedy is worse than the disease.

Pittsburg, Pa. RICHARD HOWDEN.

Why Accidents in American Mines Do Not Decrease

On every hand is evidence of efforts made to promote safety—Chief topic of research among mine officials and at miners' meetings—Comparing English and American mine fatalities

THAT this is a good age for safety-first movements in every branch of industry, is apparent whichever way we turn. On every hand we find evidences of the many efforts that are continually being put forth to promote safety. I notice that the more expensive of mine's vehicles, in *Coal Age*, do not pass by this subject of safety, always bringing a host of letters in reply.

The value of any public worker, today, finds numerous printed notices giving the warning of dangers to be avoided. The same is true when we enter a large mine. The solid bulletin boards display pictures showing both how acci-

dents may happen and how they can be avoided.

It would seem that if these numerous warnings and signs of danger were given the slightest heed by workmen, accidents would be almost impossible and soon become an unheard of occurrence. Among mining officials, the avoidance of accidents in and around mines is almost sure to form the chief topic of conversation when they meet; and safety methods and appliances are the principal subjects discussed at their regular weekly and monthly meetings.

Again, our compensation-insurance inspectors continually remind us of what must be done, or what dangerous practices must cease, if the mine rating is not to be increased. Many of the items in the inspector's Book of Standards, by which the mine rating is determined, appear so insignificant as to hardly attract the notice of the average mining man.

With all these safeguards and daily reminders, however, we may well ask ourselves the question: Is our accident list growing any less? To be honest with ourselves, we must admit that the results are not in keeping with all the efforts put forth in the interest of safety.

Fatality Rate in the United States Greater Than in England

Many comparisons between English and American mines have been made in *Coal Age*, from time to time. These comparisons are fair and just, as the mining laws of the two countries are very similar. Owing to the generally deeper mines of England increasing the dangers of mining the coal, such comparisons should be more favorable to the mines of this country.

Notwithstanding the fact, however, that general conditions favor American mining, what do we find? In the last report giving the fatalities in American mines, I see the number of men killed is between three and four, for every thousand men employed. For the same period in England, the report gives less than one fatal accident, per thousand men employed.

There must be a reason for this great difference in mining fatalities between the two countries. In my opinion, it is to be found in the fact that English laws are *made to be kept*, while in this country violators of the law too often go unpunished. By some hook or crook the guilty person, here, expects to escape the prescribed penalty for his act.

Violations of Mines Regulation Act Quickly Punished

To illustrate this truth, permit me to cite two instances of violations of the laws, there and here. On a certain occasion, in a mine in England, an overman, inspecting some loaded cars on the shaft bottom, found a lump of coal having a drill-hole partly filled with coal slack that had been used in tamping the hole.

The shot had evidently been tamped in direct violation of the Coal Mines Regulation Act, that requires the use of clay for that purpose. Taking the lump of coal from the car and laying it aside, the overman went into the mine for the man and, facing him with the evidence of his guilt, had him arrested at once.

The man expected no leniency and was, in no way, disappointed when he received the full penalty for his act, under the law, both the overman and the manager appearing as his prosecutors. Compare this summary punishment of a violator of the mine law in England, with the result of a similar violation of the law in this country.

Mine Officials Plead Leniency for Men Who Violated Code

Not long ago, at a certain mine where I am acquainted, several men were found to have matches in their possession when at work in a gaseous section where safety lamps were in use. Besides the matches the searchers found pipes and tobacco on the men. Carrying these articles into a mine generating gas violated the code and information was conveyed to the state mine inspector, who had the men arrested.

When given a hearing, however, the mine superintendent appeared in court and pleaded with the judge for the exercise of clemency toward the men, claiming it was their first (?) offense. The result was that the men were let off with a simple warning by the court and no fine or other punishment was imposed on them. The plea of the superintendent was a mistaken kindness and the action of the court does not speak well for American justice.

Classifying Coal Mines

There is another difference between English and American practice regarding mines generating gas. In England, mines are not classified as "gaseous" and "non-gaseous." A clause in the Mines Regulation Act reads somewhat as follows: "All places where men shall work or pass, shall be examined by a competent person." It does not matter whether two men, or ten men, or fifty, are working in the mine; nor whether they are in ten yards, or a mile, the law requires the examination of the working places by a competent person.

In this country, our laws lay far too much stress on classifying a mine as "gaseous" or "non-gaseous." The finding of a little gas in a place may be sufficient to cause the mine to be classed as a "gassy mine," and, as a result, its management must shoulder the expense of employing shotfirers, firebosses and first-grade certified men as mine officials.

It can be readily seen that, under this phase of the law, an unjust difference may be established between two mines, in the same field and operating practically under like conditions, except that a small quantity of gas found in a place necessitated this arbitrary classification, under the law.

It must not be thought that I would do away with our firebosses and shotfirers. That is not the case. My point is that the gas danger is over-esti-

mated in our laws, in thus classifying mines. Statistics show that more than 50 per cent of our mine accidents result from falling roof and coal, while one-tenth of this percentage of accidents are due to gas. Let us, then, seek a more equable basis that will work no unnecessary burden on any mine; but let every mine be examined for the dangers that are present.

Indiana, Pa. THOMAS HOGARTH.

Why Install a Booster Fan

Need of installing a booster fan shows bad mine management — Practical means of increasing the circulation in a mine—No place for a ventilator underground.

IT was with much surprise that I read the inquiry of a mine manager in Wyoming, who was contemplating the installation of a booster fan in his mine and wished to know the most advantageous point for its location. From the proposition presented, it seems evident that the intention was to install the booster as a unit in the ventilating system of the mine.

In addition to what has already been said in the reply to this inquiry, I may be permitted to add a few words endorsing the position taken by the editor. In my opinion, the installation of a booster fan within the workings of a mine is a bad mistake. Indeed, the need of making such a move is a sign of poor mine management on the part of the officials in charge.

NO INCREASE IN THE CIRCULATION

Observation and experience show that a booster fan, installed in a mine, does not increase the quantity of air in circulation. As has often been explained in the columns of *Coal Age*, the only effect of a booster is to rush the air past leaky stoppings and doors; and this can only be recommended as a temporary means of improving the circulation at the working face, in a section of the mine about to be abandoned.

No practical mining man will ever prescribe the installation of a booster fan as a unit in mine ventilation. There are other means of improving the circulation at the working faces that are safer, more efficient and in line with good management.

In the first place, clean up all airways and remove every obstruction to the free passage of the air current throughout the mine. Wherever practical, straighten the course of the air and avoid sharp bends in the airways. Repair all leaky stoppings and doors, and enlarge breakthroughs where the area is less than that of the airway.

At times, it may even become necessary to sink an air shaft at some point nearer the working faces, which will greatly shorten the distance the air must travel; and a larger quantity of air will then be circulated with less power. Frequently, in the development of a mine, this is the only practical remedy to improve the circulation.

To my way of thinking, in nine cases out of ten, the installation of a booster fan, at some point near the working face, is merely a bluff on the part of the company to make the miners think that everything possible is being done to give them good air. In other words, the miner is hoodwinked and the management avoids, for a time, the making of the necessary repairs of poor stoppings and doors.

In a few words, let me say that the situation should seldom arise that will warrant the installation of a booster fan in a mine. The mine manager should have the practical experience and skill, in the development of the mine, that such a condition will be avoided where it will become necessary to resort to the use of a booster fan.

Let it be understood, once and for all, that an underground location of any essential factor in creating the air current in a mine is not to be considered. All such means must be placed on the surface where they are accessible in any emergency that may arise.

Wilder, Tenn. OSCAR H. JONES.

Inquiries Of General Interest

Making Blueprint Paper and Blueprinting

Formula for Sensitizing Paper—Action of Sunlight to Change Chemical Salts—Washing Out Unchanged Salts Develops Print — Coloring Prints

WILL you kindly explain, through the columns of *Coal Age*, the process of making blueprint paper and give me any information needed regarding the coloring of blueprints to show distinctive features?

Saskatchewan, Canada. MINING ENGINEER.

In the making of blueprint paper, a good quality of rag paper should be selected, as this gives whiter lines, in the blueprinting, than paper made of wood pulp and is more readily handled in the process of sensitizing. Cloth specially prepared, or paper backed with cloth, is often used when the blueprints are required to withstand much handling.

The sensitizing of the paper must be accomplished in a dark room or, at least, where the light is greatly subdued. Two solutions are first prepared as follows: Solution 1 consists of one part by weight of ammonia-citrate of iron, dissolved in five parts of water. Solution 2 is made by dissolving one part by weight of potassium ferricyanide, commonly called red prussiate of potash, in five parts of water. These solutions must be kept separate in stoppered bottles until they are required for use.

In sensitizing, the paper is laid flat on a table. The two solutions are then mixed in equal parts, in the dark room where the work is performed, and the resulting mixture applied to the paper as uniformly as possible, using for that purpose a soft sponge and working quickly to avoid unequal warping of the paper. After applying the sensitizing solution, the paper is hung up to dry, in the dark room, and when thoroughly dry is stored in a dry dark place until wanted for use.

It is difficult to say just what reaction takes place under the influence of light, either sunlight or electric light, whereby the iron salt is rendered insoluble, forming the deep blue background when the print is washed following the exposure of the sensitized paper under the linen tracing to be copied. The action is complex, the previously soluble iron salt being probably reduced and forming an insoluble prussiate, which the presence of the citric acid can no longer prevent. Before the reduction of the iron to the lower oxide, the citric acid in the mixture prevents the precipitation of the iron by the ammonia; and this is the condition where the light has not penetrated and changed the salt beneath the dark lines of the tracing.

The time of the exposure of the sensitized paper beneath the tracing to be copied will depend on both the strength of the light and the age of the paper. In strong sunlight, not more than 3 or 4 min. is required when the paper is fresh. Fresh sensitized paper has a light pea green color. In time, however, this color changes gradually to a darker shade of green and finally to blue when the paper is old and no longer of any use. Also, the fresher the paper, the whiter will be the lines on the print after washing.

No time should be permitted to elapse between the exposure to the light and the washing process. It is a good plan to so submerge the paper as to cause the water to flow rapidly over its entire surface. Better results are generally obtained when the water is kept slightly agitated over the surface of the paper, by moving the fingers forward and backward through the water for a short time during the first moments of immersion. By this means, the dissolving action of the water is made more uniform.

It will sometimes happen that a print has been overexposed and, as a result, many of the finer lines appear to be almost obliterated. In that case, it is

possible to restore them, largely or completely, by pouring over the print a weak solution of the red prussiate of potash.

Print paper should always be used in washing the prints and the process must be continued long enough to completely remove the soluble salt and show every detail of the drawing in white lines on a dark blue background. The paper should then be removed from the tank and hung up where it will dry uniformly.

A blueprint always shrinks to some extent, depending on the quality of the paper. For this reason, it is customary to draw a scale on the original tracing. In reproduction on the blueprint will serve as a reference, where dimensions have not been indicated and must be scaled on a blueprint when in use out of the office.

It would seem unnecessary to add that the exposure of the sensitized paper to the light is made in a frame specially designed for that purpose. The paper is laid beneath the linen tracing to be copied and both are placed under the glass of the frame. It is important to lay the paper and tracing on some soft material that will keep them evenly pressed against the glass, in order to obtain a good impression of all the lines of the drawing, particularly the fine dimension lines.

Sometimes, instead of section lining, or other distinctive markings on the original tracing, coloring matter is used to symbolize what is wanted; or the same coloring may be made on the blueprint only. This can be done with a brush or by colored crayons, as desired. When the coloring is done on the original tracing, the blueprint will show a lighter tint than the background. The tinting on the original tracing with a brush must be carefully done, using a very dilute solution of the desired water color and applying it uniformly and quickly to avoid warping.

Examination Questions Answered

Mine Managers' Examination, Nova Scotia, 1922

(Selected Questions)

QUESTION—*What is the smallest percentage of gas that, in your opinion, can be detected by means of an ordinary safety lamp?*

ANSWER—The ability to detect small percentages of gas will depend largely upon the observer and the kind of lamp employed. In the use of a common Davy lamp, few firebosses are able to detect less than 2 or 2½ per cent of gas. On the other hand, a good fireboss, using a Wolf lamp, will be able to detect as low as 1 per cent of gas present in the air.

QUESTION—*What are the gases usually given off by a gob fire? Describe their properties.*

ANSWER—The gases given off by a gob fire will depend on the supply of air to the fire. In a plentiful supply of air carbon dioxide is produced, the combustion being then complete. More often, however, there is lack of air sufficient to produce complete combustion, in a gob fire; and the result is that carbon monoxide gas is produced, with some carbon dioxide.

Carbon dioxide is an extinctive gas, containing no available oxygen. The gas is not combustible and will not support life. When air is breathed containing carbon dioxide the effect is to produce headache, pains in the back and limbs, nausea and suffocation if the percentage of gas is sufficient.

Carbon monoxide is a poisonous gas, small percentages of this gas present in the air breathed, may produce instant death. The gas is combustible, burning with a pale blue nonluminous flame.

QUESTION—*How many horsepower will be required to raise 4,000 cu.ft. of water, per hour, from a mine 1,080 ft. deep?*

ANSWER—Taking the weight of water as 62.5 lb. per cu.ft., and assuming a water-end efficiency of the pump as 75 per cent, the power required, in this case, is

$$H = \frac{4{,}000 \times 62.5 \times 1{,}080}{0.75 \times 33{,}000} = 181.8 \text{ hp.}$$

QUESTION—*How much work is done in raising 300 tons of coal up an incline 2,700 ft. long and rising 1 ft. in 3, adding 40 per cent to the load, for the friction?*

ANSWER—Taking the rise as 1 ft. of vertical, in 3 ft. of inclined measurement, the total rise of this plane is 2,700 ÷ 3 = 900 ft. Then, adding 40 per cent to the load, to allow for friction, the total effective load is 300 × 1.40 = 420 tons. Therefore, the work performed in making this hoist is 420 × 2,000 × 900 = 756,000,000 *ft.-lb.*

QUESTION—(a) *How is the electric current generated before it is transmitted? (b) How is the transmitted electric power utilized?*

ANSWER—(a) A dynamo, operated by a steam engine or other source of power, is used to generate an electric current. The dynamo is then called a "generator."

(b) The transmitted electric current is made to pass through the coils of another dynamo, and the reaction that takes place, between the armatures and the commutator, causes the latter to revolve. In this case, the dynamo is called a "motor." The principle of action in a motor is exactly the reverse of that in a generator. While a generator converts mechanical power into electrical energy, a motor converts electrical energy into mechanical power.

QUESTION—(a) *How is electrical energy transmitted in a mine? (b) What three things should be carefully proportioned for the safe transmission of electrical energy?*

ANSWER—(a) Electrical energy is transmitted, from the generators to points in a mine where it is to be used, by means of a copper wire called a conductor.

(b) In transmitting electrical power, the size of the conducting wire, or amount of copper used, must be proportioned to the strength of the current, or amperage required, and the distance from the generator to where the power is applied. Using a larger wire, or more copper, the same current can be transmitted at a lower pressure, or voltage.

QUESTION—*Do you consider electricity, as a motive or lighting power, dangerous in mines producing explosive gases?*

ANSWER—Yes. In mines producing any considerable quantity of explosive gas, electrical installations should not be considered, as the presence of live wires makes possible the accidental ignition of gas and is a menace to safety.

QUESTION—*How would you proceed to remove a man in contact with a live wire?*

ANSWER—Of course, if a switch is close at hand shut off the current at once. Otherwise, make no delay; but, standing on a dry board or dry ground, drag the man from the wire by seizing his clothing if dry. If a pole is at hand it may be possible to push the man off from the wire. It is sometimes possible to seize an ax and cut the wire by one quick blow on the side of the victim toward the power. Again, an iron bar or drill may be thrown across the wire, on the side toward the power, for the purpose of short-circuiting some of the current.

QUESTION—*What are the most common dangers that come from the use of electricity in mines; and what methods would you employ to prevent accidents?*

ANSWER—When an electric installation is not properly made there is danger of men and animals coming in contact with unprotected wires; or fire may occur by the ignition of gas, or combustible material, owing to the sparking of live wires, blowing out of fuses, etc. To prevent accidents of this nature, all electrical installations should be made by competent electricians thoroughly familiar with mining conditions. Protect all wires where men or animals may come in contact with the wire.

"Competitive-Field" Wage-Making Plan Likely to Be Revived at Second Miner-Operator Conference

Some form of the old Central Competitive Field plan of wage making for the coal-mining industry of this country is likely to be re-established this winter. A fairly well-defined trend in that direction was the nearest approach to concrete accomplishment at the joint conference of operators and miners from fifteen districts held in Chicago last week. The conference, whose first futile day was reported in these columns last week, spent four days at the job of trying to design new wage-making machinery for the future. Then it adjourned to reconvene Dec. 6 in Chicago. For four days the miners sat back smugly confident, waiting for the operators to agree upon something. For four days the operators wrangled among themselves, arguing everything from the sublime to the ridiculous, the men from the "outlying districts" fighting for a direct voice in future wage negotiations and the men from the four states of the old Central Competitive Field—western Pennsylvania, Ohio, Indiana and Illinois—resisting, though divided in their own ranks. They reached no final agreement on any plan. But on the evening of the fourth day—Friday, Nov. 17—when it was evident that nothing better could be done, the conference adjourned until Dec. 6.

In the meantime the operators are discussing in their home regions a scheme of re-establishing some sort of "central competitive field" whose mine owners would discuss policy with men from the outlying districts and then send their own scale committee in to make an agreement with the union miners as of yore. It is by no means certain what regions would comprise this central field. Neither is it determined what groupings of "outlying districts" would be made. Various ideas along these lines are to be brought back to Chicago on Dec. 4, when the operators' half of the joint committee is expected to convene two days ahead of the main conference. Illinois operators, divided at least two ways on the question of entrance into a "central competitive field," will meet in Chicago, Friday, Nov. 24, in an effort to solidify the position of that state.

Thus the first session of the joint miner-operator conference on ways and means for future wage negotiations failed to set up machinery or even to design any; but it did do two other things. It gave the operators a chance to clear a good deal of argumentative ground and it gave enough promise of working out a plan in December so that the miners' union cannot aggravate the 1923 strike scare and thus hold up coal prices this winter by telling the public that the operators refused to do business with them.

Miners Look to Operators to Produce a Plan

From the beginning of the Chicago conference until the end the miners took the position that it was up to the operators to produce a new plan, and that until they did the old four-state method of wage agreement should be considered to be in effect. Both President John L. Lewis and Secretary-Treasurer William Green said the miners were there with open minds, hoping something constructive and acceptable would be conceived. They made it plain that the miners would consider any proposal that gave them some single authority among the operators with which to deal which would be sufficiently representative to fix a basis for the rest of the country.

Among the operators, argument started early on the question of effecting some kind of national basis of agreement. This was the main drive of the "outlying districts." Two definite plans were proposed, one by Harry N. Taylor, of Kansas City, Mo., and one by C. H. Jenkins, of Fairmont, W. Va. These two plans in various forms were debated for three days, their advocates offering many modifications, but all to little purpose.

The original Taylor plan, written by Mr. Taylor and by Commissioner W. L. A. Johnson of the Southwest Interstate Coal Operators' Association, would have created a joint national wage board to negotiate a basic wage scale for the whole country. Variations from this basic rate would be determined for the various districts on account of "economic, competitive or physical conditions." These various district rates would be termed the base rate plus or minus given percentages and would be fixed "under authority of the national conference and by mutual agreement between the miners and operators of the districts."

Courts of appeal to settle disputes and prevent strikes would be created also. A "joint executive board" for the whole country, composed of an equal number of miners and operators plus a non-partisan chairman of highest caliber, whose vote would break any tie, would be the "supreme court." Smaller joint district executive boards would function in each district or group of districts to consider all sorts of disputes which the existing local and district machinery could not settle.

The plan provided that after the "base rate plus or minus" wage scheme had worked at least six months, either miners or operators could appeal to the joint executive board for a readjustment of the base for their district, providing it could be shown "that the base rates existing in the adjacent or surrounding competitive territory have been either advanced or diminished equal to an amount of 10 per cent of such base rates." This was calculated to give union fields participating in the scheme a chance to gain protection against neighboring non-union competition.

National Features of Plan Attacked

The national base-rate feature and the national negotiation features of the plan were attacked at once, mainly by men in the old four-state competitive field. Various features of the appeal plan were criticised and it was apparent the miners thought the scheme smacked too much of arbitration. Mr. Taylor and Mr. Johnson made it plain, however, they were proposing only a general idea and stood ready to consider any modifications or additions that anybody had to suggest. They rewrote sections of the plan several times, in an attempt to modify the national feature and provide something approximating district autonomy. But there seemed no possibility of getting anything like a majority to support it.

Mr. Jenkins and the men of northern West Virginia pushed hard for their plan, which also was presented, they said, only as a general idea which could be molded to various forms. This plan in its original form would have set up a national labor organization of union operators to determine labor policy only and not to negotiate wage scales. This organization would fix in general terms the operators' policies with regard to the proportion of wage increases or decreases within all districts, changes in hours, minimum cases for district differentials, improved methods of mining, labor and production, and questions involving labor supply. It would supervise and enforce a new system of district zones, provide a channel of communication with governmental departments and the general public on labor matters, establish and maintain a general bureau of industrial relations to provide statistics and other data for negotiations and to disseminate information throughout the industry, and to set up both district and national appeal boards to settle disputes.

In further detail the West Virginia plan has more or less parallel to that from the Southwestern Interstate field. It called for a joint wage council of operators and miners to determine a base wage for the country, hours of labor and the duration of each periodic wage agreement. The operators' members on this council would be selected by a vote on a tonnage basis. Joint scale committees for each district would work out district differentials and working conditions for their districts. A joint national appeal board with a non-partisan chairman and with members chosen by districts would "decide all questions upon which the National Wage Council has been unable to agree."

The West Virginia men thought the country should be redistricted into eight regions, the I. Pennsylvania-

[illegible] Illinois, [illegible] Ohio, [illegible] Indiana; [illegible] (Southeast) Maryland, Virginia, Kentucky, Tennessee and Alabama; [illegible] (Southwest) Missouri, Arkansas, Kansas, Oklahoma, Texas and New Mexico; [illegible] (Northwest) Michigan, North Dakota, Iowa, Colorado, Wyoming, Utah, Montana and Washington.

There was much hesitancy among operators to debate theory that finally all the suggested plans were referred to an operators' committee of six to confer and try to recommend something to the whole conference. On this committee was Phil Penna, as chairman of the conference; H. N. Taggart, C. H. Jenkins, Charles O'Neil, J. H. Pritchard and Tom Miller. This committee failed to agree and made only partial reports back to the conference. On Wednesday afternoon, after the operators in long separate sessions continued to make no progress, a joint committee of twelve was created by adding six miners to the original operators' six. The miners were: William Green, John Brophy, Frank Farrington, Arch Helm, Lee Hall and Frank Mooney.

This committee reported Thursday morning that it could agree upon nothing. Then, in the main conference, all sorts of plans were offered without success. A motion to merely set up a joint scale committee to try to negotiate the next wage agreement on a national basis got just six votes. A motion to restore the old four-state plan was beaten. A plan to divide the whole country into three districts, each to work out its own salvation independently, was squelched. The three districts would have been an eastern one composed of Ohio, Pennsylvania, West Virginia and Virginia, a central one with Illinois and Indiana as the principal members, and a western one to include everything west of Illinois.

John Lewis said he proposed in general terms a national scheme, a four-state scheme and a middle-ground which would have set up an enlarged "central competitive field" to act for the operators in wage negotiations. None of these aroused any enthusiasm.

Finally on Friday, the fourth day of the meeting, it appeared that some form of a competitive field was the only one on which any number of operators could unite. The central districts demanded that they at least have a voice in determining the policy which the proposed central group should follow in wage negotiations. Since this had possibilities, another operators' committee was named to work out something tangible. On this committee were Michael Gallagher, of Ohio; Rice Miller, of Illinois; Ira Clemens, of Kansas; Jesse Needham, representing Wyoming; Hugh Shields, of Indiana; John A. Donaldson, of western Pennsylvania, and B. M. Clark, of central Pennsylvania.

This group could produce nothing that would get an immediate majority, so, on motion of W. K. Kavanaugh, of Illinois, the conference adjourned to Dec. 6, with an operators' preliminary session beginning Dec. 4. The operators are supposed to return with new ideas for the grouping of districts and for the possible representation of all districts on some advisory council to function with but not to dominate a wage-making group resembling if not duplicating the Central Competitive Field.

The final statement to the public which John L. Lewis and Phil Penna issued said "some substantial progress had been made and there are reasonable grounds for belief that a definite program can be agreed upon."

The delegates to the joint conference, two operators and two miners from each union district, are as follows, with the two operators named first under each district number: District 2, Charles O'Neill, B. M. Clark, John Brophy, Richard Gilbert; District 5, John Donaldson, Jesse Sanford, P. T. Fagan, William Hargest; District 6, Michael Gallagher, J. H. Pritchard, Lee Hall, G. W. Savage; District 10, C. C. Anderson, J. H. Wallace, Martin T. Fitzsik, W. C. Thompson; District 11, Hugh Shields, M. L. Gould, John Hessler, William Mills; District 12, W. K. Kavanaugh, Rice Miller, Frank Farrington, Harry Fishwick; District 13, George Hogan, E. C. Smith, J. H. Morris, John Orr; District 14, W. L. A. Johnson, Ira Clemens, G. L. Peck, Van A. Bittner; District 17, [illegible] H. Jenkins, Joseph Pennycuick, W. M. Petry, Fred Mooney; District 21, J. R. Wilson (absent), W. M. Williams, J. L. Britton, Mike Brubaker; District 22, H. C. Marchant, Herbert Addison, Myrtle Cahill, James Morgan; District 23, C. W. Taylor, F. D. Rash, Lonnie Jackson, Wm. Adam; District 24, Warner Pippin, R. M. Randall, George B. Tookey, John Murray; District 25, F. W. Lakens, H. N. Taylor, Arch Helm, James Cooley; District 27, F. W. C. White, James Needham, Nathan Smethurst, Stephen Ely. Ex-officio operator members were Phil H. Penna, A. G. Edwards and J. M. Roan and miners were John L. Lewis, William Green and Philip Murray. Mr. Penna is permanent chairman of the conference, and Mr. Green and Mr. Edwards secretaries. Mr. Roan is sergeant at Arms.

Navy Department Opens Bids for Coal

Bids to supply coal needs of the Navy Department for the remainder of the fiscal year ended June 30, 1923, were opened on Nov. 14. The proposals were divided into two sections, one providing for delivery from November to the end of the period and the other for shipments during November and December only.

Among the larger bids were the following:

Twenty-eight thousand tons for delivery from November, 1922, to June 30, 1923, in 600-ton barges alongside coal plant at the Navy Yard, Brooklyn, N. Y.: Emmons Coal Mining Co., Philadelphia, $7.05; H. B. W. Haff, New York City, $8.68; Iron Trade Products Co., $6.75, alternate bids $7.13 and $6.74.

Forty-two thousand one hundred tons divided into (1A) 32,100 tons for delivery f.o.b. Philadelphia Navy Yard in hopper-bottom cars and (2A) 10,000 tons f.o.b. barges at Philadelphia coal piers, from November, 1922, to June 30, 1923; Emmons Coal Mining Co. (1A) $6.73; (2A) $6.48; Iron Trade Products Co., (1A) $6.55, (2A) $5.99, alternate bids $6.37; Morrisdale Coal Co., Philadelphia, Pa. (2A) $7.63; Quaker City Coal & Coke Co. (2A) $6.51.

Twenty-five thousand tons divided into (1B) 16,000 tons and (2B) 9,000 tons, for delivery as above in November and December, 1922: Iron Trade Products Co., (1B) $6.55, (2B) $5.99, alternate bids $6.37 and $5.88; Morrisdale Coal Co., (2B) $7.63; Quaker City Coal & Coke Co., (2B) $6.51; Dexter & Carpenter, (2B) $7.82.

Twenty-four thousand tons for delivery November, 1922, to June 30, 1923, f.o.b. dump-bottom cars on tracks in the Navy Yard, Washington: Davis Coal & Coke Co., $7.29; Iron Trade Products Co., $6.55; L. H. Snead & Co., Inc., Washington, $7.35; C. T. Blake Co., Cincinnati, $9.02.

Ten thousand five hundred tons for delivery January to June 30, 1923, f.o.b. hopper-bottom cars, White Plains, Md.: Davis Coal & Coke Co., $7.72; Emmons Coal Mining Co., $7.26; Fidelity Coal Mining Co., $1.30; Iron Trade Products Co., $7.12; Quaker City Coal & Coke Co., $7.49.

Twenty-eight thousand eight hundred tons for delivery November, 1922, to June 30, 1923, (1A) f.o.b. 300-ton barges alongside sea wall, and (2A) f.o.b. hopper-bottom cars, Naval Academy, Annapolis, Md.: Davis Coal & Coke Co., (1A) $7.44; (2A) $7.29; Iron Trade Products Co., (1A) $7.08; (2A) $6.93.

Ten thousand tons for delivery in November and December, 1922, as above: Davis Coal & Coke Co., (1A) $7.73; (2B) $7.58; Iron Trade Products Co., (1A) $7.08; (2A) $6.93.

The government states that awards will be made on the items for delivery either from November, 1922, to June 30, 1923, or for the short time period named—either November and December, or December—but not for both.

State Executives in South Discuss Means To Avert Coal Crisis

In connection with the fuel shortage the governors of Louisiana, Mississippi, Tennessee, Florida, Alabama and Georgia discussed means to remedy the coal crisis in these states at a conference Nov. 15 at Montgomery, Ala.

Federal action to prevent a coal famine in the South has been taken by the Fuel Administration in Washington, according to a telegram made public by the Atlanta (Ga.) Chamber of Commerce from the National Fuel Board. Immediate relief from the coal shortage in Georgia and other Southeastern states was the end sought by the Fuel Administration in issuing instructions Nov. 13 to railroads of the country to supply the Louisville & Nashville R.R. with 1,000 cars with which to handle coal shipments to this section within the following ten days.

Ask President Harding to Call Conference Of Somerset County Miners and Operators

Washington, D. C., Nov. 20.—A delegation of striking miners from Somerset County, Pennsylvania, headed by J. J. Kentner, of Lock Haven, who is serving them as general counsel, called at the White House today to request the President to call a conference between operators and miners in Somerset County. At the White House a printed statement was distributed setting forth some of the points of the miners' contention.

Anthracite Operators Submit Suggestions to Commission, Pledging Co-operation in Collection of Data

The general committee of anthracite operators submitted its suggestions to the President's coal commission on Nov. 18. The text of the document follows:

This is a preliminary reply to your communication of Oct. 26. We have under consideration detailed replies on a number of topics with respect to which the commission desires information. This information will have to be collected, compiled and verified, and it is hoped that instructions as to its character and manner of presentation will issue from the commission. Until the necessary facts have been collected, it is not practicable to make any useful reply to that part of your letter which seeks our "carefully formulated views as to what efficient policy, if any, could or should be adopted by the government relative to the coal industry, having proper regard to the interests of the mine workers, the mine operators and the public."

The Committee of Anthracite Operators will co-operate with the commission to the fullest extent of its ability in securing information that the commission may desire. We suggest that a questionnaire be prepared for submission to each operator. If the commission desires, our committee will collaborate with it in the preparation of this questionnaire. We believe that all information submitted should be verified by the commission of its agents whenever verification is deemed necessary.

With respect to paragraphs (e) and (f) of your letter, which refer to the "acknowledged demoralization" of the coal industry and measures for eliminating elements responsible for this condition, we understand from you that this is not intended to apply to the anthracite industry, where regular employment and a supply of domestic size coal commensurate with, but rarely exceeding, the public's requirements is, and for many years has been, the unvarying condition except when production is suspended by strikes.

Nineteen Topics Answered Seriatim

We now deal seriatim with the list of nineteen topics accompanying your letter:

I. Ownership and titles of the mines—Information on this subject can be obtained by questionnaire in the manner already suggested.

II. Prices of coal—We assume that the inquiry with respect to prices will comprehend ascertainment of the price at the mine and the price paid by the consumer. Mine prices of coal for any period the commission may care to investigate are obtainable from the operators, while the retail price of coal may be ascertained by inquiry in the various localities where it is consumed.

It may be properly mentioned in this connection that the producer of anthracite generally sells his product at the mine. One of the many sources of misunderstanding with respect to anthracite prices is the great difference between the mine price and the consumers' price, the latter including, in addition to the mine price, expense of transportation and the charges of middlemen and retail dealers, over which the operators have no control. Naturally the commission will investigate all of these items.

III. The organizations and persons connected with the coal industry—Data with respect to this subject may be obtained by the suggested questionnaire.

IV. Cost of production—This subject is, of course, one of the most difficult with which the commission will have to deal. Anthracite operations vary widely with respect to cost of production. They differ not only by districts but as to operations in the same district and even in immediately adjoining properties. A great many considerations, geographical, physical and economic, affect the cost of production. Generally speaking, the so-called company operations are upon owned lands, while many of the "individual" producers operate under short leases requiring more rapid amortization of the investment. Some leases require royalties in excess of $1 per ton on the "prepared" or domestic sizes and an extreme case exceeds $2 per ton at the present time. This subject may well receive the consideration of your commission.

Difference in the relative proportions of the "prepared" and "steam" sizes produced (the latter being sold below the cost of production), and the resulting realization on their sales, represent another important factor in the anthracite problem.

These factors are mentioned not as inclusive but as typical of the many considerations that must be taken into account in arriving at conclusions on the cost of production and the prices obtained for anthracite.

V. Profits realized by operators or owners of said mines during the last ten years—In this connection it is suggested that the work of the commission may be facilitated by reference to the information furnished by certain companies to the Federal Trade Commission covering the period from January, 1913 to Dec. 31, 1918, and by the analytical study of costs and profits made by the engineers of the United States Fuel Administration. Supplementary information to bring these data down to date can be obtained by the questionnaire method.

VI. Profits of other persons or corporations having to do with production, distribution or sale of coal. With respect to this subject the operators can be of little assistance to the commission, except in so far as coal-producing companies perform the functions of sale and distribution or have relations with other companies that perform these functions.

VII. Labor costs—All of the producers of anthracite are in a position to supply the commission with the labor costs of producing coal. These costs are kept in such manner as to be obtainable through the questionnaire.

VIII. Wages paid—The wage rates paid in the anthracite industry have for many years been fixed by agreement. The rates of pay, as well as the daily, monthly and yearly earnings of the miners and other mine workers in the anthracite field have been carefully tabulated by the operators and are matters of record, ascertainable by the commission. All supporting data collected by the anthracite companies is open to the commission. In addition, surveys of anthracite wages and earnings have been made by the United States Bureau of Labor Statistics and the National Industrial Conference Board. The results of these surveys are a matter of public record.

IX. Wage contracts—This committee will be pleased to supply your commission with printed copies of all agreements with the anthracite mine workers since 1902, as well as decisions of the Board of Conciliation interpreting these agreements.

X. Irregular production—There is little irregularity of production in the anthracite industry, except such irregularity as may be occasioned by holidays, legal and otherwise, strikes or accidental stoppages. The number of colliery starts is perhaps the best index to the regularity of anthracite production and the figures with regard to operation are available with respect to all companies.

XI and XII. Waste of coal, and suggestions as to the remedy for the same—This subject might be a large one, comprehend the whole problem of the production and utilization of coal and the production and transmission of power. We assume, however, that the commission is interested only in such waste of coal as may be under the control of the producers. We believe that the waste of coal in the mining of anthracite is negligible and not of sufficient moment to warrant investigation. Modern methods developed through engineering and technical skill in screening, reclamation and preparation have reduced waste to some extent that the term "waste" no longer applies, except in rare instances as are occasioned by burdensome legislation, notably the Kunkel and Fowler mine cave acts recently enacted by the Pennsylvania Legislature whereby otherwise available fuel has been rendered unavailable.

XIII. The conditions, generally under which coal is produced—Before making suggestions as to the method of investigating this topic, we should like to have the commission's interpretation of this heading.

XIV. Distribution—With respect to this question there is, we think, the opportunity for an investigation which will develop whether improvements and economies can be effected in the present methods of distribution. The distribution problem is not uniform in different localities and seasons, and the demand for the different sizes of coal varies. The investigation to be useful must be comprehensive.

Operators Promise to Submit Special Memorandum

XV. The causes which from time to time result in labor disputes thereby depriving interstate carriers of their fuel supply and otherwise interrupting the flow of interstate commerce.—At a later date the operators will submit to the commission a special memorandum upon this subject. While the immediate cause of general strikes is obviously a dispute between the employers and the employees as to rates of wages and conditions of employment, there are conditions especially affecting the anthracite industry and differentiating it from the bituminous industry, of which the commission should be fully advised.

In order that the labor problems which induce strikes may be considered on their respective merits, it is absolutely necessary that the anthracite industry be regarded as separate and autonomous, otherwise it will in the future, as it has in the past, become the victim of conditions and disputes with which it is in no way concerned.

XVI. All facts, circumstances, or conditions which would be deemed helpful in determining and establishing a wise and efficient policy by the government relative to said industry.—This subject has not, as yet, had the consideration which would warrant us in submitting our reply to you at this time.

XVII. Standardizing the mines upon the basis of their economic productive capacity and regarding the closing down of mines which by reason of their natural limitations or other conditions fall below the standard.—As pointed out above, there are considerable differences between the costs of production in various anthracite operations. It should be said in this connection, however, that there is rarely in any one year a surplus of domestic anthracite, and that it is necessary not only to retain but to encourage such as at present exist, to encourage production by those operations which are relatively high cost.

XVIII. Ascertaining and standardizing the cost of living for mine workers and the living conditions which must be supplied or afforded in order to surround the workers with reasonable comforts and standardizing wages so far as practicable on account of work a man shall perform for a reasonable unit of time, regarding the value and effect of such surroundings in respect of labor efficiency.—We are unconvinced of the wisdom or practicability of attempting to standardize the cost of living for individual workers or of standardizing the amount of work that will be performed upon such standard rather would economic forces adjust themselves to abilities and requirements. Human beings cannot be standardized.

Neither the wages of mine workers nor of any other group of workers can be considered independently of other wages. At the present time mine workers are receiving a scale of wages far above that paid in other industries, with the result that mine workers in these other industries are paying higher for the necessities of life. Continuance of such a condition cannot fail to have serious results upon the anthracite industry and therefore upon those employed in it.

XIX. Standardizing a basis of accuracy of the anthracite unit of production and distributing the cost accordingly between the different sizes of the commodity recognized in this connection that the standard cost of living in all centers should be the first and controlling item of expense.—[illegible] matters we suggest more definite information from the commission as to its wishes.

Additional suggestions.—We understand that the last question is the investigation of the anthracite industry should receive consideration of the commission between the companies and the mine workers. Quite recognizing and emphasizing that the conditions in the anthracite industry is the regular basis for bituminous industry and not the opposite, [illegible] The labor problem of the industry is one of the most important to be considered and especially as to causes of the serious loss and inconvenience to the public which have [illegible]

Improved Mine Rating and Car Distribution May Result from Assigned-Car Hearing

Supreme Court Hears Arguments Against Mine-Cave and Coal-Tax Laws

affected. John W. Davis, former Ambassador to Great Britain, declared the law to be "undisguised patent confiscation of property." H. J. Mahon, W. L. Pace, George R. Hull and Attorney General G. E. Alter, of Pennsylvania, defended the law.

The anthracite tax law was declared to be unconstitutional by H. S. Drinker, Jr. The Attorney Generals of New York, New Jersey, Massachusetts, Maine, New Hampshire, Vermont, Rhode Island, Connecticut and Delaware, in a brief which the court considered, contended that the law is an attempt to levy tribute upon the citizens of their states by taxing anthracite, 80 per cent of which is being shipped outside of the state. Lewis Marshall and J. Weston Allen opposed the law, which was supported by Attorney General Alter.

Ohio Dealers' Margins Revised

Following audits of various retail concerns in the larger centers of population of Ohio, C. J. Neal, State Fuel Administrator, has announced a revised list of dealers' margins covering many points. Under the new schedule, which followed protests made by retailers through the M.-O.-I. Coal Association, increases were made in quite a few instances. Likewise some reductions were made, especially in the rural sections. The total average change made by the new list is an increase of approximately 25c. per ton in cities and 8c. a ton in rural districts.

The new margins went into effect Nov. 18.

Reductions under this scale are: Mahoning County, 45c.; Erie, Summit, Medina, Stark and Summit Counties, 40c.; Wayne County, 35c.; Ashland, Clark and Trumbull Counties, 20c.; Columbiana, Darke, Fairfield, Greene, Knox, Lake, Lorain, Pike, Richland, Ross, Sandusky and Williams Counties, 15c.; Logan, Seneca and Madison Counties, 10c.; Fulton, Marion, Miami and Van Wert Counties, 5c.

Cities where increases have been allowed include: Steubenville, 72c.; Toledo, 60c.; Portsmouth, 53c.; Delaware, 50c.; Marietta, 48c.; Hamilton, Middletown, Springfield, Dayton and Canton, 40c.; Findlay, 35c.; Youngstown and Akron, 30c.; Lima, Columbus and Marion, 25c.; Bucyrus and Mansfield, 20c.; Sandusky, 10c.

Cleveland Retailers to Test Neal Ruling

Cleveland retailers have filed a suit in the Ohio Supreme Court asking a review of State Fuel Administrator Neal's ruling on retail margins as it affects that city. The suit was filed by twelve retailers who recently petitioned Administrator Neal for a revision of the $2.75 margin allowed in Cleveland and suburbs. In the petition it is asserted that Administrator Neal in refusing to increase the margin acted contrary to law and the evidence submitted in the hearing. It is claimed that the margin is unreasonable and unjust. The Supreme Court is asked to modify the ruling.

Retailers Invited to Present Data

The National Retail Coal Merchants' Association has been invited to meet with the U. S. Coal Commission on Saturday, Nov. 25. The commission is desirous of learning more regarding distribution and retailing of coal.

There will be a meeting of the members of the Governmental Relations and the Anthracite and Bituminous Trade Relations Committees of the association on Thursday and Friday, Nov. 23 and 24, at the Shoreham Hotel, Washington, D. C., when matters for presentation to the commission will be considered.

Railroads Volunteer to Co-operate

The railroads of the country tendered their complete cooperation to the U. S. Coal Commission in a letter sent Nov. 4 to John Hays Hammond, the chairman of the commission, by R. H. Aishton, president of the American Railway Association. The rail carriers, the letter points out, are the largest users of coal and therefore are vitally interested in the economic problems of the coal industry, not only from the standpoint of the consumer but also from that of the distributor.

Miners' Union Opposes Standardization of Mines, Living Costs and Amount of Work Performed

A committee composed of Ellis Searles, John Moore and Thomas Kennedy, representing the United Mine Workers of America, sent the following communication, under date of Nov. 18, to the United States Coal Commission:

In this communication the United Mine Workers of America desire to submit further suggestions in response to your letter to us dated Oct. 23. We have already, in previous communications, covered Topics 1 to 16, inclusive, except Topic No. 3, which is covered in this letter, together with Topics No. 17, 18 and 19.

17. *Standardizing the mines upon the basis of their economic productive capacity and regarding the closing down of mines which by reason of their natural limitations, or other conditions, fall below the standard.*

If the proper kind of competition among operators of coal mines can be established and maintained through the efforts of this commission no standardization will be necessary. Competition would itself eliminate the high-cost mines, because they would be unable to compete in price of their product with those mines in which the cost of producing coal is lower. We believe this idea, properly applied and fairly carried out, would not only reduce the number of mines and the number of miners in this country but it would also give the American public assurance of cheaper coal, because the coal would then be produced by those mines whose output is produced at a low cost per ton. In addition to keeping down the price of coal to the consumer, because it comes from low-cost mines, such competition would close many high-cost mines and thus conserve their resources for the future. We believe conservation of our coal resources is one of the most important propositions to which the American people should give their attention. There will come a time when coal will be less plentiful than it is now and the population of the United States will be much greater, thus calling for a heavier supply of fuel. Anything this commission can do toward conservation of coal for future generations should be done.

It would manifestly be unconstitutional for this government to attempt to eliminate any number of coal mines from operation by any sort of selective process. It could not assume to say to any mine owner: "You shall not be permitted to operate your property," and at the same time permit some other owner to continue operation of his mine. Nor could the government legally or constitutionally say to any miner: "You must quit mining coal and get another job," and then allow another miner to continue at mining coal. Therefore, we have no suggestions to offer in regard to the possibility of closing down any number of mines, unless this end can be brought about through the means of encouragement of open competition among coal producers.

In order that such competition might be encouraged and aided we suggest that every possible effort should be made to improve transportation facilities and the most efficient utilization of the transportation systems of the country. A way should be found to enable the railroads to equip themselves with a sufficient number of coal cars and locomotives with which to move the coal from mine to consumer. This commission will, in our opinion, accomplish great good if it can find a basis upon which to predicate a recommendation of a method by which this feature of the nation's transportation problem can be solved with equitable freight rates.

We do believe, however, and we recommend to this commission, that some means or method should be found to prevent the opening up of any new mines in the United States, at least for a considerable period of time. There are too many mines in this country now. If the mines now in operation or that are ready for operation were run to their capacity they would produce at least 40 per cent more coal than is required to meet all requirements of domestic and export trade. There is no need for any more new mines. Because a set of men own a railroad is no good reason why, under such conditions as exist today in the industry, they should be permitted to open up a lot of new mines merely to supply business and revenue to their railroad. Yet this is what happens continuously, and it accounts for much of the dislocation and confusion that exists in the coal business.

18. *Ascertaining and standardizing the cost of living for mine workers and the living conditions which must be supplied or afforded in order to surround the workmen with reasonable comforts and standardizing also as far as practicable the amount of work a man shall perform for a reasonable wage, recognizing the value and effect of such surroundings in respect of their efficiency.*

How this commission can hope to standardize the *cost* of living without at the same time standardizing the *level* of living of mine workers is beyond the comprehension of this committee. It seems to us that it would be impossible to standardize the cost of living unless each individual mine worker was required to accept and adopt a standard, identical level of living for himself and his family. Any attempt to establish such a standard as to fix a maximum or minimum limit to what the individual man might wish to adopt for himself as his level of living would not accord any system, either paternalistic or communistic that we know of. We are unable to offer any suggestion about standardizing the cost of living for mine workers." It would be easy enough for experts to prepare a budget showing the amount of food, clothing, etc., that is necessary to maintain a family of a given number of members on a level of decency and comfort but it would be impossible to standardize the cost of such budget. Flour that sells for $1 at one place sells for $1.25 at another place. Sugar sells for 6c a pound at one place and 7c a pound at another place. Gasoline sells at 20c a gallon in Indiana and 15c a gallon in the District of Columbia, though why we do not know. How could anyone hope to standardize the cost of living under such conditions?

We believe it is important, however, that this commission ascertain the cost of living for mine workers as suggested in Topic No. 18. We suggest that this could best be done by the employment of women investigators. Let these investigators go directly to the miner and his wife and learn from them the actual facts about their cost of living. They are the ones who spend the money and they are the ones who know what it costs them to live. We do not believe the commission should rely too heavily upon any showing that might be made by company stores as to the cost of living of mine workers. The best place to get information is the place where the information actually exists and in this instance the miner's home is the place. Your women investigators should delve into the mode of living as well as the cost of living. They could see for themselves the kind of food and the quantity of it that is supplied to the family. They could see the kind and quality of the clothing of the family and ascertain whether the quantity was ample. The miner's wife would not hesitate to talk on such matters with a woman, but she would, naturally, be reticent in her discussion of the subject with a male investigator. Let your woman investigator ascertain whether the miner's wife is contented or unhappy over her condition and why. Do her children attend school regularly or are they compelled to stay at home because of a lack of clothing, shoes or books? Are the children healthy or undernourished? If undernourished, what is the reason?

These are some of the human factors that enter into the subject and that are vitally affected by the cost of living and the ability of the miner to earn a sufficient income to meet this cost of living.

Hold It Impossible to Standardize Amount of Work

Standardizing the amount of work a man should perform.

We do not believe it is possible to standardize the amount of work a man can or should perform in the production of coal. Conditions vary in the various mines and workings. Seams of coal differ in thickness. It is easier to mine coal in some mines than in others. Some mines experience great difficulty with water, gas and other conditions. And so it goes, each mine being peculiar unto itself, as far as working conditions are concerned. Methods in use in one mine would be impossible in many other mines. Therefore, we do not see how the work could be standardized.

Again, there is no need of standardization, so far as the actual miner is concerned, nor for its effect upon the cost of production, because the miner is paid by the ton for the coal he produces and not by the day or hour. Therefore, the amount of his daily output is not important, in so far as it affects the cost per ton. It is also true that the labor performed by men who are paid by the day varies greatly in different mines and fields and what might be regarded as a standard of work in one place would be a flagrant misfit in another mine. However, the commission will find that the miners of this country are earnestly interested in everything that promises a better method for the performance of their work, and anything that will promote their safety and security.

19. *Standardizing a basis of arriving at the overhead cost of producing and distributing the coal, including delivery at the door of the consumer, recognizing in this computation that the standardized cost of living to the miners should be the first and irreducible item of expense.*

On the subject of how to arrive at the overhead cost of producing and distributing coal we have no suggestions to offer because this is a feature of the coal industry with which the miners have nothing to do.

3. *The organization and persons connected with the coal industry.*

In one of our previous communications we advised the commission that we desired to postpone consideration of Topic No. 3, "The organization and persons connected with the coal industry, until we could get a better understanding of what was meant to be covered by this topic. This subject appears to us to be a broad one, calling for much detailed information. It would contemplate, we believe, a study of all organizations and associations having any connection with the ownership, production, distribution and sale of coal. Under this heading the subject of absentee ownership of coal lands and coal mines could properly be investigated and the effect of such absentee ownership upon the industry and the public welfare could be determined. We believe the gold-bonded commercialism involved in absentee ownership is such a menace and evil in the coal industry that if this commission succeeds in and tells the public just how the selling price of coal is affected by it the commission will lay bare a factor that helps to keep the price of coal to the consumer at a higher figure than would be the case under any other circumstance. The public wishes to know why it is required to pay unreasonable prices for coal. We suggest that a study of absentee ownership will disclose one of the causes of this gouge.

The United Mine Workers of America is the trade union of the coal miners of this country. It has a membership in the bituminous and anthracite branches of the industry of more than half a million, scattered over the entire coal producing area of the country. We shall be pleased indeed to supply the commission with any and all information in regard to the United Mine Workers of America that the commission may wish for. The commission has no secrets and nothing to withhold from the commission. If you will indicate at any time the information you desire we assure you that it will be supplied promptly and in full.

At the same time, we have made the statement that it also requires all other organizations and associations in any way connected with the industry to open to the scrutiny of this commission. To this end all coal operators should be permitted to withhold nothing from the commission, nor should the commission permit any refusal on the part of any individual operator to supply full and complete information as to his business. It will be recalled that when the previous wholesale governmental activity prompted an investigation certain groups of the coal business certain coal-selling companies refused to be a party and obtained injunctions preventing the government from ascertaining the desired information. We do not know what these coal companies were so anxious to hide and keep from the government and the public, but apparently they feared to have the light of publicity turned on their affairs and business. We suggest that this commission be empowered to use the broadest and most drastic power on the part of any coal producer or the personal interests.

Coal Commission Begins Actual Collection of Data on Production Costs, Wages and Waste

By Paul Wooton
Washington Correspondent of *Coal Age*

While no comment has been forthcoming from any member of the U. S. Coal Commission, there is a feeling in official circles in Washington that the commission is entitled to more co-operation of an initiative type from both the bituminous operators and the United Mine Workers. There is a feeling that advantage was taken of Chairman Hammond's request for suggestions as to procedure, to get publicity, and that the reply was directed more to the newspapers than to the commission. It is the opinion of some that the bituminous operators and mine workers indulged in a lot of stock comment such as each side puts forward at every opportunity. Incidentally there is a feeling that the anthracite operators came close to complying with the spirit of the request. Their made reply to the questions that were asked, and a first-page position in the newspapers apparently was not their objective. Some read into each of the replies an intimation that the industry is all right except for the need to correct the other fellow.

It is apparent that the commission has not won the wholehearted support of any branch of the industry. Each side has been politely receptive and certainly has shown no antagonism. Some are inclined to attach some blame to the commission itself for lack of progress and for failure to obtain more active co-operation. It is pointed out that the commission has not made it plain to either side as to just what they would attempt to do. This failure to be more specific may have had a bearing on the disinclination of either side to commit itself. Some officials were hopeful that the industry itself would take the initiative with the commission simply satisfying itself as to the correctness of the information laid before it. The mine workers have not offered to open their records to the commission and it will not be surprising if many operators fail to furnish the cost data called for by the commission's questionnaire.

A detailed questionnaire as to costs of producing coal in 1921 and 1922 is being sent to all operators, large and small. Since a large number of mines were closed during six months of 1922, information is requested as to shutdown costs. So far as is known, no previous effort has been made to obtain this information. The work on these returns will be under the immediate direction of David Wing, who conducted similar studies for the Federal Trade Commission. Several of the members of the Trade Commission's staff who worked with Mr. Wing during that time and who are thoroughly familiar with the handling of production cost data have been transferred temporarily to the commission's staff.

Commissioners Neill and Alschuler are to be personally responsible for the results of the field investigation dealing with the cost of living and with living conditions. Each of these commissioners will devote a portion of his own time to work in the field. Mr. Neill already has made one field trip.

Wage statistics will be under the immediate charge of Prof. Joseph H. Willits, who will be assisted by Miss Anne Bezanson, who has had wide experience in such work.

C. E. Lesher, who has charge of the engineering phases of the fact-finding work, is getting together an advisory committee of engineers and operating men. He has arranged for co-operation with the U. S. Bureau of Mines.

C. A. Allen, who serves the Bureau of Mines and the State of Utah jointly as a mining engineer, will be transferred temporarily to the commission to gather data with regard to waste in the production of coal. In this work George S. Rice, chief mining engineer of the Bureau of Mines, will assist in an advisory capacity. This will involve an examination of the percentage of recovery and the present available resources in the more important fields. There will be an intensive study of the more highly developed areas with the idea of ascertaining reserves and the amount of waste.

The study of retail costs and of the cost of distribution has not been launched as yet.

John D. Battle Appointed Traffic Manager Of National Coal Association

On Dec. 1 John D. Battle will become traffic manager of the National Coal Association, succeeding John Callahan, who has resigned to enter the coal-brokerage business in partnership with J. D. A. Morrow.

Mr. Battle has had long and varied experience in railroading. He was born in Greene County, Georgia, in 1887. He was successively telegraph operator, station agent and train dispatcher on the Georgia R.R. between 1904 and



Harris & Ewing

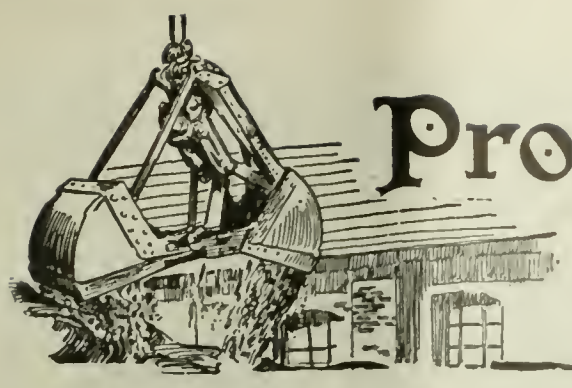
JOHN D. BATTLE

1911. From 1911 to 1918 he was with the Atlantic Coast Line and Charleston & Western Carolina joint terminals at Augusta, Ga.

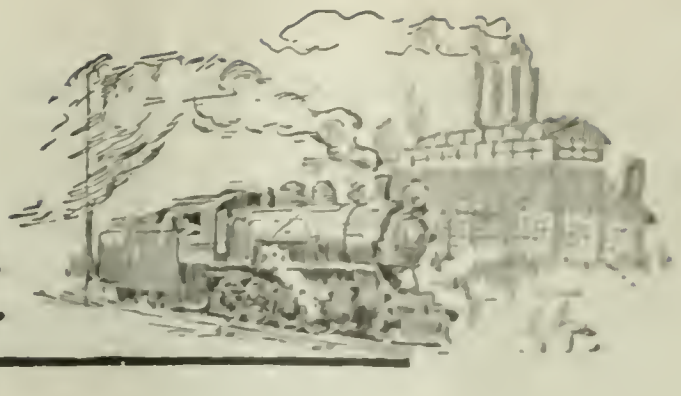
He was connected with the car service division of the U. S. Railroad Administration at Washington from 1918 until the end of federal control of railways, handling the intensive loading and efficient use of freight cars. When the roads were returned to private ownership he became a traveling inspector for the American Railway Association. He was recalled to Washington in June, 1920, to direct the work of clearing up accumulations resulting from the switchmen's strike. Since Sept. 15, 1920, he has been assistant traffic manager of the National Coal Association.

Service Order No. 25 Modified

Service Order No. 25 has been suspended in part by the Interstate Commerce Commission in the territory south of the Potomac and Ohio rivers, with the exception of the lines of the Baltimore & Ohio in that territory. The amendment, effective on Nov. 18, removes the general priority in the use of open-top equipment for coal, but does not affect the original order for priority in the movement of coal. This action allows a greater use to be made of open-top cars for the transportation of road and building materials.



Production and the Market



Weekly Review

Spot buying is being done very quietly. The usual November snap is lacking, however, and a cold spell is urgently needed to bolster the trade. Domestic sales, while still strong, have felt the effect of the continued warm weather and prices have slackened a trifle. Day-to-day buying is still the only activity in the steam market, but that this is increasing in the face of steadily increasing production is shown by the recent trend in prices.

Coal Age Index of spot bituminous prices registered an increase this week for the first time since Sept. 25. The index number rose to 343 on Nov. 20, as compared with 340 this week before, 344 on Nov. 6 and 346 on Oct. 30. The average mine price corresponding to the index is $4.15.

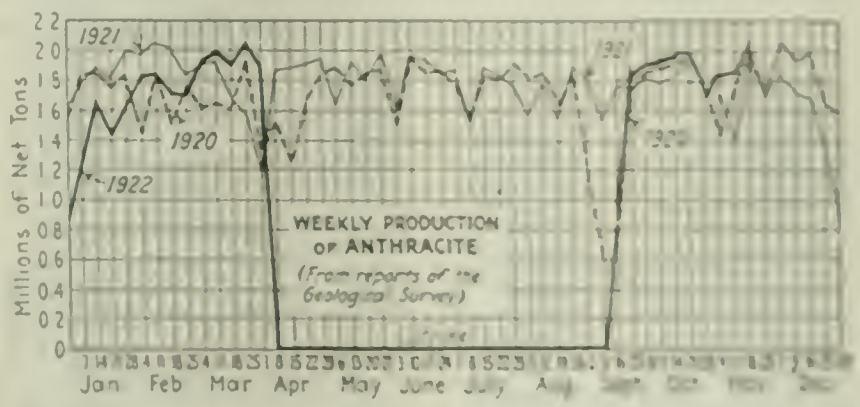
The increase resulted from unexpected strength at Hampton Roads and on good grades in central Pennsylvania. There is plenty of coal at the Roads but it is held by a large number of shippers and the market has been artificially strengthened by orders placed to piece out cargoes for tonnage waiting at the piers. High-grade fuels from central Pennsylvania are very scarce, and prices, which have held steadily for some time, are climbing slowly upward.

Only Low-Quality Coals Lack Ready Market

It is only the lower grade fuel that is feeling the want of a ready market. Consumers are willing to pay for quality and dispatch. Thus the market is divided between those who must push their coals, sometimes at concessions, and those whose main efforts are now directed toward the delivery rather than the sales factor.

Middle West markets are quietly absorbing more steam coal. This slight pickup, however, has been met so eagerly by producers that price betterment is almost imperceptible. Domestic sizes are somewhat softer as a result of warm weather. Retailers are unable to sell more than small lots and are slow to reorder. More and more mines throughout this and other sections are turning to domestic makes and this in turn is bound to affect the screening market. Railroads are buying steadily, convinced of the good values now offering and apparently realizing the transportation difficulties that are to come during wintry weather.

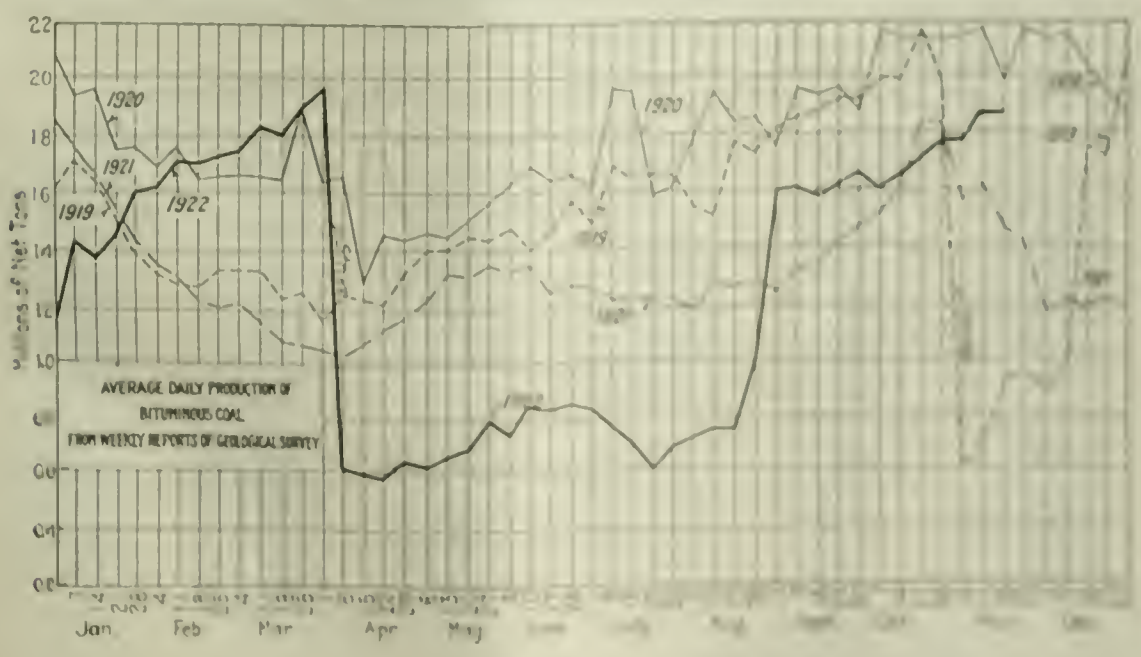
The Lake trade is drawing to a close. Dumpings are proceeding at the rate of 1,000,000 tons per week, but the movement will decline from now until the time when weather conditions stop cargo clearances. Many buyers

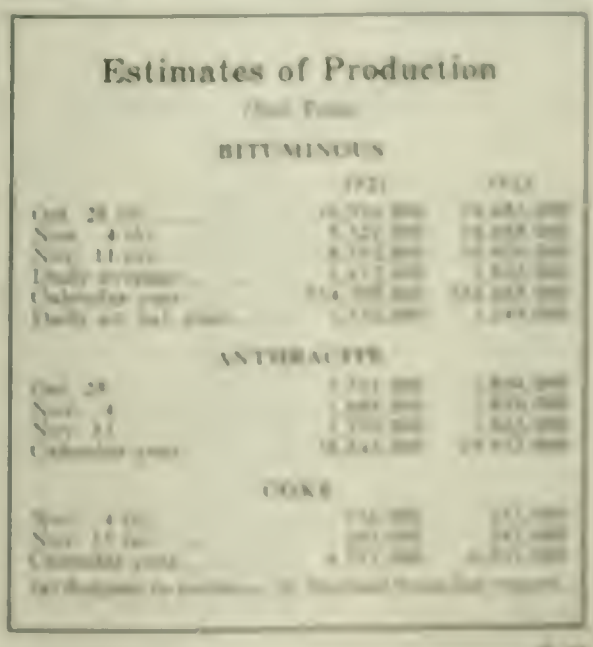


are waiting for the release of this tonnage, announcing their intention of taking on some stock when the offerings are increased by the diversion of Lake coal to commercial channels.

The Northwestern docks are feeling the keen competition of all-rail coals. Buying is increasing, but dock men are forced to shave their prices in the southern part of their territory. The Head-of-the-Lakes shippers feel these inroads keenly, as the curtailment of their territory increases their overhead and thus furthers the market advantage of the all-rail sellers.

Continued warm weather is providing a welcome delay in the matter of anthracite demand. Domestic sizes, of course, are in strong call, but there is no chance for





[illegible] will develop with cold weather. Substitute fuels are not being welcomed by householders, but as the anthracite shortage is a real one, mild weather will make their temporary use a necessity. Realizing this, various operators are producing domestic sizes for Eastern consumption and out of these emergency shipments is likely to arise a domestic bituminous market in what has always been an anthracite stronghold.

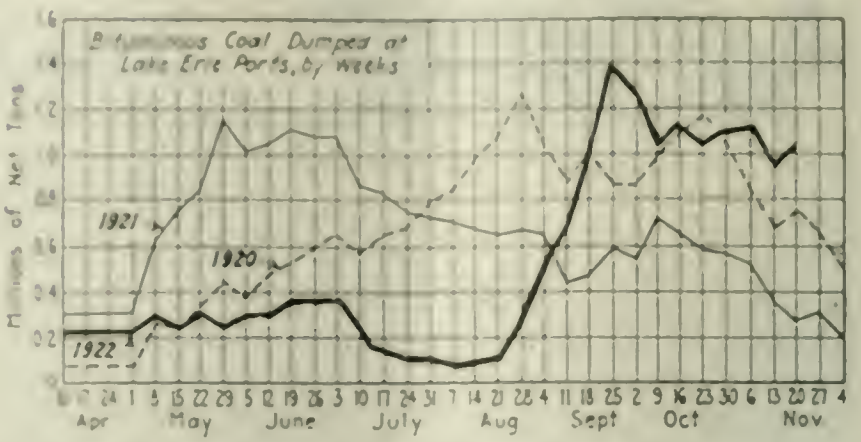
BITUMINOUS

"Preliminary estimates on production for the week ended Nov. 11, as revised by later reports reflecting the curtailed output because of election day and Armistice Day, put the total coal raised at 11,989,000 net tons," says the Geological Survey. "Early returns on car loadings at mines last week (Nov. 13-18) indicate 12,200,000 net tons, comprising 11,100,000 tons of soft coal and 1,100,000 tons of anthracite.

"Loadings of soft coal on Monday, Nov. 13, as reported by the railroads totaled 44,900 cars. On Tuesday loadings declined to 35,843 cars, and by Thursday had declined further to 32,576 cars."

All-rail shipments to New England were 3,529 during the week ended Nov. 11, as compared with 2,924 cars in the week preceding. Prices on Pennsylvania grades have increased, but not much spot coal is moving to this territory.

Hampton Roads dumpings for all accounts were 202,000 net tons during the week ended Nov. 16, as compared with 248,687 tons during the preceding week. Coal supplies at the piers are running evenly but are spread over a large



number of houses and a stronger market has resulted because of buying orders placed by a few shippers who must piece out cargoes for tonnage waiting.

Lake dumpings during the week ended Nov. 20 were 1,005,789 net tons—966,535 tons cargo and 39,254 tons ves-

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile Eastern	Market Quoted	Oct. 23, 1922	Nov. 6, 1922	Nov. 13, 1922	Nov. 20, 1922†
[illegible]	Columbus	$[illegible]	$[illegible] 25	$6 85	[illegible] $[illegible]
[illegible]	Columbus	6 25	6 [illegible]	6 25	6 25
[illegible]	Columbus	6 [illegible]	5 [illegible]	5 85	6 [illegible]
[illegible]	Chicago	6 [illegible]	6 [illegible]	6 [illegible]	6 00 — 6 50
[illegible]	Chicago	6 [illegible]	5 40	5 40	5 50 — 5 75
[illegible]	Cincinnati	6 [illegible]	7 [illegible]	6 [illegible]	6 00
[illegible]	Cincinnati	6 [illegible]	6 10	6 10	6 [illegible] — 6 25
[illegible]	Cincinnati	6 [illegible]	6 25	6 25	6 [illegible] — 6 50
[illegible]	Boston	7 [illegible]	6 85	7 10	7 75 — 8 25
Clearfield mine run	Boston	3 [illegible]	3 [illegible]	3 35	3 50 — 4 25
[illegible]	Boston	4 25	4 10	4 10	4 00 — 4 75
[illegible]	Boston	3 [illegible]	3 40	3 75	3 75 — 4 50
Pool 1 (New Standard)	New York	[illegible]	4 85	4 85	4 50 — 5 50
Pool 1 (New Standard)	Philadelphia	[illegible]	[illegible]	[illegible]	4 50 — 5 00
Pool 1 (New Standard)	Baltimore	[illegible]	4 50	4 50	4 25 — 5 00
[illegible]	New York	4 [illegible]	4 10	4 20	4 00 — 4 50
[illegible]	Philadelphia	4 [illegible]	4 [illegible]	4 30	4 25 — 4 70
[illegible]	Baltimore	4 [illegible]	4 [illegible]	4 10	[illegible]
[illegible]	New York	[illegible]	3 50	3 50	3 50 — 3 75
[illegible]	Philadelphia	[illegible]	3 50	3 50	3 50 — 3 75
[illegible]	Baltimore	[illegible]	3 40	3 35	3 25 — 3 50
[illegible]	New York	[illegible]	[illegible]	[illegible]	2 90 — 3 25
[illegible]	Philadelphia	[illegible]	[illegible]	3 15	2 90 — 3 40
[illegible]	Baltimore	[illegible]	[illegible]	[illegible]	3 15
High-Volatile Eastern					
[illegible]	New York	[illegible]	[illegible]	3 45	3 25 — 3 75
[illegible]	Philadelphia	[illegible]	[illegible]	[illegible]	3 25 — 3 75
[illegible]	Pittsburgh	[illegible]	[illegible]	[illegible]	3 25 — 3 40
[illegible]	Pittsburgh	[illegible]	4 50	4 50	4 50
[illegible]	Pittsburgh	[illegible]	[illegible]	3 35	3 25 — 3 50
[illegible]	Philadelphia	[illegible]	[illegible]	[illegible]	3 50 — 3 75
[illegible]	Columbus	[illegible]	6 25	5 85	[illegible]
[illegible]	Columbus	[illegible]	4 50	4 25	[illegible] — 3 75
[illegible]	Columbus	[illegible]	4 10	[illegible]	[illegible] — 3 60
[illegible]	Cincinnati	[illegible]	6 00	6 10	6 00
[illegible]	Cincinnati	[illegible]	4 25	4 25	4 00
[illegible]	Cincinnati	[illegible]	4 00	[illegible]	[illegible] — 3 75
[illegible]	Cincinnati	[illegible]	3 75	[illegible]	[illegible] — 3 60
[illegible]	Cincinnati	[illegible]	[illegible]	[illegible]	[illegible] — 3 [illegible]



Coal Age Index 343, Week of Nov. 20, 1922. Average spot price for same period, $4.15. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

sel fuel—as compared with 987,430 tons in the preceding week. The movement for the season to date now stands at 17,571,005 tons, as compared with 22,625,575 tons during the corresponding period of last year. Market conditions in the Northwest are easy and all-rail coal is invading the southern part of the dock territory.

TIDEWATER SHIPMENTS FOR OCTOBER, 1922

(In Net Tons)

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total
Coastwise to						
New England	120,000	45,000	45,000	654,000	4,000	868,000
Exports		22,000	8,000	57,000	8,000	95,000
Bunker	169,000	21,000	15,000	119,000	1,000	325,000
Inside capes		143,000	111,000	90,000		324,000
Other tonnage	379,000		7,000	228,000	4,000	618,000
Total	668,000	231,000	186,000	1,128,000	17,000	2,230,000

ANTHRACITE

Production of anthracite during the week ended Nov. 11 is estimated at 1,863,000 net tons. Mines are producing to the limit of capacity in an endeavor to avert a serious shortage of domestic sizes, and in this they are aided by the unseasonably warm weather. Every effort is being made to push coal to the Lakes before the winter closes in. Dumpings spurted to 151,450 tons last week, as compared with 99,000 tons in the preceding week. The shipping season has been extended to Dec. 15, in an effort to make up as much of the deficiency as is possible.

Steam coals are still a drug on the market although

Weekly Record of Car Loadings

	Cars Loaded: All Cars	Cars Loaded: Coal Cars
Week ended Nov. 4, 1922	904,927	394,677
Previous week	1,014,460	447,728
Same week in 1921	847,576	377,000

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

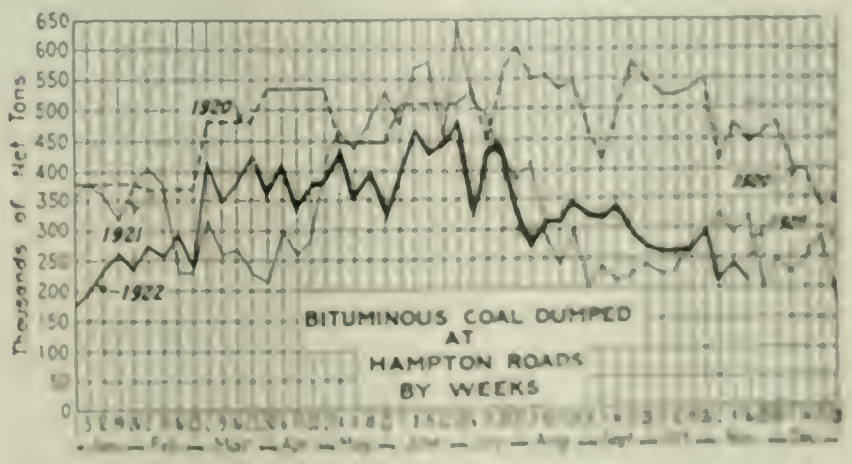
	Six Months July to Dec. 1921	Jan. to Apr. 1922	Sept. 5 to Nov. 4, 1922	Week Ended Nov. 4, 1922
U. S. Total	45.6	30.7		
Non-Union				
Alabama	63.5	64.5	54.1	51.2
Somerset County	55.5	74.8	59.8	53.5
Panhandle, W. Va.	55.3	51.9	57.4	54.8
Westmoreland	54.9	56.8	48.1	44.5
Virginia	54.8	59.9	59.1	62.2
Harlan	53.3	54.8	29.7	16.4
Hazard	51.7	58.4	45.0	20.9
Pocahontas	49.8	63.9	58.9	51.5
Tug River	48.1	61.7	52.4	32.9
Logan	47.6	61.1	23.2	10.7
Cumberland-Piedmont	46.6	55.6	35.8	24.9
Winding Gulf	45.7	54.5	50.5	51.8
Kenova-Thacker	38.2	54.1	43.9	36.9
N. E. Kentucky	32.9	47.7	27.1	20.3
New River	24.3	37.9	31.4	34.7
Union				
Oklahoma	63.9	59.9	64.3	21.9
Iowa	57.4	78.4	77.4	13.4
Ohio, Eastern	52.6	48.6	43.5	37.7
Missouri	50.7	60.5	70.2	22.3
Illinois	44.8	54.5	45.1	32.8
Kansas	42.0	54.9	57.2	41.7
Indiana	41.4	49.8	42.7	39.3
Pittsburgh†	41.2	36.6	48.3	22.4
Central Pennsylvania	39.1	56.2	45.9	36.6
Fairmont	35.3	44.9	41.7	42.9
Western Kentucky	32.5	47.7	53.2	38.6
Pittsburgh*	30.4	31.9	42.6	33.4
Kanawha	26.0	13.9	14.9	14.6
Ohio, southern	22.9	24.8	47.7	32.9

* Rail and river mines combined.
† Rail mines.

buckwheat is now in a fairly comfortable position because of better takings as a substitute for the larger sizes.

COKE

Production of beehive coke increased to 245,000 net tons during the week ended Nov. 11, as compared with 215,000 tons in the preceding week. The improvement was general in all the Eastern coke-producing districts. The Connellsville market is softer. Spot offerings have increased as the active furnaces are generally already covered for their requirements and pig iron is so sluggish that coke buyers urge the imperative need of lower prices.



Union Miners on Jury at Herrin Trial

Selection of a jury to try the first six prisoners held for murder in connection with the "Herrin riot" of June 22 goes slowly on. There are now seven men in the box. Some of them are union miners. Members of the union which is defending the prisoners have been accepted in the face of the state's best efforts to prevent it. Judge D. T. Hartwell, presiding, has ruled that mere membership does not disqualify a man. The recent special assessment, which operators are seeking now to fix the Herrin prosecution though they cannot prove riot, is being used by every union man who goes on the box. The entire force which the jurymen are being chosen to work as targets of miners—so largely in fact that it is hard to find one of its members.

Foreign Market And Export News

Heavy British Output Softens Market: Better Conditions in France

Record production has again broken the year's record. The output during the week ended Nov. 4 was 5,421,000 gross tons, according to a cable to *Coal Age*, as compared with the high mark of the previous week, 5,396,000 tons. The heavy output has congested the docks and railways, and demand has softened considerably.

The export trade of Wales has made great progress. For the four weeks ended Oct. 27, 3,170,800 tons were shipped from Welsh ports, and satisfaction is found in the fact that present exports are to normal directions, whereas the somewhat fictitious tonnage of late have been due to the stimulation which the trade received from the temporary business with the United States.

Forward business in northern England is rather restricted for the moment, owing to exchange difficulties, and fewer contract sales are in evidence. The Norwegian State Railways are in the market for 15,000 tons of best steam coal to be shipped between now and the end of December, the Malmo Gas Works are inquiring for 4,000 tons of superior Durham gas coal to be delivered over next year, and the Vagle Gas Works invite tenders for 2,500 tons of gas coals shipment during December. Several fairly substantial parcels of ordinary Durham bunker coals have been sold for delivery in monthly quantities over all next year at 21s. 6d. per ton, f.o.b., thus establishing a price basis for bunkering fuel which shipowners will note with interest.

Hampton Roads Supply Declines

Serious restrictive duty, due to the inability of shippers to get coal in sufficient quantities to supply the trade. The scarcity caused the market to strengthen, while demand increased slightly to indicate a trend of business toward better conditions.

Contract movement is showing a slight improvement, as is the bunker business, although export trading is indifferent, scattering cargoes being consigned to the West Indies in small quantities.

French Mine Activity Increases

French coal markets are now more active and the Center and the Center and Southern fields themselves are showing much improvement. The high value reached by the sterling exchange is, of course, proving very helpful to French collieries.

Mines of the Nord and Pas-de-Calais have order books well filled up. In domestic coals, most of the collieries cannot now accept immediate orders. The present scarcity of sized coals is a consequence of the reduction of output in Belgium and in the north of France.

Many consumers in the southeastern part of France, who usually order British coals, have now gone to the Loire field for supplies. Such is notably the case for several gas works on the Mediterranean coast. Important orders of coke from Switzerland and Italy are also sent to the same field.

Coal Paragraphs from Foreign Lands

GERMANY—Production in the Ruhr region during the week ended Nov. 4 was 1,751,000 metric tons, according to a cable to *Coal Age*. The preceding week's output was 2,005,000 tons. Production during October was 7,144,228 tons, exceeding the September production by 1,100,000 tons. The coal production of Upper Silesia in October as compared with September shows an increase of 5 per cent, while the October production in the Central German coal area was about the same as in September.

ITALY—The price of Cardiff steam fuel is unchanged at 40s. 3d. on the Genoa market, according to a cable to *Coal Age*.

BELGIUM—On the Belgian coal market the same activity continues and production is still insufficient to meet demands.

CZECHO-SLOVAKIA—In the second quarter of 1922 the output increased by 150,000 tons as compared with the first quarter. This represents an increase of 2.11 per cent in output, although the number of miners at work was less by 1.38 per cent. The new conditions of the collective agreement entered into force on Sept. 1.

PANAMA COAL PASSAGES DURING SEPTEMBER were 8,371 gross tons, as compared with 41,175 tons in August and 16,040 tons in September, 1921. Coal on hand Oct. 1 was 117,880 tons, 4,000 tons less than stocks on Sept. 1. During this month, 9,611 tons of storage coal were received.

Hampton Roads Pier Situation

	Week Ended Nov. 9	Week Ended Nov. 16
N. & W. Piers, Lamberts Pt.:		
Cars on hand	611	509
Tons on hand	36,024	31,350
Tons dumped	72,425	67,736
Tonnage waiting	11,100	15,550
Virginian Ry. Piers, Sewalls Pt.:		
Cars on hand	829	840
Tons on hand	48,750	51,800
Tons dumped	90,261	81,662
Tonnage waiting	11,917	10,527
C. & O. Piers, Newport News.		
Cars on hand	508	181
Tons on hand	25,400	21,050
Tons dumped	59,312	30,966
Tonnage waiting		80

Export Clearances, Week Ended November 16, 1922

FROM HAMPTON ROADS

	Tons
For Cuba:	
Nor. S.S. Solvang, for Havana	3,412
Amer. Schr. Tompate, for Banes	1,057
For Bahamas:	
Amer. Schr. R.R. Govin, for Nassau	594
For Atlantic Islands	
Dan. S.S. Bryssell, for Guayabal	1,843

FROM PHILADELPHIA

For Cuba	
Nor. S.S. Raymanger, for Havana	
Am. Schr. Wm. H. Marston, for Cienfuegos	1,169
For West Indies:	
Am. Schr., Albert F. Paul, for Fort de France	

Pier and Bunker Prices, Gross Tons

PIERS

	Nov. 11	Nov. 18†
Pool 9, New York	$7 50@$7.75	$7 50@$7.75
Pool 10, New York	7 00@ 7.50	7.00@ 7.25
Pool 11, New York	6.50@ 6.75	6.25@ 6.75
Pool 10, Philadelphia	7.15@ 7.65	7.00@ 7.15
Pool 11, Philadelphia	6.90@ 7.35	6.60@ 6.80
Pool 1, Hamp. Roads	7 40	7.75@ 8 00
Pools 5-6-7 Hamp. Rds.	7.40	7 50@ 7 75
Pool 2, Hamp. Rds.	7 40	7.75@ 8 00

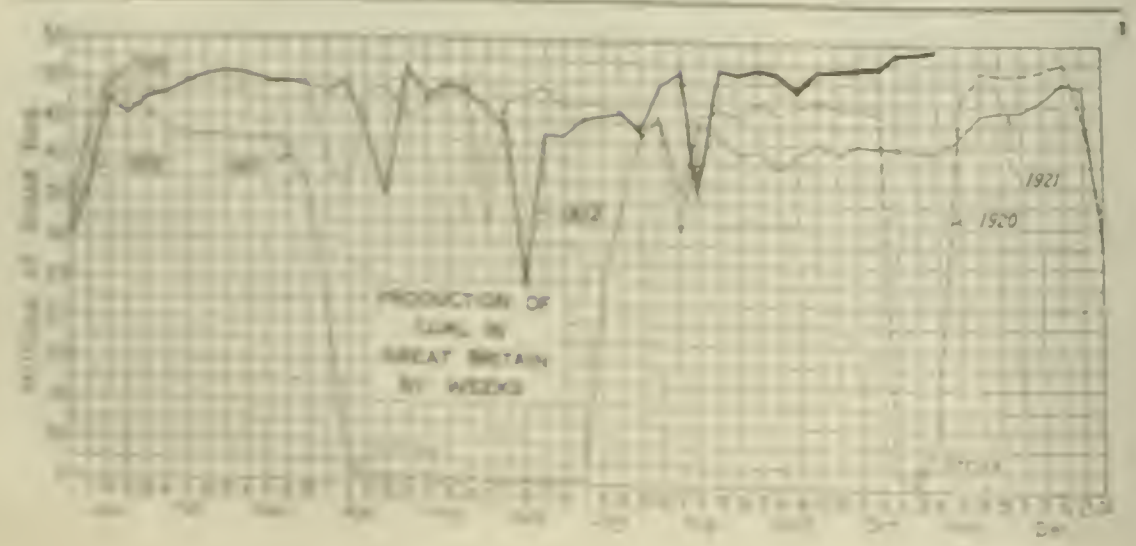
BUNKERS

Pool 9, New York	$7 90@$8.15	7.90@ 8 15
Pool 10, New York	7 40@ 7.75	7.40@ 7.65
Pool 11, New York	6.90@ 7 15	6.65@ 7.15
Pool 10, Philadelphia	7.65@ 8 15	7.30@ 7.40
Pool 11, Philadelphia	7 40@ 7.90	6 85@ 7 10
Pool 1, Hamp. Rds.	7.50	7 75@ 8 00
Pool 2, Hamp. Rds.	7 50	7 75@ 8 00
Welsh, Gibraltar	38s f.o.b.	38s f.o.b.
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d f.o.b
Welsh, Lisbon	37s. f.o.b.	50s. f.o.b
Welsh, La Plata	50s. f.o.b.	50s f.o.b
Welsh, Genoa	41s. t.i.b.	42s c.i.b.
Welsh, Algiers	38s. f.o.b.	38s f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	64s. f.o.b.	65s. f.o.b.
Welsh, Madeira	42s. 6d. f.a.s.	40s. 6d. f.a.s.
Welsh, Teneriffe	38s. 6d. f.a.s.	38s. 6d. f.a.s.
Welsh, Malta	41s. f.o.b.	41s. f.o.b
Welsh, Las Palmas	38s 6d f.a.s	38s. 6d. f.a.s.
Welsh, Naples	41s f.o.b	39s 3d. f.o.b
Welsh, Rosario	52s. 6d f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore	52s. 6d. t.i.b.	60s. t.i.b
Welsh, Constantinople	52s. 6d. f.o.b.	60s. f.o.b.
Welsh, St. Michaels	50s. t.i.b.	50s t.i.b.
Welsh, Port Said	49s. f.o.b.	49s. f.o.b
Welsh, Oran	38s. f.o.b.	38s f.o.b.
Welsh, Fayal	50s t.i.b.	50s t.i.b
Welsh, Dakar	42s 6d. f.o.b.	42s 6d. f.o.b
Welsh, St. Vincent	42s. f.a.s.	42s f.a.s.
Welsh, Montevideo	50s. f.o.b.	50s f.o.b
Welsh, Alexandria		43s. f.o.b

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff	Nov. 11	Nov. 18†
Admiralty, large	28s @ 28s 6d	28s @ 28s 6d
Steam, smalls	16s @ 17s	16s @ 17s
Newcastle		
Best steams	25s 3d @ 27s	25s 3d @ 27s
Best gas	24s @ 25s	24s @ 25s
Best bunkers	23s @ 24s	23s @ 23s 6d



North Atlantic

Many Buyers Await End of Lake Shipping Season

Coal Will Be More Plentiful Hereabout Then, Is Belief—Some Producers, Finding Better Market With Hard Coal Scarce, Screen Lump Sizes to Fill Demand.

Lower-grade coals are freely offered, both on the spot and contract market. The better coals are firmly quoted, with little tonnage available. Deliveries are slow and uncertain and tonnage is being moved with little difficulty. The market, however, is still unsatisfactory for all except the consumer, who is able to obtain his currrent requirements—all that he is now buying—without causing any stiffening of the spot market.

Many buyers are awaiting the end of the Lake shipping season in the belief that more coal will then be offered in this section. There are scarcely any receipts of British coal. Certain producers report a better market because of the anthracite shortage and a number of them are now screening out the lump sizes to meet this demand.

BALTIMORE

The usual snap to a November market is totally lacking. The lack of demand is hard to explain even in the face of the fact that Baltimore was a bit more favored than some other localities to the distribution in October of more than 100,000 tons of English coals, and the movement during and just prior to that time of probably 100,000 or more tons which came by barge from Hampton Roads.

In relation to car shortage the weekly returns show that the run is not more than from 35 to 40 per cent on all roads. On one day the past week which can be taken about as an average, it was noted that the entire car supply on the B. & O. was 55 per cent. On the Connellsville division the supply was 27 per cent and on the Charleston division, 29 per cent. Several mines in the Somerset region last week reported on certain days that they had not received a single car.

PHILADELPHIA

If any one is satisfied in the soft coal trade it is evidently the consumer, who takes life easy in the confidence that he can get coal when he wants it, which is true to date. From the producing standpoint the old complaints of car shortage and unsatisfactory prices prevail. Possibly most shippers would admit that the prices are fair enough if they could produce coal anywhere near capacity. In the way of cars conditions are slightly better on the Pennsylvania, although there are some who complain bitterly of hardly any cars over a period of ten days.

There are occasionally reports of some producers willing to contract on coal of a Pool 9 grade at prices from $4@$4.25. Some arrangements on Pool 10 are also rumored, where considerable tonnage has been offered until April 1 at prices around $3@$3.25.

Market prices on high-grade coals are slightly firmer, while the low grades seem to have slipped a trifle. On the whole prdoucers are of the opinion, after following the market trend for the past week or so, that the lowest prices have been reached for the good coals.

There has been just the slightest tendency to betterment at Tidewater, at least there has been an increase in clearances, while bunkering holds its own.

CENTRAL PENNSYLVANIA

Production is gradually falling off, due in a large measure to a shortage of cars. The week ended Nov. 5 showed 18,594 cars. The week ended Nov. 12 fell to 17,287 and the week ended Nov. 19 will be considerably less. Unusual charges of discrimination are being made and there is much dissatisfaction.

The market is somewhat inactive. Unclassified coal is selling at $2.75@$3. Pools 15 and 18 are $3@$3.15; Pool 11, $3@$3.10; Pool 10, $3.75@$4; Pool 19, $4.50@$4.75; Pools 1 and 71, $5@$5.25.

There is some dissatisfaction in the district over the above ratings which may lead to new classifications. Some operators claim that grades of certain pools are better in some localities than others and that these ratings are unfair.

NEW YORK

There is a better feeling here. Demand is a trifle stiffer and quotations for the better grades show more strength. Prompt shipments are impossible. Car supply remains bad to which must be added poor motive power.

Producers have been rushing their coals to the West before the close of Lake navigation. When this takes place there promises to be a stronger demand along the seaboard by industrial users as well as by the railroads, who are not heavily stocked.

Buyers are cautious when making purchases and in many instances are buying from hand to mouth. However there has been a quiet accumulation in many quarters. Cold weather is the only solution of the situation, say many operators.

The number of cars at the local piers continues around 1,500, with comparatively little free coal being offered. This coal consists mostly of Pools 10 and 11.

Scarcely any foreign coal is coming here. Southern coals were quoted during the week on a basis of $7.40 f.o.b. Hampton Roads or about $8.40 New York. Some B. R. & P. coals were quoted around $3.65 f.o.b. mine during the week. Other prices are quoted in the Weekly Review.

FAIRMONT

Car shortage made itself felt to a very material extent during the week ended Nov. 11. Mines having Lake orders were given the preference in car supply. A disparity between Eastern and Western prices still exists, with mine run for Eastern delivery ranging $2.75@$3 and Western prices $3.75@$4.

UPPER POTOMAC

Loadings are still on a somewhat larger scale than the weekly average for 1921, with Upper Potomac mines getting out more tonnage than those in the Georges Creek and adjacent territory. Although the car shortage is affecting mines, producers are principally concerned now with market conditions, since there is not a ready sale in Eastern markets.

West

DENVER

In spite of an 18-in. blanket of snow and below zero weather, the *Denver Post* undersold retailers by lowering lignite in its "people's yards" 50c. to $6.35. The cold weather has livened up competition especially among lignite operators.

Reports reveal a movement among certain operators to bring suit against the railroads in Colorado before the I. C. C. for failure to deliver cars. One suits is said to have been filed by a Denver coal company. Members of the firm, however, deny the suit has been filed.

KANSAS CITY

The car shortage continues as brisket here. One operator reports less than 50 per cent production, with a strong demand for domestic sizes. Little hardship has resulted to the industrial users, although occasionally it has been necessary for them to accept other than their contract coal. Domestic deliveries are from two to four weeks behind and retailers are rationing their receipts.

Reports from Kansas and Missouri indicate that domestic buyers are still shying at the price, expecting a December break. While this simplifies the matter of supplying the present demand with a decreased car tonnage, it is thought to portend some difficulty later in the season unless the car situation improves. Kansas lump is $6, nut, $5.50 and screenings, $5.50. There is some off-grade production quoted at 50c.@$1 under these prices. Arkansas semi-anthracite lump quotations range $6@$8.

SALT LAKE CITY

There is a brisk demand now as a result of the increasing severity of the weather. Stocks are low with probably not more than 7,000 tons in the city's yards. The car situation shows no signs of improving.

President Ferguson of the dealers' association told the Coal Age correspondent he regarded the situation as serious. Many retailers here are coal and are trying to put their customers off until they can get shipments.

Anthracite

Unseasonable Weather Fends Off Clamorous Demand

Frigid Temperature Needed to Urge Buying of Substitutes—Some Bituminous Producers Screen Fuel in Anticipation—Push Movement to Lakes—Closing Date Deferred.

Mild weather remains the most favorable factor in the anthracite situation. Production is being pushed to capacity, but only the unseasonable temperatures prevailing have kept demand from becoming clamorous. Until consumers feel the urge of cold weather they will not buy substitutes to bridge the shortage, but, anticipating this, several producers of bituminous coal who ship to the East have made arrangements to screen their fuel. It is likely that a portion of the Eastern anthracite market, thus invaded, will become a permanent outlet for bituminous coal.

Every effort is being made to get coal to the Lakes before winter interferes. The closing date has been deferred to Dec. 15. During last week Buffalo dumped 451,450 tons, as compared with 99,000 tons in the previous week.

BALTIMORE

The hard coal situation continues to worry. In October the total shipment to Baltimore was 2,478 cars. To the middle of the month, according to estimates, the November receipts were around 600 cars. This leaves only 1,000 cars to be sent in the latter part of the month if the Baltimore allotment is to be kept up.

While there have been promises of increased shipments towards the end of December and early in December, it can be stated that the trade is far from optimistic along that line. The call from consumers who have no coal or whose small supplies are dwindling is becoming more active every day. There are a large number of consumers returning to their soft coal heaters against the time that they will get hard coal supplies, but real cold weather will probably drive them to cover.

NEW YORK

Conditions are more settled. Although the Metropolitan district would show little of the domestic trade there is no real shortage and everybody seems able to obtain a portion of their needs.

The closing of the Lake season will probably help the local situation. Dealers have many orders on hand and most are anticipating winter by ordering coals of their immediate comfort, even in fall purchases.

In Greater New York, especially the suburban districts, consumers have received 14,200 for Fort William, 8,500 for Port Arthur and 6,200 for Ashland, on Lake Superior.

Rates are strong at $1.25 to Racine and Kenosha, 60c. to Chicago, 50c. to Milwaukee, Green Bay, Waukegan and Port Arthur and 40c. to Duluth, Fort William and Ashland.

BOSTON

Mild weather continues the most favorable factor and it is felt that in the absence of bitter cold in the next three weeks and no unusual breaks in production we shall somehow pull through. New England is hoping to benefit materially when the last Lake shipments have been made, for certainly the heavy volume in that direction has curtailed the tonnage available for distribution here.

The retail trade shows no new developments. Stocks are of the hand-to-mouth character and deliveries are still restricted to one and two-ton lots. The Emergency Fuel Administrator of Massachusetts has raised a controversy over a recent price advance of one of the retail distributors here, claiming it to be unauthorized. Practically all the other retail dealers had already been obliged by mounting costs to increase prices. Similar, and in some cases, higher advances had been authorized in nearby cities and towns by the same functionary.

PHILADELPHIA

The expected shipments from the companies have not yet materialized, and the waiting is a severe strain both on the retailers and the consumers. From information that is given out it would appear that no real relief can be expected until Dec. 1 at the earliest.

Recently a shipper from the upper field flooded this market with cards to the effect that he had coal for sale. In reply to inquiries quotations were made as follows: Egg and stove, $12.65; nut, $10.75 and pea $8. One interested dealer went to the region and examined the nut coal and said that possibly 5 per cent of it might be coal. Another offering at $9 has been simply bank coal, with everything in it from stove to dirt. The number of dealers who are taking bituminous is increasing, but very slowly.

The steam sizes are little changed, with free offerings of all sizes at off prices, although the better buckwheats of the independents are still able to command full price. There is, however, considerable tonnage offering from that price down to $3.25. In rice coal the cut is even deeper and prices of $1.75@$2 are frequent, with barley freely offered at $1.25.

BUFFALO

The supply is so small that there are all sorts of complaint. Even the fuel administration is reminding the authorities in New York that the allotment is to be kept up, but there is no promise of more. All that is expected now is that the supply to the Lakes will be continued a week or two after the season closes.

The city is not buying much high-priced independent anthracite and some other sections have cut it off by fixing a maximum price. A prediction that coke for domestic purposes would not last past the middle of this month has not come true, for there appears to be as much as ever.

Lake loading suddenly increased to 141,450 net tons last week, of which 18,000 tons cleared for Milwaukee, 22,700 for Chicago, 9,500 for Racine, 7,000 for Waukegan, 7,000 for Kenosha and 4,500 for Green Bay, on Lake Michigan, 25,200 for Duluth and Superior,

South

VIRGINIA

With transportation conditions somewhat improved it was possible to speed up production to a slight extent, the aggregate output being in excess of 62 per cent. The improvement in transportation facilities was more marked on the N. & W., on the Interstate and on the Southern than on any other roads. The output is still somewhat short of market requirements notwithstanding a sluggish Tidewater demand.

BIRMINGHAM

Car shortage continues the principal disturbing factor, the railroads not being able to furnish on the whole over 50 per cent of the cars ordered. Contract mines are far behind on deliveries and furnace interests and coke manufacturers are not getting the desired amount of coal.

Inquiry for steam coal is light and spot business is taken care of without great difficulty. Consumers in general are holding off from the market as much as possible, buying only in quantities needed for current use.

The continued warm weather has somewhat softened the demand for domestic coal. However, the softness is only noticed in the lower grades. Indications point to the enforced use of mine run in considerable quantity, as the production of lump and other domestic sizes, in the absence of the usual stocks at this season, will not be sufficient to supply the winter's demand.

Prices are practically unchanged from a week ago. Production for the week of Nov. 4 was slightly better than the previous week, totaling 340,000 net tons, which was due to a temporary betterment in car supply.

Chicago and Midwest

Sluggishness Prevails in Most Midwestern Markets

Slight Steam Pick-up in Chicago Helps Flooded Market but Elsewhere There Is Nothing Encouraging—Domestic Prices Soften a Little.

Sluggish conditions rule most of the markets just now, thanks to the continued warmth. Kentucky producers are pushing hard to find markets for even their lump, and steam trade is not brisk there. Around St. Louis there are no bright spots. Almost every Illinois coal reaching that market is dragging in spite of the new effort of Distributor Spens and the United States Chamber of Commerce to encourage slow but steady stocking. In the Chicago market there is a trifling steam pick-up which has had practically no effect on a market already marked by a wide spread in quotations.

Railroads continue to buy slowly but steadily so that almost every line in this region has at least a normal volume on hand. They are getting a good deal of fuel at reasonable prices and are not so thoroughly convinced of a coming drop in price. Apparently the railroads have some knowledge of the possible car supply of the rest of the winter which other large consumers have not. There is no denying that many industrial buyers remain confident that they will be able to get plenty of coal even if real winter settles down for a long stay.

Shippers are sending a good deal of coal to distant markets where snappy sales effort has located a fair reception. This is helping materially to overcome the depression which slow local conditions spread.

LOUISVILLE

Due to comparatively light production in eastern Kentucky because of the usual poor car supply, and with much of the production under contract to Lake shippers, steel mills, railroads, etc., the amount of open market coal has been comparatively small. As a result, prices have been well maintained in spite of reductions in the competitive fields of West Virginia.

Eastern Kentucky mine run and screenings are selling at $3.75@$4 for non gas, and the gas or byproduct coals are $4@$4.25. Some 2-in. is reported at $6@$6.50, but block is selling at $6.50@$7, and quoted as high as $7.25. The margin between prepared and mine run is wide and has created a better demand for mine run, but with the Lake movement perhaps closing this week, some of the operators will be forced to screen more coal, and it is not believed that the margin can be maintained.

Retailers are buying as they need it, and not stocking. They anticipate a lower market on eastern Kentucky prepared by the latter part of November or early December, as car supply is showing improvement, and with Lake shipments cleaned up, the operators will be forced to hustle for business.

SOUTHERN ILLINOIS

A declining market on steam, no demand for domestic, with continued mild weather—that tells the story in this field. For the first time since the mines resumed in the Carterville field there are no-billed domestic sizes on track and here and there a few mines have found it necessary to make "repairs" and remain idle.

The association operators, however, are maintaining the price of $5.50 on lump, egg and nut. A few of the independents have cut to as low as $4.50, but it is not general. Screenings went down to $2, and then came back again about 25c. Car supply is not good. Railroad tonnage is good, everything considered. The bulk of the domestic tonnage is moving to the Northwest. Southern shipments are very poor.

Conditions are similar to this in the Duquoin and Jackson County field, except that on the Illinois Central working time is 2 days a week as a maximum. Mt. Olive is unusually burdened with steam sizes. Domestic is slow but a price of $4 for St. Louis shipments and $5 for country is being maintained. Steam nut is as low as $2.50, and screenings, $2.

In the Standard field conditions are extremely bad. Nearly all mines have no-bills and some of them are unable to work on this account. Lump coal is down to as low as $2.75 for 2-in. lump and $3.50 for 6-in., while screenings are showing a little strength at $1.25@$1.50.

ST. LOUIS

Warm weather and a jammed market has practically put the coal man out of business here, temporarily. All yards are loaded and the roads west of here are jammed up with consignment coal destined to Omaha, St. Joseph and Kansas City. The public is not buying. It is anticipating lower prices, or an unusually mild winter that may force lower prices.

Reports come in from the country districts that domestic and steam coal, which has been declining for several weeks, is dead because buyers are on the market for small quantities from day to day and are not stocking ahead.

Storage conditions locally are the same. With the exception of public utility plants there is very little storage. Gas plants in the Middle West have been unable to get any storage coal ahead, but are promised shipments during the latter part of the month.

Hard coal shipments have been curtailed and the public is resisting the prices. Very little local coke is offered but some is moving in from Alabama, and a little smokeless is coming from the East. The retail price has not been disturbed, but this may come soon if weather conditions do not change.

CHICAGO

An almost imperceptible steam pick-up is on now as was prophesied last week. It is not strong enough to have a general upward influence on the whole market as yet but it is viewed with pleasure by the selling organizations. Their very anxiety to meet the demand is retarding rising prices on small sizes and it is doubtful whether any increase at all has taken place.

The range is wide on steam coals so that a slow strengthening of prices is hard to detect. Jobbers have been unwilling all week to pay more than $2.25 for southern Illinois screenings, for the bulk of the business in that coal has been running $2.10@$2.50. Other Illinois screenings are selling down to $1.50.

While the call for domestic continues brisk there is more coal on the market that can be absorbed at top prices, and although choicest 6-in. southern Illinois lump continues to bring $5.50 to companies whose trade and service are well established, some shading has been made occasionally. Central Illinois with more production than it has known what to do with for weeks, has softened on 6-in. lump so that practically none goes above $4.75 and a good deal as low as $4. Slight softenings on Indiana domestic sizes a week or two ago have not been regained. Kentucky coals find an indifferent market here just now. The trade still yearns for a long cold snap.

WESTERN KENTUCKY

Lack of industrial demand and only a fair call for prepared sizes have resulted in the market working lower. Operators are now having trouble selling coal. Some are offering lump at $4 a ton rather freely, while others are holding at $4.25@$4.75, but not refusing much business at $4.25@$4.50. Mine run has worked off to $2.25@$2.50, and the low price here is probably being shaded somewhat. Screenings are quoted $1.25@$1.50 for pea and slack and $1.50@$1.75 for nut and slack.

Retailers have been buying a little more freely, but with warm weather they report slow sales and are refusing to stock, as they figure that even $4 a ton is out of line for lump coal and they do not care to have any heavy stocks on hand if the market shows further decline. The western Kentucky market as a whole is weak.

INDIANAPOLIS

Prices on Indiana coal seem a little weaker, due to the unseasonably warm weather. Some prepared grades are selling around $4, while screenings are slightly above $2.

Operators are at a loss to know just what the industrial users are doing for coal. There is little being purchased yet each day some reports of industrial economies that cuts the coal bill. The domestic situation shows no change. Retail buying is as slow as it could be. Prices on Virginia coal show little change but there are some grades of Indiana coal that are being offered by retailers at prices about the lowest that a week ago.

Eastern Inland

Spot Market Feels Lull As Lake Season Closes

Some Mines Having Ceased Shipments to Lower Ports, Buyers Expect Lower Prices—Operators Take Different View—No Marked Weakness in Steam Trade—Domestic Grades Moving Better.

The end of the Lake season is given as the reason for the lull in spot market activity. Some mines are already discontinuing shipments to the lower ports and within another week buyers profess to believe that this diverted tonnage will be available at lower prices. Operators, however, feel that this surplus will easily be absorbed with slight and only temporary price concessions.

Although the steam trade is dull, there is no marked weakness and the tonnage offering is easily sold. Domestic grades are moving better, not only because of milder weather but also due to the stimulating effect on Ohio production of the recent 50c. raise permitted by the Ohio Fuel Administrator.

CLEVELAND

Continued moderate weather and easing up of Lake shipments have combined to soften the industrial market. There is no market weakness, but the price for No. 8 lump is about 25c. less than it was two weeks ago. Mine run and screenings are holding their recent levels.

The supply of coal, however, has not increased greatly. This is largely due to the low car supply, which is reported as getting worse. Coal operators in the Ohio district have started an investigation into car supplies at Ohio mines. It is claimed in some quarters that this state is being discriminated against in favor of other states.

The Lake season is near its close and Ohio will release many cars for other uses. The warm weather has had a depressing effect upon the coal market and for the next month or so the state of the market will wholly depend upon weather conditions.

Purchases of fuel for household purposes are slightly less. With December and hard coal unavailable in adequate volume consumers have not yet had the urge of cold weather to place orders for less desirable grades.

DETROIT

Only a moderate degree of interest is assumed in offerings. Receipts fall short of the requirements of local consumers. This circumstance, however, seems to have little influence in stimulating a more active demand.

The close of Lake navigation, the jobbers believe, will not materially change the situation, except that for a few days cars may be more plentiful on the all-rail routes.

Coal now reaching Detroit is chiefly from Ohio mines. Hocking lump is $5.75, egg, $5.50, mine run, $3.75, nut, pea and slack, $4.25. Three-quarter Pittsburgh No. 8 is $4.75, mine run, $3.75@$4, slack, $3.50@$3.65. Fairmont lump is $4.75, mine run, $3.50@$3.75, slack, $3.50. Four-inch block from West Virginia or Kentucky holds around $6.50, mine run, $4@$4.50, slack, $4. Very little smokeless is available.

COLUMBUS

A decline in prices has taken place as the result of the near approach of the Lake closing. Mild weather has helped to cause the reaction although it would take quite a long cold spell to inject much strength in the trade. Retailers have larger stocks than formerly. There are hopes in the minds of consumers that prices will be lower and consequently they are only buying part of their winter fuel requirements.

Steam trade is rather quiet as most of the large users have accumulated considerable reserves. Buying for immediate needs is now the rule.

In the Hocking Valley, Crooksville and Pomeroy fields the car supply has been about 33 to 40 per cent. In eastern Ohio the output is close to 50 per cent because of a better car supply.

Orders have been given for no more Lake shipments from the Southern roads. Shipments from the Hocking Valley, T. & O. C. and Ohio lines will continue for some time, depending on weather conditions.

EASTERN OHIO

Due to lack of cars and restricted operations on Armistic Day, the output during the week ended Nov. 11 dropped below that of any week since mining was resumed in August. Production aggregated 272,000 tons or 44 per cent of capacity, registering a decrease of 24,000 tons under the preceding week.

Regardless of restricted output, steam demand has been tapering off and because reserve stocks are known to be too low for this time of the year some operators are apprehensive for the steam trade in view of approaching weather conditions which may seriously affect the already crippled condition of the railroads. However, it would seem that many steam users have deferred their storage programs until after the close of Lake navigation anticipating not only increase of considerable magnitude in available supplies of coal but a downward movement in prices.

Greatly increased activity has developed in the retail trade because of the milder weather now prevailing. It is expected that the 50c. additional granted by the Ohio Fuel Administrator, effective Nov. 15, on prepared sizes above 34-in. produced in Ohio will stimulate production.

Spot prices in the main adhere to those set by the State Administration. Retailers say that smokeless lump from eastern Kentucky and West Virginia is becoming more plentiful but the price range is $6@$8.

Cleveland received during the week ended Nov. 11 the largest volume of bituminous coal on record. The total arrivals were 2,430 cars, divided: 1,775 to industries and 655 cars to retail yards. Average weekly receipts during the last quarter of this year now average a little less than 2,000 cars per week.

PITTSBURGH

While there are wide variations in car supplies from day to day, the average remains fairly steady at something like 40 per cent of mine ratings. Distribution is much the same as formerly, to the Lake trade, industrial consumers and domestic consumers. In general the coal is moving on contract, usually with a weekly or monthly adjustment of price, no large tonnages of spot or prompt coal being sold as a rule.

The iron and steel industry continues to show very heavy production. Since Oct. 1 steel production has been at a rate about 15 per cent greater than the average rate April 1 to Oct. 1, and it is seriously questioned whether steel consumption can support such a rate of production throughout the winter.

Current market quotations are as a week ago. The undertone of the market is plainly softer and next transactions of any consequence are expected to be at say 25c. lower, for spot and prompt. For shipment over the month of December, however, prices are expected to be firm as weather conditions are likely to make fresh transportation trouble.

BUFFALO

Demand continues what the shippers call light, yet it may be as heavy as the consumption, and if it is, the trade will have to stand it. As a rule the complaint of car shortage is as great as ever, but there is less looking for a collapse in consequence of lack of transportation.

Much complaint is heard from operators on account of the great surplus of miners in all regions. This makes it necessary to suspend work a good part of the time and if cars were not so scarce the market would be broken down. The high wages enables the men to get along without working more than half the time. It is a state of affairs that nobody seems able to change for the better. So long as it lasts the labor situation in the mines will be bad.

Shippers are putting out their coal more on its merits than they used to. They can find customers who will pay an extra price for extra quality. This is a good thing to do, for it increases efficiency and confidence in the trade. All the way up to a dollar a ton extra can be had in that way.

Prices are fairly firm at $5@$5.25 for gas lump, $4.75@$5 for steam lump, $3.25@$3.50 for mine run and $3@$3.25 for slack, Allegheny Valley prices being somewhat lower than these figures, on account of quality and lower freight rates.

NORTHERN PANHANDLE

Operations were more curtailed than during the preceding week owing to difficulty in securing cars. The West afforded the best market owing to the fact that higher prices were being paid. Mine run commanded $3.25@$4, with prepared bringing $4.50@$5. Slack ranged $2.75@$3.50.

Northwest

Hard Coal Short but No Bituminous Famine Ahead

Allotment of 60 Per Cent of Normal on Anthracite Not Expected Now—Substitutes Grow Commoner — Rail Trade Cuts Docks' Soft Coal Business.

Nobody expects the full 60 per cent allotment of anthracite to reach these states now. The shipments have been too light and rail coal from Pennsylvania probably will not come through as was expected. Even the extension of the navigation season to Dec. 15 is hardly enough to let sufficient hard coal in. Many substitutes are getting a trial. The anthracite price has ascended about $1 in most Northwest markets.

The territory is well supplied with bituminous, however. Rail shippers have been making hay while the sun shone through the early fall months. The result is rail competition is now cutting more heavily into the docks than it ever did before. An organization to promote this trade is working briskly at Minneapolis and St. Paul, announcing that it has designs on a good deal more business than it has landed yet.

MILWAUKEE

The market is featureless at present, and may continue quiet until winter weather stirs up consumers. Dealers are only reasonably busy, and the entire market lacks pep. Prices continue undisturbed. If an advance comes, it will not be until navigation closes, and future supplies depend upon rail service. There can seemingly be no pretext for advancing soft coal, but the anthracite situation is unquestionably bad.

Nine cargoes of hard coal were unloaded during the first half of November, the aggregate being 76,839 tons. This makes the cargo receipts of hard coal since the opening of navigation, 218,953 tons. Soft-coal arrivals during the same period aggregated 2,131,211 tons. Last year the receipts to date totaled 923,881 tons of anthracite and 2,502,099 tons of soft coal.

DULUTH

If any one feature of the market stands out at present, it is the anxiety over the hard-coal situation. At present it does not seem that more than 600,000 tons can possibly be delivered before the close of navigation. This is about 40 per cent of the normal supply. The lower part of the state may get relief by all-rail from mines. Pocahontas briquets are coming into favor as a hard-coal substitute.

No anxiety is felt about soft coal. There has been a falling off in demand from mining companies on the Iron Ranges. One company has relinquished an option on 10,000 tons of steam coal. This lack of demand is thought to be because of the results of the recent elections here. Minnesota is leaning toward the farmer-labor party candidates—in fact has sent a man of that party to the United States Senate—and these are known to be in favor of additional taxes on iron mining.

Last week saw receipts of but forty-one cargoes, of which six were anthracite, as against forty-nine the week before. Only twenty-one cargoes are reported as having loaded out of lower ports for here. The market on hard coal is, of course, strong, though there will be no general advance. The differential of $1.05 a ton, mentioned two weeks ago has again appeared. This is coal from non-union mines. Railroads are out of the market, evidently waiting for lower prices.

MINNEAPOLIS

The fuel directors have announced that the danger of a serious shortage in the Northwest is now remote except in hard coal. On soft coal, it has been entirely a matter of transportation for a number of weeks. The supply will hardly be enough for the entire winter on the basis of the stocks so far sent to the Northwest. But between the stores on the docks and the tonnage received all-rail, plus the tonnage which may reasonably be expected to come during the remainder of the winter, all rail, the Northwest will doubtless get through without difficulty.

Anthracite has come very slowly so far. The tonnage has hardly amounted to 20 per cent, well into November. As the district was allotted 60 per cent of a normal supply, arrangements have been made to extend the period of Lake navigation beyond the usual closing date to Dec. 15, in the hope of making up the deficiency.

The rail trade has about flooded the Twin Cities with soft coal and has put up a competition which has forced down dock prices constantly. Rail coal and dock coal divide the business in the Twin Cities and even north of those cities, while south of there rail coal is taking a bigger portion of the business than ever.

All this means a great deal to the dock business, which has hard work to make a showing with the costs running high for maintenance of docks, freights by rail and water, handling charges and the like.

New England

Smokeless Supply Runs Low, But Demand Is Almost Nil

Car Supply Erratic—Small Users and Retailers Tag Along, Relying on Dull Market to Supply Short-Notice Needs —Broad Market Still Far Off.

The situation of smokeless grades has changed materially at the mines and at Hampton Roads. Instead of accumulations at the terminals there is now in most cases an actual shortage, and more than a few bottoms have been obliged to wait from three days to a week for cargo. Car supply is erratic, due partly to heavy shipments West earlier in the month and to failure to return cars on the part of Western roads.

There is almost an entire absence of demand here. At the same time there are smaller users together with retail dealers who are running along on light stocks, relying upon a rather lifeless market to furnish what coal they may need on short notice. If Pocahontas and New River advance in delivered cost there is still the central Pennsylvania area to draw from, and it may be that seaboard buyers will not overstay. The corporations are all loaded up with British coal, supplemented by current deliveries on contract via Hampton Roads, and for that reason it is difficult to figure out any broad market for a long time to come.

While Southern coals have been advanced moderately on cars Boston and Providence for inland delivery, $8.50 @$8.75 being the current level, most of the Pennsylvania grades offering here have remained stationary as to price. A few of the more desirable coals were advanced a fortnight ago, but the producers have now found that cars are catching up with orders in hand and they are again combing over the market for consignments.

Coastwise freights from Hampton Roads are still on a minimum basis and prices on Pocahontas and New River have not yet advanced sufficiently to furnish an opening for Pennsylvania coals by water except at distant water points. A few small cars have begun buying Cambria coals by this route on the assumption that prices are about on the bottom.

Receipts both by water and all rail show a falling off, but this was only to be expected. Everything considered the volume has been reasonably strong since early July, and in view of relatively light consumption by the railroads and by New England industries it was almost certain there would be a diminished movement in November.

The long-fought battle on the wharfage question, which had been effective from Feb. 15 was brought to an end the past week. The operators have accepted the original terms offered by the railroads, and now most of the mines will be in full operation, as trade conditions will permit.

Cincinnati Gateway

Cold Weather Hoped For To Offset Lake Closing

Price Drop Expected Unless Temperature Falls or Transportation Fails—Prices Propped Up by Eleventh-Hour Lake Rush—Domestic Demand Exceeds Supply

Weather conditions are being anxiously scanned these days, it being felt that colder weather or crippling of transportation is the only element that can stave off a drop in prices with the close of the Lakes. The C. & O. officially brought the season to a close on Nov. 18 and the N. & W. ordered all shipments over the Portsmouth scales cleared by Nov. 22. There was an eleventh-hour rush to fill out certain cargoes which helped to bolster prices for a few days, but softness again set in and a drop of 50c. followed.

Domestic prices are holding their own with the demand still overtopping the supply. The slack prices will get the severe cut in readjustments, it is believed, indications already pointing in that direction. The movement of empty cars is sluggish. Transportation is now the key of the situation.

CINCINNATI

Though more and more mines are turning toward the make of prepared coal there is a sufficient amount of takers to hold this part of the market firm. Lump shipments from Hazard, Harlan and Logan begin to show heavier and to this shortly will go a large amount of coal that has been moving to Pool 4.

Steam requirements are not being forced on the market and the buyers of byproduct are lying back, evidently waiting to see the next developments.

The smokeless business goes along on an even keel and the representatives here do not look for much change in the tariff of the season. Top prices are still possible on the steam sizes and some byproduct plants are still paying a premium on the tonnages.

There has been no change in the coal situation. Generally speaking, the retail prices are 50@75c. below the limit set by the Ohio fuel authorities.

HIGH-VOLATILE FIELDS

Kanawha

The output of the region is not more than half the week's average of last year. Although the demand has been of a desultory nature, various conditions have not affected operations, owing to the fact that the output is not sufficient to fill contract orders. There is hardly an item of Eastern coastal for steam grades, the prices are so low in the East that very little coal is moving in that direction. The spot price on mine run for Western delivery ranges $3.75@$4 as against $2.75@$3 in Eastern markets.

Logan and Thacker

Logan mines, with somewhat better transportation facilities, have been able to speed up production to some extent. Much of the additional output has been absorbed by the Lake trade. Producers are behind with orders for regular customers and are still working to a great extent on contracts. Little of the tonnage is finding its way to Eastern markets, a much better price prevailing in the West.

There has been little fluctuation in the output of the Williamson field in recent weeks. It still remains at about 50 per cent of potential capacity. Owing to this limited production, it is not possible to more than fill contract orders. The bulk of the output is moving westward.

Northeastern Kentucky

Notwithstanding a small increase in the output the market is keeping pace with the larger production. The current demand is more than sufficient to absorb any surplus spot coal and a few large contracts are being placed at prices somewhat better than the current market prices. It is possible as a rule to secure about $1 for mine run, with prepared grades ranging $6@$7.

LOW-VOLATILE FIELDS

New River and the Gulf

Better facilities for Western movement are tending to reduce the amount of New River tonnage available at Tidewater but without enhancing the price. Producers are greatly handicapped by a poor car supply, few mines being able to secure more than 26 per cent of allotment and hence not loading more than 115,000 tons per week. Contract orders are absorbing nearly the entire output, so that after all there is little spot coal to be had. The scarcity in the West is reflected in a price of $5.50@$6.50, but at Tidewater the range is $1@$1.25.

Coal is somewhat more plentiful at Sewell's Point than at other Tidewater piers. Gulf mines are handicapped to a great extent by limited transportation facilities and principally by lack of adequate motive power. Although these facilities are inadequate they are being slowly improved by the Virginian.

Pocahontas and Tug River

Any advantage to the Pocahontas field as a result of the lifting of Western embargoes has been more than offset by a curtailment of transportation facilities in other directions. It is not possible to send much more coal to the West than it was while embargoes were in effect. The shortage of empties is also reducing the movement to Tidewater. The trouble seems to be in getting cars back on the home line. It is out of the question to handle many spot orders and that is contributing to a scarcity of Pocahontas coal in the West, as a result of which prices are strong.

Shipments from the Tug River region are being made to a great extent to Western points. The output is so limited, however, that mine owners have all they can do to keep up with contract orders so that after all little spot coal is being marketed. The average price on mine run from this region is $5.50@$6.50.

Coke

CONNELLSVILLE

The coke market has declined again, losing 25c. on furnace and 50c. on foundry, spot and prompt being now quotable at $6.75@$7.25 and $7.50@$8.50 respectively.

The market seems full of coke now, as production has continued to increase and consumption does not increase materially. The market has poor absorbing power since nearly all the furnaces dependent on Connellsville merchant coke have contracted to the end of the year and thus there is little occasion for furnaces to buy at this time.

It develops that when the market broke, about a month ago, most of the furnaces concluded they would be taking a narrower chance by buying than by not buying. Accordingly, there was much contracting to the end of the year at $8@$8.50. These transactions the furnaces now regret, as the further declines in the coke market do not help them while they have an adverse sentimental effect on pig-iron prices, which are sagging almost constantly.

The *Courier* reports production during the week ended Nov. 11 at 115,600 tons by the furnace ovens, and 61,280 tons by the merchant ovens, a total of 176,880 tons, an increase of 12,560 tons.

UNIONTOWN

The three coke plants of the Oliver & Snyder Steel Co., closed since the strike last April, resumed operations last week, prior notice having been served upon employees to return to work or vacate company houses. These plants are the last of the larger independent plants to recover from the coal strike. While technically the men are still "out" in the Connellsville region, operators are producing all the tonnage needed.

Railroads and the Lakes are taking practically all the coal tonnage from the Connellsville region. The Eastern market is described as "quiet." There continues to be no revision in coal prices here, steam coal being quoted at $3 and byproduct, $3@$3.50.

The coke market has not strengthened to any extent and the price resistance is met by operators with a claim of increased cost of production because of the strike. Furnace coke is quoted $7@$7.50 with foundry $8.50@$9.

BUFFALO

Furnace demand is still light, but domestic movement is so large that certain producers have put up their prices $2 or so. Jobbers quote foundry at $8.50@$9, furnace at $7.50@$8, and off-grades and stock at $6@$6.50, adding $3.28 for freight. Local byproduct furnaces demand $12@$14 for domestic sizes with various minor freight charges.

News Items From Field and Trade

ALABAMA

It is reported that **Watt Brown**, of Ragland, will undertake the development of coal properties in that county, where he is interested in a large acreage of land. It is also understood that **Joseph G. Rowell**, who is operating mines at Inland, in St. Clair County, will electrify his plant and install a coal washer.

The Beechy Hollow Coal Co. has been organized at Dora by Olin Goodwin, C. I. Jones, of Dora, and T. E. Dunham, Birmingham, and has taken over the old operations of the **Burnwell Coal Mining Co.** at Burnwell, near Dora. The new properties recently developed by the Burnwell company in Walker County were not included in the transaction.

James Bonnyman, who has been a prominent coal operator in the Birmingham district for a number of years, being one of the officials and owners of the **Brookside-Pratt Mining Co.** and previously connected with other mining developments, will move to Cincinnati, where he will reside in the future.

At a meeting of the board of directors of the **Alabama Mining Institute** recently held, **Frank Nelson, Jr.**, was elected president for the ensuing year, succeeding **Frank Crockard**, of the Woodward Iron Company. All the other old officials will hold over until their successors are elected later on.

At the election of Nov. 7 an amendment to the state constitution authorizing the state to lend its **credit to the exent of $10,000,000 to the harbor commission** for improvement and enlargement of harbor and port facilities at Mobile, was approved by a large majority. Considerable Alabama coal passes through this port yearly.

COLORADO

With the opening of the **Nushaft mine** of the **Colorado Coal & Mining Co.** at Coal Creek, all of the mines of this company in the Fremont County field are in operation. This mine had been idle for several months.

Settlement of the bituminous coal strike **in the San Juan valley** has at last been made. The operators have agreed to pay the 1921 union scale to miners, which calls for $1.14 per ton on veins in the neighborhood of 6 ft. The working of the smaller sized veins, which calls for a higher rate of pay, has been stopped.

CONNECTICUT

The Molstein Coal Co., of New Haven, has recently filed papers of incorporation to engage in the coal and fuel business, conducting yards at New Haven. The firm will have a capital stock of $100,000, and will commence business with $75,000.

The City Coal Co., Hartford, has applied to the War Department, at Providence, for permission to construct a new front on the dock and wharf in the Connecticut River. This would give the company much more facilities to handle incoming coal.

Anthracite to the amount of **172,870 gross tons entered Connecticut during October. This was 9,870 more gross tons than was** to be allotted to the state, the allotment being 163,000 tons, or 60 per cent of the normal monthly supply. All-rail shipments amounted to 123,533 tons and Tidewater shipments to 49,340 tons, the latter exclusive of Tidewater coal mined by the Philadelphia & Reading Co., which is sending most of its coal west, New England receiving meager shipments.

ILLINOIS

Harry M. Goodnow, for several years chief engineer of the Equitable Coal & Coke Co., with mines at Johnston City and Du Quoin, has been made superintendent of one of the mines at Johnston City. **Arthur M. Lee**, formerly assistant to the chief engineer has been appointed to fill the vacancy made by Mr. Goodnow's promotion.

The Bradenbery Coal Co. of Davenport, Iowa, has purchased one of the largest drifts at Breeds, Ill., and is enlarging and improving it and expect soon to be mining coal in large quantities.

Work is now well under way on the sinking of the large mine two miles east of Percy, by the **Willis Coal & Mining Co.** The Jones-Avis Sinking Co., of West Frankfort, is doing the work. The shaft is to be 18 by 11 ft. in the clear and will be 130 ft. deep. The mine will be equipped with steam hoists and electrical haulage and hauling machinery underground. It will be served by the Wabash, Chester & Western R.R., which is already working on a branch from its main line to the mine site. The mine, under lease by the **Southern Gem Coal Corporation**, is expected to be in operation in from eighteen to twenty months, and may produce 6,000 tons a day.

Indictments have been returned by the federal grand jury, charging **an intricate system of fraud in coal shipments**, by which railroads were mulcted of as much as $300 a day for months. The indictments were against **James C. Michaels**, president of the Chest Creek Coal Co., and **Daniel J. Kinrally**, an agent of the company. State indictments against the two men were returned last April. Federal investigators report that the fraud was worked by reporting carloads of coal received in bad condition, then, before the road checked up the report, $400 or $500 worth of coal would be removed and reported lost.

The Hoy Coal Co., Springfield, has just been incorporated. The incorporators are George W. Schwaner, Carl Hoy and W. R. Whitney.

Edward Gartner, of Pittsburgh, and **George B. Worden**, of Edwardsville, are preparing to sink a coal mine north of Edwardsville. Several prospect holes have been located and drilling has been done by the Pittsburgh Drilling Co. Options have been taken on about 10,500 acres of land from more than 90 farmers. Pittsburgh capital is said to be interested in the new mine.

The Standard Turbine Corporation, of Wellsville, N. Y., has appointed **E. E. Maher**, district sales manager in Chicago, with offices in the Insurance Exchange Bldg. The Chicago office will handle business for the greater part of Indiana, Illinois and Iowa.

IOWA

The Norwood-White Coal Co. of Des Moines has recently opened a large coal mine near Herrold. The company has inspected a wide coal field and it is probable that several other mines in that vicinity will be opened. The mine is to be equipped with electrical machinery.

KANSAS

Theodore Langenbergh, engineer for the Phoenix Utilities Co., has opened headquarters in Oswego, and has started on a survey of the company's options on coal lands near that city, preparatory to drilling. The primary object of the company is to exploit the field for the use of its big power plant, which is under construction.

KENTUCKY

A report from Whitesburg is to the effect that the **Isaac Lewis Coal Co.** has sold several mines to the **White Elkhorn Coal Co.**, of Detroit, which plans for enlargement of capacity.

Approximately $80,000 was the amount of the verdict awarded **M. M. Tyree** of Charleston, W. Va., against the **Kentenia Coal Corporation**, of Pineville, in a suit in the United States District Court at Covington. The judge instructed the jury to find for the plaintiff. The defendant company sought to secure a continuance but the motion was overruled. Suit instituted by Tyree was to recover the sum of $[illegible] with interest, the plaintiff claiming that [illegible] was due him as commission [illegible] as profits as a stockholder during the time he was managing agent and sales agent for two years. Tyree testified that as a stockholder he attended a stockholders meeting and was present [illegible] the books found an entry showing that the company owed him $[illegible].

The last of the Kentucky national guardsmen [illegible] left Hopkins County were released Nov. 16. The principal source of trouble was the effort of the United Mine Workers to organize workers in the strip mines [illegible] belong to the Operators' Union. The operators oppose the U. M. W. efforts and discharge men as fast as they join the miners' organization. Disorder has been threatened several times, but the situation now is such that local officers can handle it.

The W. G. Duncan Coal Co. at [illegible] will install a 3,000-kw. steam turbine with condensers and auxiliary equipment.

Federal Judge A. M. J. Cochran, Covington, on Nov. 2 ordered the sale of the property of the **Liberty Coal Co.**, in Floyd County, to satisfy a judgment of $[illegible] secured by T. H. Morris, of Floyd County. John W. Menzies, federal court clerk, Covington, was named as receiver and special commissioner to conduct the sale. The value of the property is approximately $125,000.

Steady improvement is expected in the movement of coal cars into the Eastern Hazard coal field and that within a short time normal conditions will have been reached in mine operations. It is said that the L. & N. is now receiving 15 and 16 cars daily from the Cumberland Steel Co., and that at the present rate more cars will be given the two operators' mines. The road is also steadily picking up its idle cars on other roads and diverting them to these fields. Most mines of eastern Kentucky loaded more coal during the first half of November than they have loaded in a month before.

MICHIGAN

Following a talk on other matters at the twenty-fifth annual meeting of the Bankers' Club of Detroit, **Thomas R. Marshall**, of Indianapolis, former vice-president of the United States, outlined **the attitude of the Federal Fact Finding Coal Commission** of which he is a member. "It has neither thought nor purpose of being awed by influence or bought by gain," said Mr. Marshall. "It does not purpose to be suspicious nor censorious, but it does intend to see that it shall not be treated as though it were a court of law before which parties litigant are appearing, each striving to conceal some fact of advantage to the other man, and each seeking to cast discredit upon the other. It has been promised and we do believe, that it will receive the hearty assistance of both operator and miner in the effort to ascertain the truth."

MINNESOTA

C. P. White, federal [illegible] for the Northwest was at Duluth-Superior harbor recently on a [illegible] Mr. White felt optimistic as to the [illegible] but stated that anthracite [illegible] possibly be filled by water.

A Minneapolis coal company is advertising lignite coal as a profitable product and invites investment [illegible] tion notes running [illegible] ment suggests that a $[illegible] finance a car of lignite which will [illegible] immediate market, and will thereby [illegible] and handle another car and so on [illegible] the winter. Any amount [illegible] $10 up.

MISSOURI

A large coal field has been discovered at Mosby in Clay County. **The J. P. Drysdale Coal Co.**, of Davenport, Iowa, which made the first [illegible] has control of 1,000 acres. **The Mosby Coal Co.**, which was formed to exploit the new field recently, [illegible] and coal is now being loaded there.

The Higginsville Coal Mining Co. has changed its name from the **Hanover Coal Co.** and has [illegible] with a capital stock of $[illegible] by officers of the Kansas City and K. C. Odell Fuel Co.

Fire of undetermined origin recently destroyed the office, [illegible] building of the De Lay Coal Co. at Kansas City, causing a loss of $[illegible].

NEW YORK

Thomas Dickson, [illegible] Dickson & Tyler, New York, has been elected a director of the Brooklyn Trust Co. He succeeds the late Edgar M. Cullen, former Chief Judge of the Court of Appeals of New York State.

The City Club of New York and the **Women's City Club** [illegible] public meeting [illegible] Nov. 27. **Arthur S. Somers**, of Thomas Neale & Co., will speak on "[illegible] Crisis." The Rev. [illegible] will be presided over by **Thomas Kennedy**, [illegible] Whitney, of Hard & Rand, will give the views of coal [illegible] producers.

An audience of more than 200 [illegible] mining part engineers of [illegible] Pennsylvania

OHIO

The Hardwidge Coal Co.

The Wyoga Coal Co., Cadiz, capital $50,000. [illegible] and Charles J. [illegible]

The Lewisville Coal Co., Cincinnati, capital $50,000. H. D. Lloyd, Edward F. Kane, M. H. Harvey, F. F. [illegible] and Ryan Anthony.

The Guardian Coal Co. of Akron, capital $50,000. Harry S. Bailey is listed. Charles D. [illegible] and C. B. Baker.

The Brady Tucker Coal Co., Cincinnati, capital $[illegible]. [illegible] and Lee Bridge.

The Cascade-Salyards Coal Co., Dayton, has been incorporated with a capital of $15,000 by Howard Cassady, Herbert E. Cassady and others.

Seven hundred miners employed at the Walhonding mines of the **Cambria Collieries Coal Company** went on strike on the result of a conference in the mine in which general reduction of coal wages [illegible]. The miners refuse the proposed decrease in coal prices [illegible] the coal which was mined in the mine and which had been burned there was not paid [illegible] the new agreement [illegible] the difference between them and the miners was adjusted at a conference.

Four new coal offices have been opened in Cincinnati in the past two days, as follows: **The Calder Coal Co.**, representing West Virginia interests in the First National Bank building; the **Co-Operative Coal Co.**, in charge of a Cleveland operator, in the Dixie Terminal building; the **Regent Coal Co.** in the Pyramid building, and the **Valley Coal Co.**, a branch of the Wheeling concern of the same name.

President Tom Morgan of the Cincinnati Coal Exchange and retail manager for the Wolf Coal Co., is at Fort Myers, Fla., recuperating from an attack of pneumonia. This is the third time that he and wife have visited the winter resort.

With the installation of four elevators at Cincinnati on Oct. 1, the coaling time of locomotives on the Ohio River railway [illegible] the handling capacity. Every [illegible] will be equipped to [illegible] the new [illegible] and refueling [illegible].

Elmore Stebbins, for eight years with the Hocking Coal Co., has resigned and goes with the **Pittsburgh & Ohio Mining Co.**, of Cincinnati, in connection with the Cincinnati office of the Pittsburgh & Ohio Mining Co. Mr. Stebbins will be in charge of the Cincinnati office of the Pittsburgh & Ohio Mining Co., the latter having moved after the new company's lease at Lancaster for the same purpose, following completion of the former mine [illegible].

More than 1,000,000 tons of coal have been delivered on **Lake Erie** docks and dumped since Sept. 1. The [illegible] docks of the Interlake Iron Co. at the port of Lorain have a capacity of 1,000 tons an hour. Under the [illegible] agreement, the Lake vessels [illegible] Cleveland [illegible] a ton [illegible] Lorain [illegible] a ton.

Seventy-seven miners employed at the Wick mines of the **Jamison Coal & Coke Co.** [illegible] went on strike [illegible] a reduction in the rate [illegible] mining coal [illegible] Pittsburgh [illegible] Wick mines [illegible] Jamison [illegible] Pittsburgh [illegible] Wick [illegible] Jamison [illegible] Pittsburgh [illegible] Wick [illegible] Jamison [illegible] Pittsburgh [illegible] Wick

TENNESSEE

Announcement is made of the consolidation of the **Street Bros. Machine Works** and the **Patten Manufacturing Co.**, manufacturers of hoisting machinery. The charter of the Street Bros. Machine Works, Inc., will be expanded, and the products of the two companies will henceforth be manufactured and marketed by **Street Bros. Machine Works, Inc.**

UTAH

A great legal battle is expected soon in Utah following the **release under bail of the long list of coal operators** indicted by a grand jury in Salt Lake City in October, charged with conspiring to keep up the price of coal.

VIRGINIA

Norfolk domestic coal dealers who have complained to Alexander Forward, state fuel administrator, that they have been unable to obtain shipments of anthracite, have been informed by Mr. Forward that they may order direct from the mines 60 per cent of their last year's supply of this coal, and if shipments then are not forthcoming he will take up each individual case and get the shipments through.

Sale of the mines of the **Dex-Car Pocahontas Coal Co.**, at Twin Branch, W. Va., to **Henry Ford**, by the Dexter & Carpenter Co., will not interfere with that company's business in Norfolk, which is in charge of **H. T. Tengle**. The company will get supplies for its Hampton Roads trade from other sources.

WEST VIRGINIA

Matters have reached a point in the Kanawha and Logan fields where it will be necessary, according to operators, for them to ask that they be released from their agreement not to **charge more than $4.50 for prepared grades** or else be given a larger supply of cars. Mines are not working more than two days at the most and many of them not more than one day a week, and operators contend it is out of the question for them to produce prepared coal and sell it at $4.50.

The Pocahontas Fuel Co. has added to its holdings in the southern part of West Virginia by acquiring additional smokeless coal land and additional plants. It has completed negotiations for the purchase of the **Bottom Creek Coal & Coke Co.**, in which George and Samuel Patterson and others have been interested. The center of operations of the Bottom Creek company has been at Vivian. The Pocahontas company is controlled by Isaac T. Mann and associates.

Not only have the **Henry Ford interests** purchased the mining properties of Dexter & Carpenter at Twin Branch, these being among the largest shipping mines in the district, but there is also a report in circulation to the effect that the same interests **contemplate the purchase of other mining properties in Tug River District** and also the purchase outright of a large tract or tracts of mineral lands in the same district.

Pennsylvania and West Virginia coal men have launched the **B. R. & P. Coal Co.**, which is capitalized at $50,000. Headquarters will be at Fairmont. Leading figures in the new company are: James A. Berns, George Palmer, of Fayette City, Pa.; John D. Richmond, of Watson; Frank Bettegar, of Labelle, and E. C. Frame, Fairmont.

The Kellys Creek Colliery Co., Ward, is building a $70,000 amusement hall. The company is building concrete sidewalks and expects to have the camp connected with Charleston with hard roads soon.

Refuting the statement made by Fred Mooney, secretary-treasurer of District 17, U. M. W., that martial law and the opposition of officials of the state were responsible for the failure of the strike in Mingo County, **George Bausewine, secretary of the Williamson Coal Operators' Association** declares that the strike simply simmered out and was lost because at no time were many of the miners in the Williamson field really interested in its outcome. Less than half of the 5,000 to 6,000 miners who were working July 1, 1920, heeded the call to lay down their picks and shovels. The contempt that the radical element showed for law and order was astounding, and it was little wonder that the nation's papers reached out for the news. Soon special correspondents flooded the field. Then the union, ever alert to the power of publicity, sent in its propagandists. The tent colonies provided the "sob story" that sold the strike to the sympathetic and brought golden tears from sympathizers in New York, Boston, Baltimore and elsewhere in the East.

The E. E. White Coal Co. has awarded the contract for the construction of a modern steel tipple at its plant at Glen White. During the work of constructing the new tipple there will be a minimum loss in connection with present operations.

The fire which broke out several weeks ago in the mine of the **Anchor Coal Co.**, at High Coal, has been extinguished and it has been possible to resume operations on the usual scale. The fire when discovered was isolated, under the direction of inspectors of the department of mines, by building four concrete stoppings.

A temporary injunction has been granted to the **Nuttallburg Mining Co.**, in which Henry Ford has a controlling interest against the **Maryland-New River Co.**, which operates adjoining the Nuttallburg mine. The purpose of the injunction is to restrain the defendant company from removing certain barriers which it is claimed will cause the flooding of the Nuttallburg mine. It is stated that the Maryland company's work has been undertaken with a view to draining the flooded Rosedale section of its mine.

More coal was loaded in the Logan field during the first ten months of 1922 than during any similar period in the history of the region, the total reaching 11,103,450 tons. The previous high-water mark had been reached last year when 10,607,110 tons were loaded between Jan. 1 and Oct. 31. Under conditions such as prevailed during the first six months of the year, it would have been possible, it is believed, to have reached a total of 15,000,000 tons during the year. Under conditions now prevailing, it is believed that the total output of the field will reach 13,000,000 tons.

Litigation pending in the courts for five years between Alex R. Watson of Fairmont and the **Buckhannon River Coal Co.**, a Uniontown, Pa., concern operating at Adrian, has been settled by a decision awarding $25,244.27 to Watson, for breach of contract. The plaintiff contracted with the defendant company in 1916 for 50,000 tons at 95c. a ton but only secured the delivery of 36,000 tons. When the price of coal began to go up and he was unable to secure the delivery of the balance he made the defendant company a proposal to accept half the profit on the 14,000 tons remaining undelivered. That proposal the defendant company rejected. The judge of the Upshur Circuit Court held that he was entitled to half of the profit made by the defendant company on the sale of 14,000 tons on a basis of $1.40 per ton.

The Blue Ridge Collieries Co., of Cincinnati has been organized as a West Virginia concern. It proposes to issue 15,000 shares without par value. **Active in** effecting an organization of this company were: N. C. Kelley, Richard M. Lambert, Lyman H. Dreibach, Calvin S. Cramer and Arthur W. Gordon, all of Cincinnati.

Action taken by the stockholders of the **Pittsburgh-Wheeling Coal Co.**, in increasing the capital stock of the company from $100,000 to $250,000 has been approved by the secretary of state and the increase made effective.

Further development of coal land in the Northern Panhandle is presaged by the organization of the **McMechen Coal Co.**, which has a capital stock of $[illegible]. This company will have its office at McMechen. Largely interested in the new concern are C. W. Caldwell, C. D. Martin, J. F. Young, Michael Freeman and E. L. Parriott.

A most **successful safety meeting was** held at the Ida May mine of the **Consolidation Coal Co.** about the middle of November over which W. J. Wolf, superintendent of the Consolidation, presided, extending to the State Department of Mines his appreciation for its co-operation in having taken inspectors most in the safety work.

Until there is a better outlet from the western Greenbrier field of West Virginia and a better connection with the main line of the Chesapeake & Ohio development of the field in question will be materially retarded. The product is shipped over two roads, the Greenbrier & Eastern, completed about a year ago, and the Kanawha & Michigan railroad. Owing to transportation difficulties, mines on the Greenbrier & Eastern are limited to an allotment of 10 cars per day. One company alone in the new field is capable of producing more than the allotment of the whole field. There is a movement on foot to have the C. & O. make a direct connection with the Greenbrier & Eastern over the Hawks Nest route to Meadow River.

The Ohio County Fuel Co., of Pittsburgh, has been organized as a West Virginia corporation. Leading figures in the new company are: Horace H. Lamb, Mont W. Lamb, Horace H. Lamb and Thomas Balsley, all of Wheeling. Mr. Lamb is located at 13 Broadway, New York.

A number of strikers who participated in the mine riots at Short Creek and Barton and Franklin were sentenced on Nov. 14 by Judge Frank G. Wagoner in the circuit court at Cumberland. Francis R. Kaever, Allen Yates, James E. Miller, David A. Murphy, Edward Hazel and Douglas Truly drew sentences of six months in the house of correction for unlawful assembly. A number of others were convicted and sentenced for participation in the riot. Judge Wagoner in pronouncing sentence scored those who did not appear for trial but who incited the miners.

The Stanley Coal Co., with principal offices in Morgantown, has been incorporated by C. W. Ross and Stanley Ashby of Crelin, M. L. S. Kendall Jr. and John W. Kendall, Morgantown, and F. L. Kendall Jr., Pittsburg, with an authorized capital of $[illegible] to operate in Monongalia County.

CANADA

F. W. Osborn, representing the Yorkshire Trust Co., Vancouver, and A. P. Gardo, mining engineer of Prince Rupert, **are investigating the results of the diamond drilling** operations which were done by order of the court on the coal areas in the Copper River district owned by the **defunct National Finance Co. of Vancouver**, with a view to obtaining an order from the court to renew the operations in the spring. The coal areas are said to be the last single asset of the defunct company. Last spring an expenditure of $[illegible] in exploration work was required.

The U. M. W. will attempt to invade the northern Alberta field, which in the past has been an entirely open-shop district. A mass meeting was held at Edmonton on Nov. 15. Operators are showing no particular alarm over the movement. They state that the mines are well laid out, are armed of constant employment, and are non-unionized, and that have no fear that the movement will succeed.

Prof. F. A. Thompson, of the Idaho School of Mines, recommended the **American Mining Congress** at a meeting of the British Columbia Division of the Canadian Institute of Mining and Metallurgy, Nov. 15-18.

According to a report issued by the **Dominion Bureau of Statistics**, the total **number of coal mines in Canada in 1921** was 698, the aggregate length of the underground workings [illegible]. The total capital investment was $[illegible] and the output was [illegible] tons, the value of [illegible]. The total number of employees was [illegible], who received in wages $[illegible]. The number of days worked was [illegible], or an average of 228 days for each mine, [illegible] average wage was $6.24 per day. Including employees receiving [illegible] received a total of $[illegible] and [illegible] for mine timber, amounted to $[illegible].

The Dominion Bureau of Statistics has issued a summary of **imports and exports during the first ten months of the year** as given below. Imports from Great Britain show heavy increases as compared with the first years.

CANADIAN EXPORTS AND IMPORTS

	[illegible]	[illegible]
Anthracite imports	[illegible]	[illegible]
Bituminous imports	[illegible]	[illegible]
Coal exports	[illegible]	[illegible]

Alexander Dick has been appointed [illegible] engineer of coal mines and **E. F. Merritt** as general manager of coal mines for the **British Empire Steel Corporation**. Mr. Dick was general mine agent of the Dominion Coal Co. He had previously been engineer of the Coal Commission, with the formation of the new company, when he became its acting coal mines chief. Mr. Merritt for the past three years has been general manager of the Dominion Steel Corporation at Sydney.

The first cargo of hard coal for the use of Port Arthur this season has arrived at that port via the Panama Canal. The cargo was a load of coal from Buffalo consigned to the Welsh Coal Co.

WASHINGTON, D. C.

Coal Dust Explosion Tests to Prevent Mental Mine [illegible] [illegible] report by Dr. [illegible] of the Bureau of Mines [illegible] the Bureau's experiments in connection with the explosion of [illegible] A. Gorgas, who as chief engineer of the Bureau of Mines directed the experiments, is a [illegible] report of a series of tests conducted by the Bureau of Mines at the Pittsburgh [illegible] Bureau of Mines [illegible] in connection with the [illegible] Association.

Association Activities

Clarksburg Coal Club

Monongahela Coal Association

West Virginia Coal Association

Publications Received

Annual Report of the Department of Mines of West Virginia for the Fiscal Year [illegible] by H. M. Lambie, Chief of Department of Mines. Pp. 414.

Report of the State Mine Inspectors of Iowa for the Calendar Year Ending Dec. [illegible] by W. L. Holland, R. T. Rhys, [illegible] and L. M. Sharon. Pp [illegible].

Coal Statistics for Canada for the Calendar Years 1919, 1920 and 1921. Dominion Bureau of Statistics, Mining, Metallurgical and Chemical Branch, Ottawa, Canada. Pp. [illegible]. Covers coal consumption, production, exports, imports, number of employees, etc. This report is a continuation of the series of annual reports previously published by the Department of Mines on the production of coal and coke in Canada.

Obituary

C. G. Blake, president of the C. G. Blake Coal Co., pioneer shippers and agents for New River coals, died at his residence in Cincinnati on Nov. 3. Mr. Blake was born in Terre Haute, Ind., seventy-five years ago and came to Cincinnati in 1870, where he engaged in the pig-iron business. In 1886 he disposed of his holding in that trade and entered the coal business with Richard and Frank Ellison. A second incorporation of the firm under its present style admitted E. A. Colter, one of the leading figures in Cincinnati's coal trade. Mr. Blake took pleasure in recounting the fact that he was one of the first persons to ship New River coal west. With the growing importance of that field his company expanded and became large handlers and shippers of coal to foreign ports. Mr. Blake laid much of the ground work for this enterprise himself.

Col. Jay H. Northup is dead of paralysis at Louisa, Ky. He was long active in coal, timber and railroad industries. He opened the Big Sandy region to capital and later founded a model farm. He was a lieutenant in the Union Army.

Traffic News

The Pittsburgh & West Virginia Ry. Co. and eighteen coal operators whose mines are located on that road, have filed a complaint with the I. C. C. asking that a **physical connection at Hopedale, Ohio, between** that road and the **Alliance Division of the New York Central**, be made mandatory. Recently, due to lack of power and other adverse operating conditions, the P. & W. V. is said to have been utterly incapable of handling the volume of traffic offered it. The New York Central has declined to make the connection voluntarily on the ground that traffic is not sufficient to justify the expenditure, not only of the connection but of the enlargement of terminal and handling facilities which the increase in traffic would necessitate. It is alleged that the New York Central also is fearful that it would be short-hauled on Pittsburgh [illegible] traffic.

In the complaint of the **Jeddo-Highland Coal Co.** an examiner recommends that rates on [illegible] run of mine and culm coal from mines and culm banks of the Lehigh Valley R.R. in the Lehigh region of Pennsylvania to breakers in this region for preparation and re-forwarding by that road during federal control, were unreasonable because they exceeded those established Aug. 26, 1918.

A proposed report by Examiner A. S. Worthington of the I. C. C. in the case of the **Kanawha Black Band Coal Co.** vs. the **Chesapeake & Ohio Ry. Co.**, finds rates on coal or carbonite from certain mines on the Kanawha District to interstate destinations on the C. & O. and its connections are unreasonable and unduly prejudicial. Reasonable and non-prejudicial rates are prescribed for the future.

Recent meetings of operators in West Virginia [illegible] for the purpose of **securing some relief from car shortages** and other transportation handicaps led to a general conference of representatives of the various coal fields of the state and operators of the C. & O. at Huntington. The conference was held specifically for the purpose of discussing the question of car supply on the main and branch lines of the road.

Headway was made toward a better understanding between the railroad and the operators. It was pointed out by the road officials that every effort was being made to get motive power and coal-carrying equipment in better shape.

Wyoming's railroad mileage is about to be reduced twelve miles. The branch line from Lost Springs to the Rosin coal mine, twelve miles distant, is to be scrapped by the Chicago & Northwestern.

As a result of a ruling by the railroad commission of Wisconsin, a **reduction of 10c. a ton** on freight charges on soft coal **from Milwaukee and Sheboygan to Oshkosh, Wis.,** has been made. Formerly the rate was $1.10 per ton.

A reduction of 10 per cent in the short-haul intrastate coal rate has been ordered by the **Indiana Public Service Commission.** The short-haul rates affected are all hauls of 30 miles or under. The reduction goes into effect Dec. 1. The reductions ordered affected certain classes of rates that were not decreased in the general freight rate reductions of a few months ago and will now bring these classes down to the level of the rest of the freight rates on coal. The case was pressed by the **Indiana State Chamber of Commerce.**

At a recent meeting of the Monongahela Valley Association the question discussed had to do with reference to the recommendation of a representative of the I. C. C. that the minimum local rate for moving coal in West Virginia should be 84c. instead of 64c., the present rate. The decision reached as a result of such discussion was that each chamber of commerce in the Monongahela Valley should file an intervening petition with the I. C. C. and that the association on its own part should also file an intervening petition so that the association may be a party to the hearing to be held in Pittsburgh on Dec. 4.

Trade Literature

Solid Bronze Centrifugal Mine Pumps. Allis-Chalmers Mfg. Co., Milwaukee, Wis. Leaflet No. 2060. Four-page folder, illustrated. These pumps are particularly designed to resist the acidulous and erosive action of mine water.

Supplies and Equipment for Coal Mines. Cooke-Wilson Electric Supply Co., Charleston, Pittsburgh and Athens. Catalog No. 4. Pp. 381, 6 x 9 in.; illus. Covers a wide range of electrical supplies for coal mines and contains a fund of useful information.

New Marion Model 21. The Marion Steam Shovel Co., Marion, Ohio. Pp. 8; 9 x 12 in., illustrated. One of the important features incorporated in this new shovel is a new and novel type of rigid crawler trucks.

The Coxe Stoker. Combustion Engineering Corp., New York City. Bulletin CB1. Pp. 24; 8 x 11 in.; illustrated. Describes the performance of this stoker on Western and Midwestern bituminous coals. The tests recorded will be of interest to the engineering world.

R. D. Nuttall Co., Pittsburgh, Pa., has issued a new booklet No. 36 containing a **series of charts on gear design,** also bulletin No. 34 on **industrial helical gears.**

Padley & Venables, Ltd., Sheffield, England, List B, Section 2, describing the Hollow and Solid Rock Drills, and List B, Section 3 on **Coal Cutter Picks.**

The Combustion Engineering Corp. of New York City has published a booklet entitled "**Service**," by John Van Brunt. It gives the stoker manufacturer's standpoint on the subject of service.

Coming Meetings

The Illinois Mining Institute will hold its next meeting Dec. 1 and 2 at the Illinois Union Bldg., cor. Wright and John St., Champaign, Ill. Secretary, Martin Bolt, Springfield, Ill.

West Virginia Coal Mining Institute's annual meeting will be held Dec. 5 and 6, at Huntington, W. Va. Secretary, R. E. Sherwood, Kanawha Bank Bldg., Charleston, W. Va.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, *Editor*

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What Every Coal Man Knows

THAT if the railroads were now to supply all the cars and transportation ordered by the soft-coal mines—to reduce "car shortage" to zero—the coal producers would not only not be able to sell the coal that would thus be produced but would get a far lower price than now obtains for that which they did produce.

That with mines and labor ready to produce 13,000,000 tons and upward per week, with consumption less than 9,000,000 tons weekly and with stocks of bituminous coal in the hands of consumers now equal to, if not in excess of, thirty days' requirements, a gain of a million tons per week in production would flatten out the soft-coal market to a distressing position.

That, in fact, the car shortage is the only thing that sustains the price of soft coal, and that in spots it is not even doing that.

In the week of Nov. 4 the railroads reported to the American Railway Association that 412,679 cars were ordered by the bituminous-coal mines for current loading. These, if supplied and loaded, would have given an output of more than 20,000,000 tons, or twice the actual output that week. This figure doubtless represents the present rating of the mines, and as everyone knows that the ratings are inflated no one will consider that the mines could have produced and loaded that quantity of coal had the railroads been able to supply the cars.

Cars placed—that is to say, constructively placed, for every car that is held over either empty or under part load is counted each successive day—numbered 220,039, according to the same authority. This represented 53 per cent of the orders; the car supply was therefore but 53 per cent. For the same week the reports to the Geological Survey of time worked and lost by causes at these mines showed Ohio and eastern Kentucky working less than 40 per cent of full time and other districts ranging upward to Alabama at 82 per cent. The average for the country was around 43 per cent, and of the more than half time lost the greater part was attributed to transportation disability or "car shortage."

Instead of this obviously inflated base on which to calculate the extent of the railroads' shortcomings, let us compare the present rate of production to the maximum recorded weekly output of bituminous coal, 13,000,000 tons. There can be little doubt but that were production to mount to 13,000,000 tons per week the demands of all consumers would soon be satisfied. In fact such an output would rapidly meet all needs, for it would put something over 2,000,000 tons more per week into stocks and thus double the rate of accumulation of reserves. The present weekly output is 82 per cent of that maximum, and the car supply, measured in a more reasonable manner, is thus 82 per cent and not 53 per cent.

The railroads are now exceeding all previous records in loading freight of all kinds, between 900,000 and 1,000,000 cars per week being the usual thing. They could boost the bituminous-coal production to 12,000,000 tons per week and higher were they willing to make the effort. There have been in effect priority orders affecting the supply of transportation for this commodity that if followed by the railroads would have brought this result. Previous high records of coal loading always have been reached through the imposition and strict application of such priorities. Objection to literal observance of priorities of this nature is found in the consequent denial of transportation to other commodities such as ore, limestone, steel products, building materials, and even anthracite, that move in open-top equipment. Many of these other offerings are better revenue producers than soft coal. Possibly the railroad officials have an eye on the general situation and consider that coal will move next week if not this, while some of the other kinds of freight might not. This year coal has not had its normal share of the transportation.

It is quite true, as continually pointed out by the coal operators and mine workers, that lack of transportation alone holds down production during periods such as this autumn, when the consumers are demanding large tonnages. It is also true that while the demand for coal at any given time may be twice the current rate of production the total requirements in a season are limited and there never has been a year, save 1916 and 1917, the end of which did not see the demand well satisfied. From the date in August when the strike was settled to the end of 1922 there will be produced about 190,000,000 tons of bituminous coal. It is being produced at an average rate of between ten and eleven million tons per week. If the railroads had been able in August and September to supply the transportation it would have poured forth at 15,000,000 tons per week for a few weeks. At that rate every stockpile would have been overflowing in four weeks and the demand and output of soft coal would have dropped to around 9,000,000 tons and the price would have been like unto last March.

We in this country can have peakload transportation for 13,000,000 or 15,000,000 tons of bituminous coal per week without a car shortage if we are willing to pay for it. But since the requirements for such tonnages are spasmodic and of short duration, coal-freight rates would have to carry the charges sufficient to support the capital investment necessary to supply the additional equipment and facilities. This might conceivably add from 25 to 50 per cent to the coal freight rates. The railroads would add nothing to their total tonnage carried by such a program.

On the other hand the country pays for the lack of sufficient transportation during periods of peak demand by paying more for spot coal. A measure of this is found by comparing the average realization of the bituminous-coal operators, as reported by the Geological

Where the Inefficiency Lies

OUR contemporary the *Gas Age-Record* in a recent issue comments editorially on the "inadequate organization [the Geological Survey] now employed to collect and distribute coal statistics" and deplores the fact that it is not possible "to take the figures given out by the Geological Survey, and draw definite and accurate conclusions." It appears that the *Gas Age-Record*, like a host of others, including ourselves, is surprised at the volume of stocks of bituminous coal in the hands of consumers, as reported recently by the Survey. Having taken the reported stocks of coal as of last April, added current production and subtracted estimated consumption week by week, the *Gas Age-Record*, like the rest of us, found that by the time the strike was ended, in August, the reserve of coal was something less than zero.

None but amateur calculators took this conclusion seriously. Informed observers noted as early as the middle of July that there were other factors involved than were currently reported in the Survey's weekly reports. The market was entirely too steady for there to be such a paucity of coal. The figure reported as of Sept. 1, 22,000,000 tons, is higher than we expected, but the unknown factor, coal in transit, on which data are now available, explains the result.

The editor of the *Gas Age-Record* does not want to reflect on the "distinct service" rendered by the Survey in its weekly report, but does charge it with inefficiency. The inefficiency is, we believe, on the part of those who use the figures, or rather overuse them. We have extrapolated these figures ourselves and have missed the mark at times, but never so far that we were moved to seek an alibi by assailing the source of the data, the accuracy of which we were not disposed to question.

Coal Cost in Relation to Water Power

A SUGGESTIVE thought was expressed recently by Dr. Charles P. Steinmetz with respect to the influence of the cost of coal on the development of water power. After pointing out that in New York State there are developed water powers producing energy equivalent to 10,000,000 tons of coal as compared with an annual total consumption in the state of 54,000,000 tons, he notes that there are undeveloped water powers capable of saving 34,000,000 tons of coal.

California has 1,150 kw. of hydraulic energy per capita as compared with 185 kw. of fuel power. New York has 277 kw. of hydraulic power and 105 kw. of fuel power according to Dr. Steinmetz. California has no coal and what is imported comes from great distances and is costly. New York has always had cheap coal for industry. The Western state has had a powerful incentive for developing her water power and the Eastern state has not. It is pointed out that the cost of coal in New York is now as high as it was in California when that state forced the development of hydraulic power.

The high initial cost of installation of water power is what has held it back, but when that is offset or more than balanced by a high price for coal, capital investment turns to the rivers and coal loses a permanent market. The change will be gradual, but we agree with Dr. Steinmetz that it is sure. It does not follow that the consumption of coal will in consequence become less, but rather that it will not grow with the industrial development of the country. Water power can never supplant the use of coal in its entirety, even for supplying electrical energy, for the relative costs always tend to equalize and local conditions must always have a powerful influence on the choice between the two basic sources of power.

Can Soft Coal Retain Domestic Trade?

ANTHRACITE operators are frankly concerned over the possibility that forced substitution of other fuels for hard coal this winter will make permanent inroads on their business. It has been twenty years since the East has lacked hard coal to meet its household requirements. The Easterner is not now particularly pleased when he is required to take bituminous coal and he is but slowly heeding the advice that he do so, at least to the extent of protecting his early requirements.

On the other hand, there are those bituminous-coal producers in the high-grade fields nearest to the Atlantic seaboard who have for years looked longingly at the steady, dependable market enjoyed by the producer of domestic sizes of anthracite. He has wanted to introduce his product in competition, as the hard-coal seller has sought to push his steam sizes on the markets of the soft-coal man.

Because bituminous coal has never participated in the household trade of the East, bituminous coal has not, save in exceptional instances, been prepared for that market. The result now is that when the soft-coal shippers are called on to help fill the gap caused by the strike in the hard-coal mines they have nothing but run-of-mine to ship. Straight run-of-mine coal is not a satisfactory household coal. No one likes to use it. Hotels, office buildings and apartment houses with fully equipped steam plants can and do take mine-run coal, as in Chicago, where run-of-mine smokeless coal is the favored fuel. But the householder wants sized lumps. If the bituminous-coal producer has a desire to retain any of the market now thrust upon him he must cater to that market. Several of these producers have announced the installation of equipment for sizing their product, and the indications are that others will follow. Some of the central Pennsylvania coals will not lend themselves to this treatment, being too friable, but others have already been proved to be real household coal.

The present is an opportunity for the soft-coal men so situated that they can ship into the Eastern territory. Having matched preparation with anthracite, they will have lower price to set against cleaner, smokeless product, shipped from mines that never have car shortage.



Coverdale Mine to Hoist 4,000 Tons per Day Is Fitted With Two-Car Self-Dumping Cages

Disadvantage of Skip When Tonnage Is Under 5,000 Daily and Shaft Depth Moderate — How Cars in Single File Form "Twos" at Shaft and Enter Single File Beyond

By A. F. Brosky*
Pittsburgh, Pa.

UNLESS a speed is attained both dangerous and undesirable, 4,000 tons of product cannot be raised satisfactorily in cages in an eight-hour day up a two-compartment shaft, even though that shaft be of only moderate depth. It may be said that the end may be attained by putting two cars in tandem on a single cage, thus increasing the capacity of the shaft.

Unfortunately, though it is easy to arrange to put two cars end for end on a cage, when it is done they cannot be made self-dumping, and time will be lost spotting the cage at the landing, pushing the cars off the cage and either loading other empty cars in their stead or dumping the cars as received and backing them onto the cage. Furthermore with the decaging and dumping arrangements two more men must be employed. The suggestion may be made that cages with two or more decks each lifting one car might be used and indeed they have been tried, but it has been found that too much time is lost in caging and decaging.

Unless 5,000 tons is to be raised per shift skip hoisting is not desirable, though it might be a preferable method of handling coal at great depths. It brings a large tonnage up whenever the mine bottom is filled and it would overburden any tipple that was designed to prepare and load an output under 5,000 tons per shift. The maximum efficiency of a skip is realized only when it is operated at a fair speed. To handle the load of coal that is brought up a shaft whenever a trip brings a string of cars to the bottom, the tipple must be run at overload with resulting poor preparation or else the speed of hoisting must be stepped down to the rate of preparation for which the tipple was designed.

Increased tipple capacity to cope with high-speed hoisting under the conditions stated is not desirable as there then would be idle periods between trips. It is a different matter with 500-ft. shafts or deeper. In that case skip hoisting is ideal for tonnages of 4,000 or even less, depending upon the depth, as much time is consumed in raising the coal from the bottom to the dump plate.

In a shaft of moderate depth and with a 4,000-ton output only one of the many advantages which skip hoisting affords—the ability to use gateless mine cars—is retained, but this advantage is offset by the complexity of the equipment with which the shaft bottom must be provided. The skip hoist is primarily to aid in the rapid lifting of great tonnages up a single shaft of moderate depth or moderate tonnages up a single shaft of great depth.

Four thousand tons of coal may be hoisted successfully by another means—namely, through the employment of a cage holding two cars placed side by side in conjunction with a four-track bottom. Such an installation has been in successful operation for several years at the mine of the Monroe Coal Co. at Sevier, Pa., and one installed more recently at the Coverdale mine, as

Note—The headpiece shows the [illegible] mine tipple. The tank, of unusual shape mounted on four legs in the rear of a small brick building on the extreme right, is a gravity-fed cooling tank for water circulated around the crosshead bearings and engine slip regulator by a small centrifugal pump.

*Bituminous Field Editor, *Coal Age*

No. 8 shaft of the Pittsburgh Terminal Railroad & Coal Co., is working equally well. This mine is 12 miles south of Pittsburgh and has approximately 3,000 acres of the Pittsburgh seam, the deposit being about 9 ft. thick. The property was opened up only a few years ago, and much development work has yet to be done. In consequence only 1,000 tons of coal is now being hoisted in each eight-hour day, but the ultimate daily output will aggregate 4,000 tons.

The depth of the shaft is 340 ft. The distance from the concrete coping to the point of discharge is 65 ft., so the total lift is 405 ft. The inside dimensions of the shaft are approximately 11 x 26 ft., the unusual width being necessary to accommodate the Lepley cages, each carrying two 2-ton mine cars side by side. The cages are self-dumping and differ but little in operating principle from the single-car type, the tipping and locking guides and other devices being practically the same in each. In order to carry safely the heavier loads resulting from hoisting two cars in one lift the cages, which measure 10 ft. 6 in. x 12 ft., are more heavily constructed than is usual. The 16-ft. head sheaves also are heavier than in most headframes. They carry a 1¼-in. rope and are mounted on a 10-in. steel shaft. The headframe itself is more substantial than that which is provided at most mines. Heavy headframes are sometimes made up of fabricated columns cross-latticed, but the headframe over the Coverdale shaft is composed of six solid-sectioned columns for posts and two for the inclined compression legs, all of which are securely batter-braced.

Before giving details of the main shaft bottom it might be well to describe briefly the method of mining as regards the immediate and future recovery of coal, the underground layout and related facts. A rectangular block of coal is left about the shaft bottoms for protection. The greater dimension of this rectangle is in the direction of the face entries, which lie north and south—the usual direction of such workings in the Pittsburgh seam. The main bottom entries are not driven at 90 deg. to the main face entries, as is frequently the case, but on an angle of about 70 deg. The surface topography, railroad needs and the elimination of excessive cutting and filling influenced the location of the shaft and main bottom entries. They are so placed as to allow an incoming motor with a load trip to uncouple and pick up the empty trip with a minimum of confusion and delay. This feature will be described elsewhere. The double entries connecting the supply shaft with the main shaft are approximately 1,100 ft. long and lie at 90 deg. to the load and empty tracks on the main bottom and parallel with the spur railroad track on the surface. The surface topography fits in well with the shaft locations and affords an ideal sur-



FIG. 1. MOUNT AND VILLAGE OF THE COVERDALE, OR NO. 8, SHAFT OF THE PITTSBURGH TERMINAL RAILROAD & COAL CO.

A stream flow between the hoisting shaft and the village. This isolation has its advantages in keeping people from congregating around the mines and children from playing on the railroad tracks. The valley will in time, however, be filled with rock by means of a larry with distributing conveyor

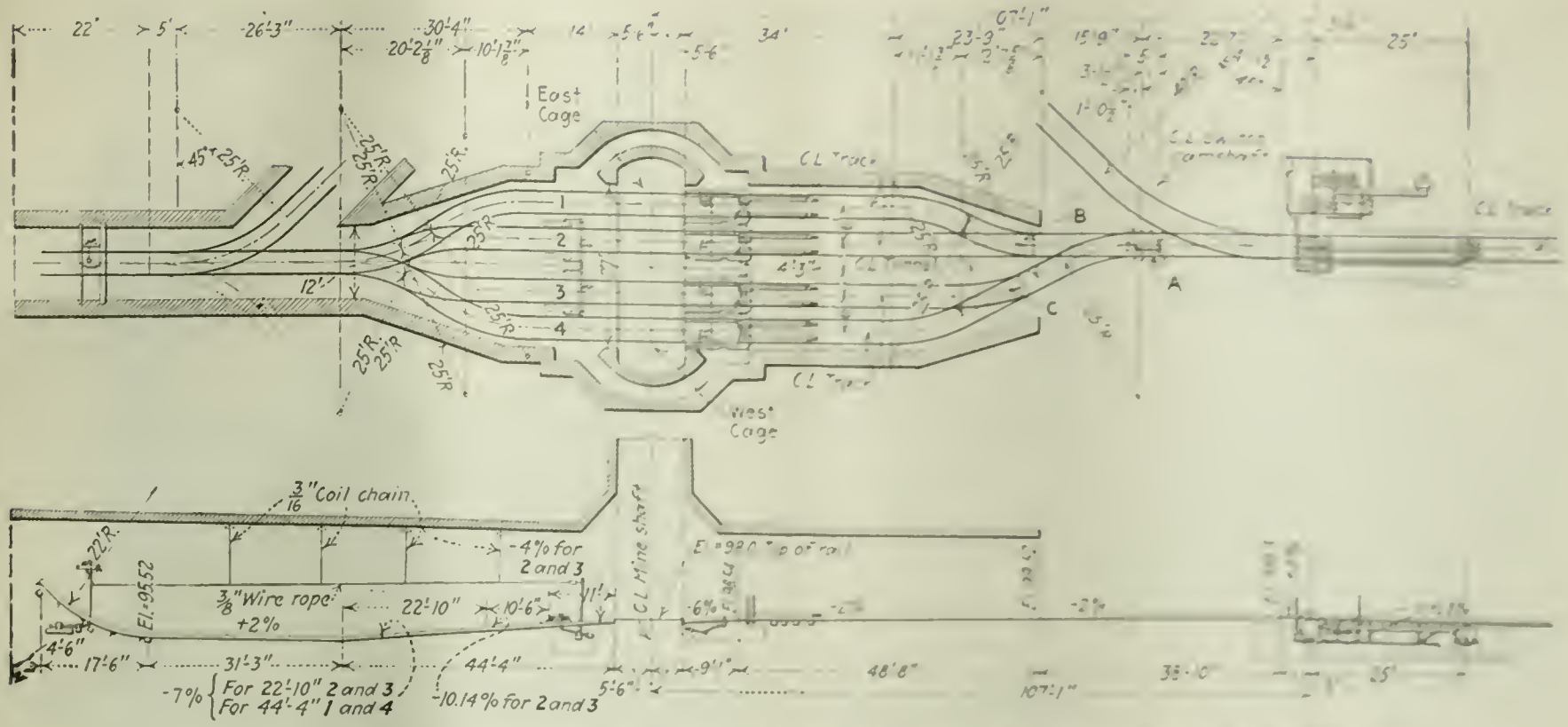


FIG. 2—SHAFT BOTTOM WITH FOUR TRACKS LEADING TO AND FROM TWO CAGES

The switches provide automatically that the cars will go to the proper track. The [illegible] in the left of the illustration releases the cars on the empty track one by one, so that they do not collide but take the empty pit in such order as to avoid one another, without however occasioning any undue delay.

face-plant layout. All this may be noted in Fig. 1, which shows a portion of the mine map upon which are superimposed a few of the surface buildings. It will be noted that a low-lying basin separates the town proper and the area occupied by the surface plant, and that the bottom of the depression passes close by the supply shaft. The town itself lies on a hill that flanks the eastern edge of the basin. This natural hollow is a benefit in two ways. It partly separates the town from the plant and affords a convenient dumping ground for the refuse rock from the mine.

The men traveling from the town to work and returning therefrom keep throughout their journey on the opposite side of the valley from the tipple and main shaft and do not come anywhere near either. In this way the men at work at the main shaft are free from the interruption of passing and loitering men.

A Heyl & Patterson refuse-stacking car disposes of the slate. The slate track passes under the rock bin on the tipple and skirts the edge of the hollow approximately parallel with the railroad track. The conditions are such as to favor easy slate disposal at low cost because of the short haulage and straight track.

Air and Main Shafts Over Thousand Feet Apart

As already has been mentioned, the auxiliary or air, shaft is 1,100 ft. from the main shaft. Ordinarily the shaft for lowering men is placed close to the one up which coal is hoisted. Surface management is facilitated by the grouping of its several structures as close together as possible and certainly closer supervision is obtained, but the arrangement has the disadvantage that men will then occupy their time by "loafing" around the main shaft and tipple. Furthermore, in the early stages of development, mining activities are concentrated about the big bottom, consequently the miners have a short distance to travel to their working places, no matter where the main shaft may be. After development it makes little difference whether the men are lowered at a point near the big bottom or many hundred feet away. Few men work in the vicinity of the big bottom. Each plan has its advantages and disadvantages, but these do not entirely govern the selection, for surface features and other related factors have a direct bearing on the final plan.

The mine is laid out on the quadruple-entry system. At 2,000-ft. intervals two face entries are driven, and from these two butt entries are extended every 300 ft.

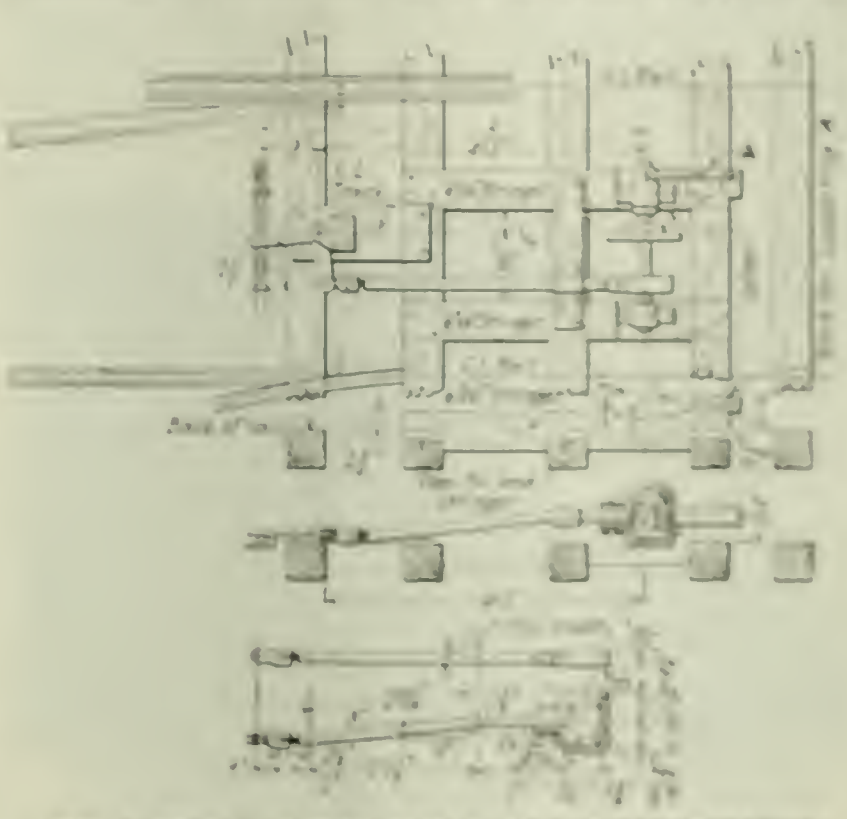


FIG. 3—TWO OF TURNEVILLE MULTIPLE-SPEED SWITCH

The operating principle is as follows: Two steel bars, pivoted together so as to form four spurs, are mounted [illegible] horizontal shaft from which projects a [illegible] This carriage within a square hood under [illegible] a connecting rod. As the two spurs [illegible] two positions at which it is operated [illegible] the switch. In one it presses on one side of the switch, putting the [illegible] rail forward and opening that portion of the [illegible] the other side of the switch, pulling the [illegible] closing the switch. These positions correspond to the positions of the cast steel. The automatic features [illegible] without effect. [illegible] opening cars [illegible] changing the switch points. The third rail [illegible] spur and open the switch. The latter will [illegible] the rear wheel [illegible] the switch [illegible]

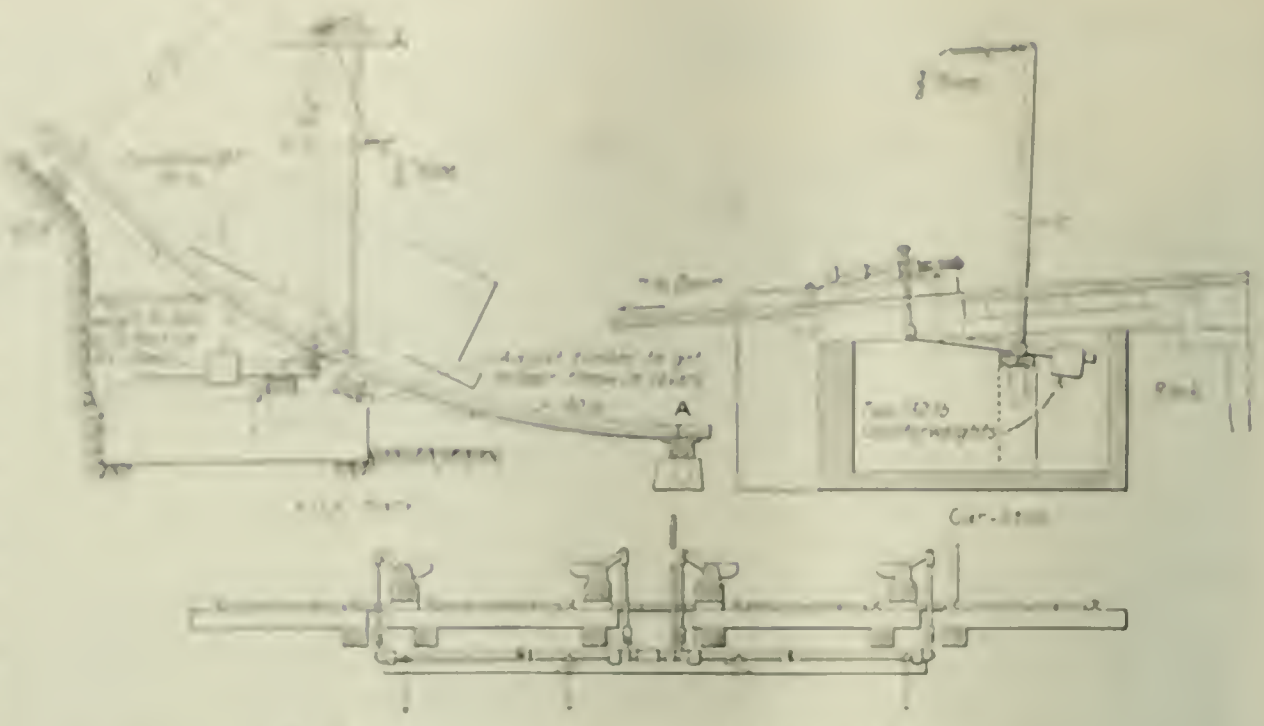


FIG. 2.—AUTOMATIC KICKBACK AND CAR STOP

The car rips on the kickback, and just about where it reverses, the rail, held up till that time by a counterweight, descends and actuates the car stop, which releases another car. This car arrives at the switch of the empty track almost immediately after the car from the kickback has passed out of the way.

The rise in this section must be allowed to stand at least till the entry is finished. When entry driving has been sufficiently advanced, activities will be shifted elsewhere.

The coal lies practically flat; in fact it is so nearly level that it has not been thought necessary to provide the mine cars with brakes. The haulage motor with a loaded trip pulls into the main bottom as far as a trip feeder. Here it is cut off and runs around to the empty-car entry. At this point it picks up its trip and without delay starts back to the workings. The trip of loads, which never exceeds fifty cars, is elevated, one car at a time, up a 1.5-per cent grade by a 25-ft. chain and hook trip feeder. From the knuckle of this feeder the cars drop down a favorable grade and through



automatic switches to the shaft. A plan and profile of the shaft bottom are shown in Fig. 2.

Cars in sets of two to passing through the first automatic switch at *A* are diverted alternately to the track leading to the east or west cage. Let us say that this switch is set to allow two cars to pass on to the east cage. The foremost of the two cars will be diverted either to the right or left track leading from *B* to the east cage, depending upon the setting of the wheel-thrown switches at *B*. Whichever track the first car passes over, its wheels throw the switch points at *B* for the opposite track, over which the second car passes. The next set of two cars in passing over the switch at *A* will set it so as to allow them to drop down to the west



FIG. 6—LOAD SIDE OF SHAFT BOTTOM

Looking toward the shaft. The illustration is made from a photograph taken on a day when the mine was idle. This accounts for four loaded cars being at the landing. Ordinarily there are only two, both on either one of the two sides. Note the well-concreted arch in the rear, the 12-in. beams in the foreground resting on a heavy side wall of pressed brick.

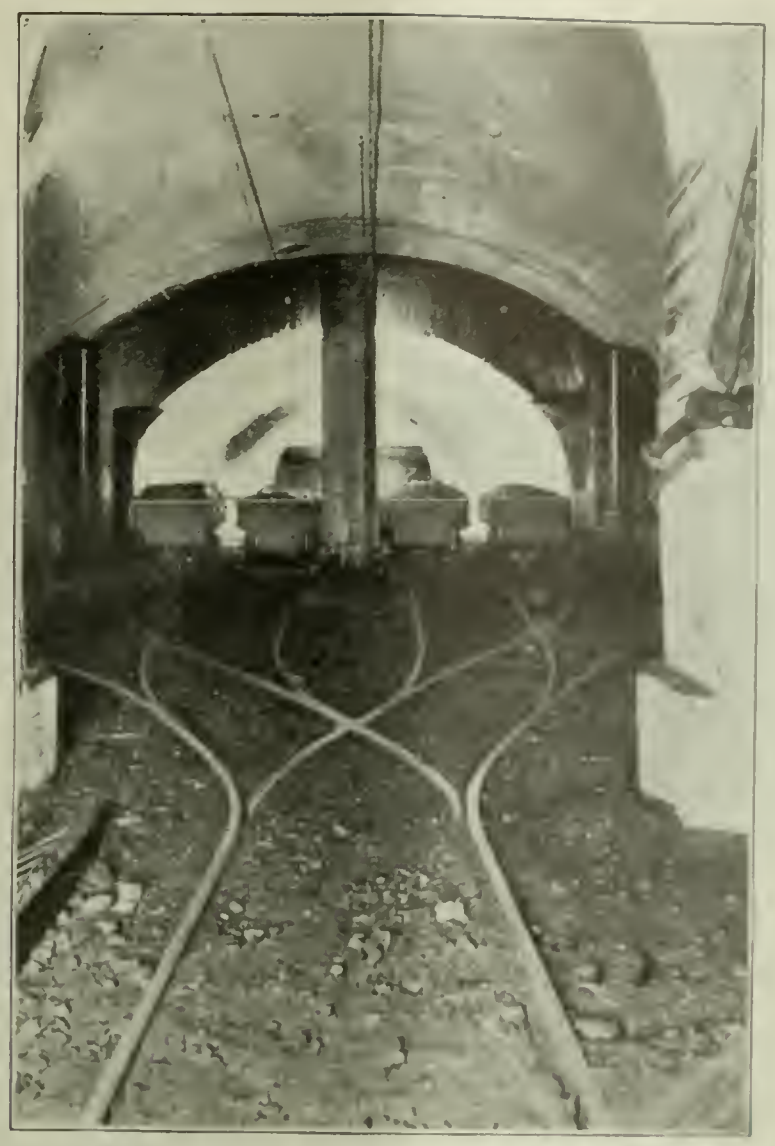


FIG. 7—EMPTY SIDE OF SHAFT BOTTOM

Looking toward the shaft. The empties (here shown loaded) drop down this grade of 7 per cent to a kickback to the rear of the point from which the photograph that this illustration reproduces was taken. The ropes seen along the roof connect the swinging kickback with automatic car stops located on the inner tracks.

cage, going through a similar switching device at *C* as is found at *B*. Reference to the illustrations, Figs. 3 and 4, and the captions thereunder will aid the reader in understanding the working principle of these two switches.

After passing the last switch points the cars drift down toward the cage. The grade to the cage is steep, so that the cars attain much speed on their way and must be slowed down and stopped. This is accomplished by four friction car checks, one on each track. These are of the usual type, consisting of a heavy wheel clamp of structural-steel held against each rail by strong steel-coil springs and operated from a point centrally located in front of the cages. These car checks are designed with provisions for the future installation of an air cylinder, so that eventually they may be operated pneumatically.

Upon being released from the car checks the two cars on the approach to the cage next to be landed drift down simultaneously to the cager, where they are held by horns until the cage descends into position. The cager, which is automatic in the setting and resetting of the horns at the cage landing and in raising and depressing the car stops that hold the cars on the cage, varies from the usual type only in its handling two cars instead of one.

The arrangement on the empty side whereby the two empty cars coming from the cage are passed to the empty storage track, however, is unusual. As the empty cars run off the cage the inner one will be held by a car stop and the end one is delivered directly to a pivoted kick-back that automatically releases the inner car from its stop after the first car reaches the kick-back. Sections showing the details both of the kick-back and the car stop comprise Fig. 5.

It will be seen from the drawing that the curved kick-back rails are held securely at gage by means of angle irons fastened on the bottom, or flange. The lower ends of these rails are pivoted where they join the level track at *A*. The car is shown in the illustration directly above a knife edge on the kick-back. The weight of the car when it approaches this point depresses a counterweighted lever arm to which is linked a vertical rod. This rod again connects with an L-shaped lever, which when acted upon by the vertical pull of the vertical rod causes it to pull on a horizontal rope that is attached to it. The other end of the rope is connected to the car-stop release. The depression of the kick-back is only sufficient to release the car stops. After the car has left it the kick-back is elevated by the lever action of the counterweight.

The car-stop mechanism is simple in construction and in operation. The rope from the kick-back connects with the upper ends of horizontally axled levers, to which are welded counterweighted lever arms. To the ends away from the counterweights on these levers are pinned vertical tie rods which when depressed cause the lugs that protrude out over the rail and in front of the car wheels to be swung into the clear. The released car then passes by gravity to the kick-back and the lugs fall back over the rail to catch the next inside car coming from a landed cage. The cars after leaving the kick-back are sidetracked to the empty-car entry. This equipment was furnished by Heyl & Patterson, Inc., of Pittsburgh, Pa.

The shaft-bottom equipment, although it appears to be complicated, is simple and positive in action. One begins to realize this only after having watched the operation in which a ton of coal may be raised every 8 seconds if so desired, and the cars fed, caged and uncaged by only three men, one of whom does the lubricating and inspecting of the mine cars and makes



FIG. 8—SHUTTLES FOR MAKING UP SHOTTON TRIP

A heavily ballasted reciprocating tapped rod, 4 in. steel, just visible behind the right post above the trip. The solenoid coil of concrete



FIG. 9

Motor-Generator Set

From left to right: induction motor, flywheel, direct-current generator and low-voltage exciter, all covered or at least guarded. The room also contains the controller panel, the slip regulator, the switchboard and other auxiliaries. The hoist is in an adjoining room. This is an example of well-guarded machinery. The mines are recognizing at last, and guarding against, the dangers of the power house and shops.

up the empty trip. Another uncouples the cars comprising the load trip and drops them to the trip feeder. The third man is the cager.

Another of the features of the Coverdale plant is the Ilgner-Ward-Leonard hoist installed at the main shaft. Incidentally it is the first of its kind in the Pittsburgh region. The load on the motor of a hoist is extremely variable. An inspection of a characteristic curve of load versus time of the average hoist will show that the load rises rapidly at the beginning of a cycle and then drops off almost as fast to a little less than half the peakload. Here it remains practically constant until the cage or skip reaches the dumping point, when the curve drops down almost vertically. The filled-in outline of this characteristic curve resembles the silhouette of a chair, the top of the chair as the peak load and the seat as the constant load after the hoist has been fully accelerated. If possible, the load should be made more uniform so that the operating company would enjoy the reduced rate allowed by all power companies for operation under fairly constant load. The flywheel motor-generator set has another merit: there are no large losses in the starting rheostat.

The main shaft hoist is driven through single-reduction herringbone gears by an 850-hp. 350-r.p.m. 600-volt shunt-wound direct-current motor. The incoming alternating-current of 2,300 volts coming from the substation drives a slip-ring induction motor, which in turn drives a direct-current generator. On the same shaft is a flywheel and exciter. The motor is fitted with a slip-ring regulator so as to maintain full-load current on the motor at reduced speeds. The generator naturally supplies direct current for the operation of the hoist motor. The control is accomplished by varying the field strength of the exciting current.

The through shaft of the motor-generator set is mounted on four split pedestal bearings, one on either end of the set and the other two on either side of the 20,000-lb. flywheel. These bearings are lubricated both by gravity feed and oil rings. The flywheel bearings are further cooled by means of circulating water through the cored-out bearing shells. The water supply comes from a deep-well pump, from which comes also the water for drinking purposes and for cooling the slip regulator. This regulator serves also as a liquid rheostat for starting up the set.

Although the company has a power plant of its own, the transmission lines from it are in parallel with

FIG. 10

Hoist Room



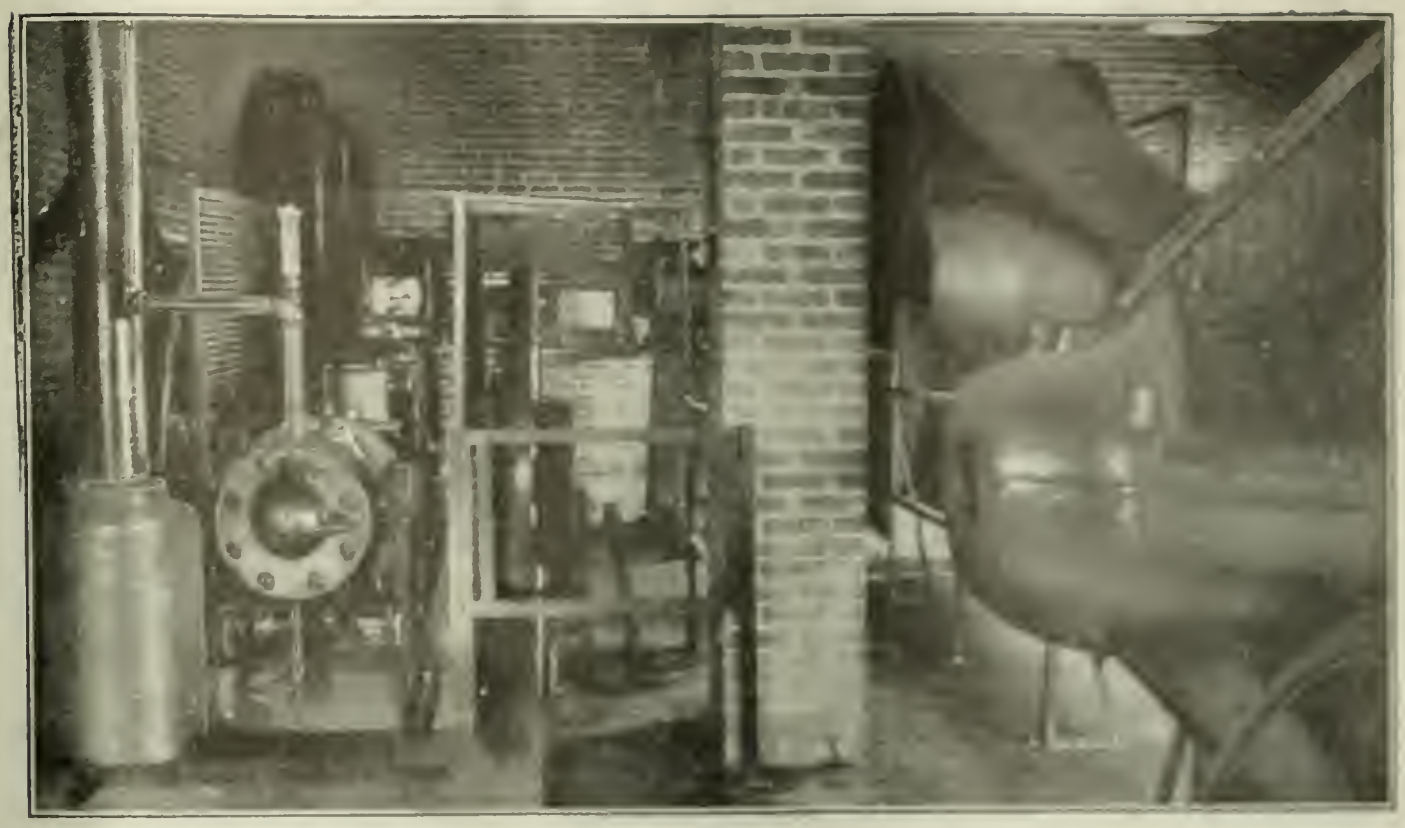


FIG. 11.

Fan House

The 5 x 12-ft. fan is driven by a 200-hp. induction motor. On the left is a fuel-oil engine as a standby in case the two sources of electric supply at this mine should fail. Every effort is made today to avoid the danger of an idle fan. The fuel-oil standby is independent of the company's steam and electrical power as well as of the power from the public-service station.

those of the Duquesne Light Co., to guarantee constant power supply. Thus the two sources of power may be drawn from separately or together. Though the risk of power failure is but slight the 200-hp. induction motor in the fan house is supplemented by an oil engine which stands abreast of the fan shaft, so that an almost instant change can be made in the fan drive by engaging a shaft clutch. C. M. Means, of Pittsburgh, Pa., was the consulting electrical engineer of this plant at the time of its construction.

American Coal Mining Institute Prepares To Answer Members' Knotty Problems

FIFTEEN questions, five papers, a banquet and a trip will occupy the time of the Coal Mining Institute of America during its winter session at Pittsburgh, Pa., Dec. 13, 14 and 15, the technical discussions taking place in the Chamber of Commerce Building and the banquet, in the dining hall at McCreery's store.

On Wednesday, Dec. 13, the meeting will hold its business session at 9 a.m., in which it will cast its vote on the new constitution. This meeting also will be addressed by Silas S. Riddle, chief of the Bureau of Rehabilitation of the Department of Labor and Industry, Harrisburg, Pa., on "Rehabilitation of Injured Mine Employees."

In the afternoon of Wednesday a question-box session, with W. E. Fohl, consulting engineer, as leader, will consider the following questions:

Question No. 1—What is the most important point to be considered when entering a mine after an explosion? (From Pittsburgh, Pa.)

Question No. 2—What are some of the practical remedies for the pollution of our streams by mine water? (From Clarksburg, W. Va.)

Question No. 3—What method should be used in working coal beds 30 ft. or more in thickness, as found in some of the Western states where the roof is only fair and the dip less than 5 deg.? (From Denver, Colo.)

Question No. 4—What electrical methods of shooting explosives in mines are to be preferred? (From Wilmington, Del.)

Question No. 5—What are the most practical methods of preserving mine timber? (From Pueblo, Colo.)

A paper will then be presented by Dr. Yandell Henderson, of Yale University, on "Methods of Resuscitation from Carbon-Monoxide Poisoning."

The annual banquet will be held at 6:30 p.m., at which the speakers will be Douglas Malloch, "The Poet of the Woods," Chicago, Ill.; Dr. E. A. Holbrook, dean of the School of Mines, Pennsylvania State University, and Jack Armour, the humorist from *Coal Age*.

The question box of the next morning will be opened by Jesse K. Johnston, general manager of mines, Bolivar, Pa., the questions being as follows:

Question No. 6—What is the most efficient method for humidifying mine air? (From Pueblo, Colo.)

Question No. 7—What is the solution for the overdevelopment of the bituminous coal industry? (From Philadelphia, Pa.)

Question No. 8—Which is the most efficient method for use in coal mines, hewed or sawed, and why? (From Johnstown, Pa.)

Question No. 9—Are doors necessary in the construction of a gaseous mine? (From Pittsburgh, Pa.)

Question No. 10—Would a national danger sign for use in all American coal mines be advantageous? (From Johnstown, Pa.)

At the close of this session David J. Price, engineer in charge of grain-dust explosion investigations, U. S. Department of Agriculture, Washington, D. C., will address the institute on "Industrial Dust Explosions and What Coal Men Can Learn from Them."

Thursday's afternoon session will be presided over by Alexander McCauch, state mine inspector, Mononghela, Pa., and A. C. Callen, dean of the School of Mines, West Virginia University, Morgantown, W. Va., will deliver an address on "Methods of Education in Coal Mining." These questions will then be discussed:

Question No. 11—Why should not all firemen and examiners [illegible] and be required to be men of [illegible] experience, be inspected and tested by the Pennsylvania inspection and rating bureau?

Question No. 12—At a drift or slope mine where the pitch runs from 7 to 8 deg. should a safety dump or a [illegible] be installed? (From Connellsville, Pa.)

Question No. 13—Can a wage [illegible] and based on the selling price per ton or bonus at the [illegible] operator and miner can agree? If not, why not? (From Pittsburgh, Pa.)

Question No. 14—Which is the better way to [illegible] coal, and why? (From Johnstown, Pa.)

Question No. 15—What is the most effective way of reducing the present appalling rate of accidents to mine [illegible] coal and rock? (From Connellsville, Pa.)

At the conclusion of this paper Bernard J. Reis, expert accountant, New York City, will discuss "Depletion, Depreciation and Other Factors Bearing on Cost."

On Friday a trip will be made by automobile to the power plant and mine of the West Penn Power Co. at Springdale, Pa.

What Hard-Coal Mines Are Doing to Lessen Derailments

Symposium Contributed by Six Leading Anthracite Officials as to Practice at Their Mines in Regard to Tire Repairs, Retracking, Track Revision, Bumper Guards and Other Details of Haulage Management

ASSEMBLED BY D. C. ASHMEAD*
Kingston, Pa.

"WHY are there as many derailments in coal mines? What are engineers and superintendents doing to remedy them? How are locomotive tires maintained?" These are questions agitating many mine executives today. Wrecks should be unusual happenings; instead they are of frequent, and in some mines of daily, occurrence. Three or four or more wrecks occur in some mines every day.

Consequently it was felt that a symposium of practices and experiences from engineers of the anthracite region would be interesting and useful. Several replies were received to a questionnaire regarding the subject. The first letter reveals the same difficulties in the anthracite region as have troubled the bituminous fields.

"Practically no derailments have been caused at our mines as a result of the lessening of the clearance due to the wearing of the tires. It is customary to keep locomotive tires in service till grooves from ¾ to 1 in. deep have been worn in them. Then they are turned. As far as I know, no accidents have occurred as a result of the grooving action. No tires have ever come off themselves during service, but on one or two occasions the wheels have become loose on the axles, but no wrecks resulted.

Bumper Guards Do Their Work Well

"All our locomotives are equipped with bumper guards, and no accident has arisen from the use of these devices. The switches and frogs of worked-out breasts usually are left in place till they are needed somewhere else.

"As for retrackers, we make them ourselves. They consist of V-shaped pieces of iron that can be laid over the top of the rail. They have a latch point riveted to the top of the V. In some cases factory-made retrackers are used. As a few points guard rails have been laid, but on none of our curves is the rail elevated or braced. In driving a new gangway, or tunnel, the first rails laid are regarded as constituting a permanent track. Sometimes it is lined up and properly ballasted later, but that is unusual.

"Too light a rail is used in the anthracite region. Much of our difficulty in regard to haulage can be traced to that fact. It causes numerous derailments, with consequent loss of time and loosened joints. This latter so joints makes it difficult to keep bonds in condition and is the cause of electrical trouble in the locomotive itself. The vibration and bumping which the light rail causes is injurious to the locomotive."

The electrical engineer of another company could not answer fully all the questions submitted. He replied, however: "Our locomotives are not equipped with tires. We use cast-iron wheels, and so do not have any trouble with tires that come loose. The wheels being of chilled iron, we do not turn them, of course. I would say that they have an average life of from five to six months. The groove on a worn wheel sometimes will cause an accident by catching in the frogs. As to the number of wrecks occasioned by loose wheels I have no information. We protect our locomotive motormen from cars jumping up and crushing them by the use on each end of the locomotive of a pair of the cast-steel bumper blocks."

A mechanical engineer of one of the largest independent anthracite companies says:

"There is a tendency to be careless in maintaining the haulage tracks of coal mines in good condition. Yet bad tracks in a mine are not only expensive; they are dangerous, and that is true of either animal or mechanical haulage. The mistakes made in the laying of mine tracks are four: (1) Light rails, (2) light ties spaced too far apart, (3) poor grading, with lack of ballast, and (4) absence of angle bars.

Half the Accidents Are Due to Bad Track

"Next to these as causes of haulage accidents comes carelessness in maintenance. Fifty per cent of the haulage accidents are chargeable to bad track. In many mines the track is repaired only after an accident, and then the mine foreman, looking for a cause, finds a worn, loose or broken wheel; usually it is the latter and is caused doubtless by the derailment, but the foreman in his report never blames the track.

"Fifty per cent of the locomotive repairs are traceable to the poor condition of the haulage roads. Guard rails are used at frogs but seldom on curves, where it is customary to elevate the outside rails. Rail benders should be used to make curves. The springing of rails to put a bend in the track is the cause of many derailments and accidents that could be avoided if a rail bender were used. When the rails are not permanently bent but are sprung into place they are held in line



BUMPER GUARD KEEPS CAR FROM INJURING DRIVER

The wheelbase being short in comparison to the length of the car and the change in grade sometimes sharp, it often happens that the bumper of the car tends to rise too high on that of the locomotive—to "lock bumpers," one might say, only that in this case the car does not merely pass its bumper over that of the locomotive but also crowds the locomotive driver against the coupler. To avoid this danger, bumper guards are used to keep the car bumper down to a safe level.

* Mechanical Engineer, Coal Age.

under stress, and a passing trip may readily loosen the spikes, with a consequent spreading of the rails and a derailment.

"Many curves in the mines could be greatly improved at little expense by trimming the rib. Make the curves of as long a radius as possible, and you will note a decrease in car repairs that will compensate you for the money expended.

"Accidents caused by loose wheels are few but when combined with those from spread rails will be found to form about 20 per cent of the haulage accidents. When mining is finished the frog and switch for that branch should be removed from the main haulage road, thereby reducing the possibility of a derailment. This is an item seldom overlooked by the foreman, who usually is waiting to transfer the switch to another branch.

"Worn locomotive tires rarely cause accidents but they do greatly increase locomotive repairs and also do much damage to frogs and switches. They should be turned after they have been worn down ¾ in. Mine-locomotive bumpers should be provided with top guards which should be of sufficient length to prevent the cars from 'climbing' and becoming derailed when being pushed over a summit, thus injuring the motorman by crowding him against the locomotive.

"Derailers of the saddle type and pressed-steel car-replacers are used to retrack derailed cars. Where a locomotive is available derailed loaded cars often are retracked by hitching the coupling to the top of the car and then pulling so as to retrack the hind wheels. The front wheels then are retracked with a short piece of rail placed between the locomotive bumper and the top of the car. This is placed a little out of center. By pushing on the rail the front end of the car is lifted and the front wheels are retracked at the same time. This is a practice which, though successful, frequently damages the car.

Cars May Be Hung Up on Guard Rail

"Guard rails should be protected with wedge-shaped iron or wood blocks to prevent the car couplings from catching the former. This provision increases the safety of employees and reduces equipment repairs.

"No track that is laid nearer to the face than 600 ft. should be of a permanent character or be so regarded, for if it is regarded as impermanent the engineers can establish grades and lay out a track that can be laid properly. Proper clearance spaces should be provided on both sides of haulage roads, and on passing branches room enough to insure safety should be left between cars.

"Ditches across haulage roads never should be left open. A pipe or pipes of sufficient capacity to take care of the drainage should be installed. Clean the roads thoroughly. Coal should not be allowed to accumulate along the tracks. Clean haulage roads not only increase the car yield but prevent accidents.

"Haulage roads should be carefully inspected and all loose roof properly supported or removed. Grade crossovers, heads of slopes, passing branches and all points where transportation men are required to couple and uncouple cars should be well lighted or given a coat of whitewash, preferably both."

An official of one of the largest anthracite companies writes as follows:

"All our locomotives are equipped with solid wheels, shrunk on the axle. The clearance height of the frame of the locomotive above the rail varies from 3½ to 4 in. Therefore there is no danger of the locomotive rubbing along the rail or the bottom.

"Our locomotives run on 25-lb. rails and the wheels are changed when about a ½-in. groove is worn in them. They are turned down about once. Our locomotives are not equipped with tires, no accidents having occurred from lack of this provision. I do not know of any instance where a loose wheel has caused an accident.

"Switches and frogs are removed from chamber branches as soon as there is no further use for them. This, of course, makes better main haulage roads and saves the switches and frogs from unnecessary wear.

"Our locomotives are equipped with two safety steel bumpers on the cab end at a height of 14 in. above the locomotive bumpers. The lug is 7½ in. above the bumper. The extension of the lug is 4 in. The width of the safety steel guard is 5 in., the thickness of the steel guard being ¼ in. This safety guard prevents a derailed car next to the locomotive, when being pushed or held back, from jumping up into the cab and injuring the motorman. If he uses ordinary care and obeys the company safety rules on speed limits, accidents from this cause should not occur.

Carry Retracker on All Locomotives

"Retrackers are carried on all locomotives. They serve to retrack satisfactorily both locomotives and cars. Jacks and car replacers are used only to retrack a derailed locomotive. When a replacer is carelessly held by hands or feet against the wheel, men are liable to be injured. Sometimes a prop or a tie is placed with one end against the locomotive bumper and the other against the top rail of the mine car for the purpose of lifting the car into place. In this method of retracking, men occasionally are injured. This unsafe method will swing the car to one side, and men have been caught between the car and the rib. Another way of replacing cars on the track is by a lever and blockings. This method also has its dangers.

"Guard rails are used on curves and at frogs. The rails are elevated on the long side of the track and braces are used on the curves when necessary. All rails used in development are taken out and replaced by a well-laid track.

"In only one instance in the last five years has a motorman been killed at our mines by a wreck caused by a runaway trip of cars and motor. This accident resulted from the carelessness of the motorman in charge. He pulled the trip over the summit onto a down grade so fast that the brakeman could not place the required sprags in the trip for its safe control.

"The following are some of the safety rules covering the operation of electric locomotives:

"Safety Rule No. 1—Every motorman must inspect his locomotive before taking it off the pit and he must report its condition on a motorman's inspection blank, giving the date and his signature and depositing the slip at the close of each day's work in a box kept for that purpose.

"Safety Rule No. 4—Motormen must insist that their brakemen and helpers put in sufficient sprags to show so that the locomotive and trip of cars are fully under control when running down grades.

"Safety Rule No. 5—Motormen at all times must carry car replacers, jacks and pinch of coal in their locomotives. Jacks and car replacers shall be used only to replace a derailed locomotive.

"Safety Rule No. 9—Motormen must not work their

locomotives if they do not have a good and efficient brake equipment with four brake shoes. Brakes must be in good working order at all times.

"Safety Rule No. 16—Motormen while pulling cars over main roads must not run their locomotives in excess of six miles per hour. When pushing cars the speed should not exceed three miles per hour. When approaching switches and going through doors the speed should not exceed two miles per hour.

"Safety Rule No. 23—Motormen, helpers and brakemen must not place a pin or prop against the bumper of the motor and the top sill of a car as a means of replacing cars on the track. Car replacers must be used and under no circumstances should cars be pushed by a pole.

"Safety Rule No. 24—Motormen, helpers and brakemen must not jump on the front end of a locomotive but must get on from the side. Riding on the front end is strictly forbidden."

The next letter is from another of the large coal companies: "In my opinion the causes of mine-train wrecks with their attendant delays in the day's schedule, their damage to equipment and their injuries to men, though many in number, are principally that the turnouts are too sharp, that lumps of coal or other refuse strew the track, that the rails are poorly aligned and that the tires have become excessively worn. The speed of these trains is such that the mishaps are not serious and usually only the cars are derailed.

"Some locomotives have a clearance as small as 2 in. and even that as the tires wear away would become less, but I have never been able to learn of an accident at our mines where this lack of clearance caused a derailment. It is the common practice to turn wheels as soon as they are worn enough to damage frogs, switches and crossovers seriously. A ½-in. groove is sufficient to cause much pounding on the track, but nevertheless the tires are more often worn about ¾ in. before they are turned.

"The tires on electric locomotives usually are turned after six to nine months of service and those on air locomotives are allowed to run without turning for a full year. A badly worn tire is apt to cause a derailment on a sharp curve or at a rail junction.

Practice to Use Tires Shrunk on the Wheel

"Locomotives rarely lose tires when they are shrunk on. If they should do so, I would ascribe their coming off to faulty installation. We have ceased to use demountable tires on our air locomotives because they worked loose, but no doubt a demountable tire of such design that it would remain tight on the wheel would prove most economical. Particularly is this true of the large six electrical locomotives.

"I have never known of a wreck being caused by a loose wheel, but of course that could happen from poor workmanship. An occasional inspection of the locomotive should reveal a defect of this sort to the motorman long before an accident occurred. In fact it is hard to see how he would fail to note it even without any careful inspection, so obvious would it be in operation.

"I understand that some locomotives have been equipped with anti-lifting hooks or similar devices to prevent the car next to the motor from being lifted from the track, but not all are so equipped. Almost all locomotives carry a steel retracking casting upon which to run derailed wheels and force them back on the track, using the power of the motor to pull them on the rails. However, should a locomotive entirely leave the track, jacks must be used to replace it on the rail. Levers are frequently used for the retracking of cars and in consequence men are sometimes injured by the falling of coal or the slipping of the lever.

"Guard rails are not extensively used, such as are laid being located at sharp turnouts on main roads and on planes, slopes and other places where their use is warranted. Braces are not used on curves, but the outer rails are elevated, and when a permanent road is laid it is graded and the rails are aligned."

The last letter will be one from an engineer with one of the larger companies who not long ago wrote an article on mine haulage:

"In the anthracite fields of Pennsylvania it is the general practice to keep the road between the rails clear down to the top of the ties. The only chance of rubbing would be from a lump of coal that might fall off the cars, but that would not be sufficient to lift the locomotive far enough from the rails to cause a wreck.

"Our general practice has been to use wheels having cast-iron centers with steel tires 1½ in. thick and wear them down as far as possible and then replace them with new ones, as it is sometimes impossible to turn them, so hard do they become by reason of the arcing from wheel to rail. They are worn down approximately ½ in. before they are removed from the centers. The groove is not allowed to become any deeper because a deep groove injures frogs and switches. When the wheels have grooves they are more liable to be derailed at frogs and switches than those having good treads.

Not Troubled with Loose Tires or Wheels

"As all our tires are shrunk on the wheel centers we have no trouble from loose tires. All cast-iron centers are keyseated and pressed on the axles, and in consequence we have no trouble from loose wheels, but we have had several wrecks from broken axles due to defects in the steel, and these have been overcome by using hammered steel axles instead of cold-rolled steel.

"Whenever the switches and frogs at the necks of breasts are likely to lie idle a long time before second mining will take place, they are removed so that the main line will be in good condition for haulage purposes.

"All locomotives are equipped with guards so as to prevent cars from jumping on top of the locomotive should the latter be derailed, and one general rule provides that when a locomotive is put into service it shall be so placed that the motorman will be at the end away from the loaded trip when coming out to the shaft.

"Each locomotive is equipped with a pair of standard retrackers and roadjack for use in case of derailment. Men are sometimes injured while holding the retrackers in place.

"Guard rails of wood and steel are frequently used on curves, and, as a rule, the rail is elevated to suit the radius of the curve, the rails being well braced at such places."

It will be seen from these six reports that practice varies from company to company. Probably there are no two companies in the anthracite region following the same rules in regard to the avoidance of derailments. Reference is frequently made in this symposium to loose wheels but always as to those on locomotives. The loosened wheel on the mine car is a far more frequent offender and should be, and doubtless is, given due attention by those who fail here to give it any verbal recognition.

Methods of Dry Cleaning and Dust Collecting at the Coal-Concentrating Plant of the American Coal Co.

Of Crane Creek Coal 60 per Cent Passes 2-In., 15 per Cent 1/16-In. Screen —1 x 2-In. Coal Has 22 per Cent Ash, Dust 10 per Cent—Screens Coal to Seven Sizes Before Tabling

AT THE Crane Creek Mine of the American Coal Co. of Allegany County, near McComas, W. Va., a large dry-process coal-cleaning plant is being erected. This will be the second commercial installation of this sort in this country, the first having been made for the St. Louis, Rocky Mountain & Pacific Co. at its Brilliant Mine, near Raton, N. M., this latter plant having just been put in operation with good results.

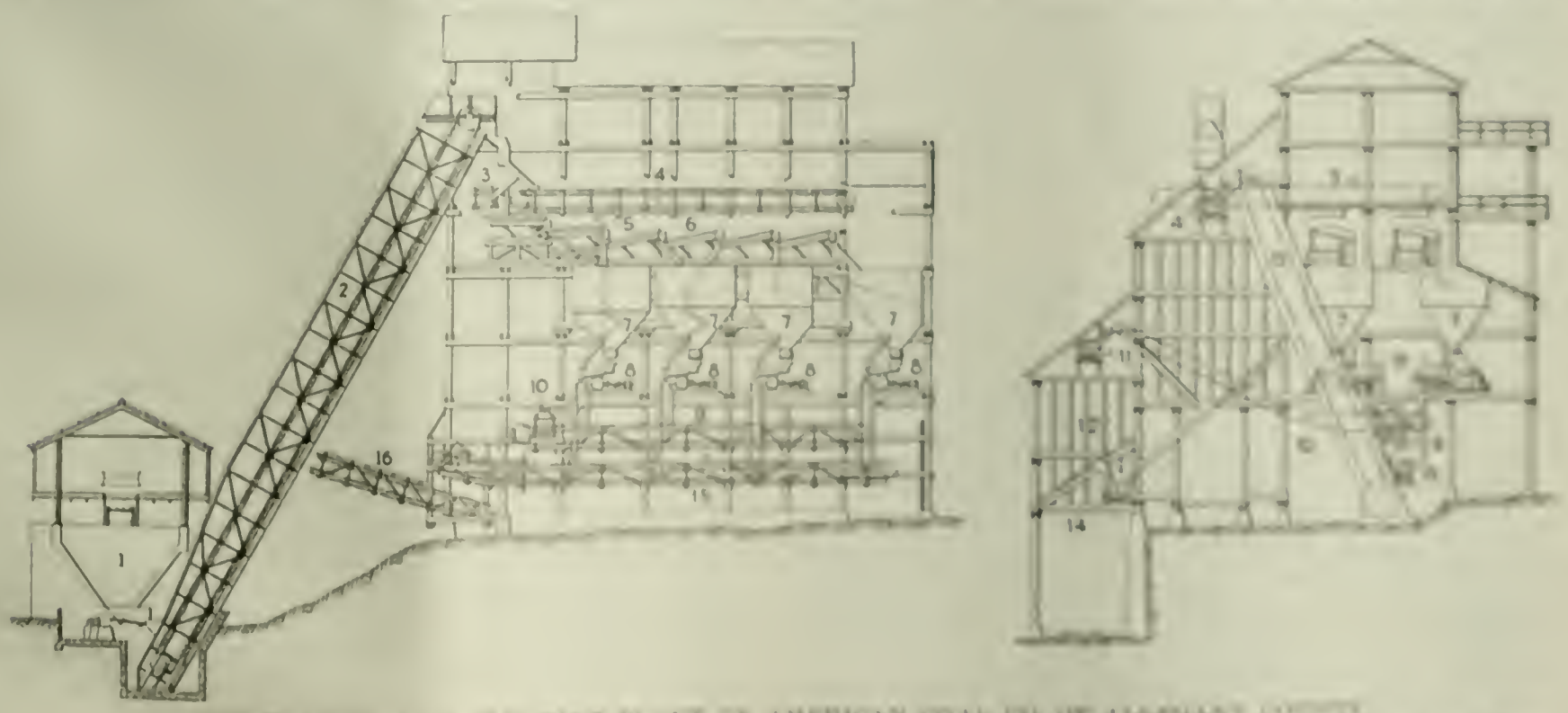
The American Coal Co. of Allegany County formerly operated a wet washery at which it treated all the coal from the Crane Creek Mine that would pass through a 2-in. screen. The results obtained by this method were never quite satisfactory for several reasons, the principal objection being that the coal was wet and in consequence froze and gave trouble during the winter months; that freight had to be paid on the moisture in the coal shipped despite the fact that it had, of course, no commercial value, and that the loss of coal in the process was excessive, particularly in the fine sizes. To these disadvantages should be added the ineffectiveness of the process in reducing the ash content of small sizes.

The coal mined at this property is from the No. 3 Pocahontas seam. This coal, as is well known, is soft and friable, and breaks up badly in mining. Of the mine-run 60 per cent will pass through a 2-in. perforation in the tipple screens, and of this small coal only 75 per cent is retained on a ½-in. perforation. The quantity of coal under 2 in. in diameter to be treated each hour is 240 tons.

At this Crane Creek plant instead of separating the non-combustible or refuse material from the pure coal by water, that separation is accomplished by means of air. The serious problems in successful wet washing, as almost everyone knows, are the recovery of the coal and refuse products from the water, the successful treatment of the finer sizes, the economical use of water and finally the drying of the washed product. All these problems are eliminated by the use of the dry, or air, method of cleaning.

Before erecting this plant the American Coal Co. of Allegany County made tests of their coal at the American Coal Cleaning Corporation's testing plant, located near Welch, W. Va. The tests were conducted over a period of several months and on a number of different samples.

The percentage of ash or non-combustible material in the uncleaned coal, or coal as received from the mine, varies greatly with the size. It will average 22 per cent on sizes which pass a 2-in. and are held on a 1-16-in. screen. The ash content of the dust, on the other hand, is only 10 per cent. The general average is about 16 per cent. After cleaning, the coal will contain about 5½ per cent ash. The refuse, or rejections, from the coal at the same time will average about 75 per cent ash. The refuse material is comparatively free



DRY-PROCESS COAL-CLEANING PLANT OF AMERICAN COAL CO. OF ALLEGANY COUNTY

(1) Bin in tipple for raw coal screenings, (2) conveyor delivering raw coal to screens, (3) flight conveyor depositing coal from elevator to the two sets of horizontal screens, (4) flight conveyor used as a bypass to distribute coal to the tipple bins or mine it is not to be cleaned, it also handles clean coal from [illegible] horizontal screens for first screening operation [illegible] perforations, (6) anti-gravity screens which [illegible] it up an incline; they have ½-in., ¼-in., 3-16-in. and 1-16-in. perforations, (7) hoppers of separated coal which [illegible] tables or pneumatic separators, (9) [illegible] conveyor, the upper run carries [illegible] coal [illegible] to the clean coal elevator, [illegible] for [illegible] coal and [illegible] for [illegible] coal, [illegible] coal [illegible] to [illegible] coal [illegible] to [illegible] coal screening bin, No. 1 and [illegible] to [illegible] coal screening bin, No. 2 and [illegible] to [illegible] coal screening bin, No. 3 and [illegible] to [illegible] coal screening bin, No. 4 and [illegible] to [illegible] coal screening bin, No.

[illegible] the coal and consists of rock, slate and a soft rash.

The plant installation as finally decided upon by the coal company will consist essentially of the following units arranged at different floor levels for convenience of operation. At the top of the building, or upper floor level, will be two batteries of sizing screens, each having a capacity of 120 tons per hour and producing the following sizes:

[illegible]

These screens will have not only a shaking motion but the screen decks will be vibrated as well, this latter action being accomplished by means of pneumatic vibrators. Each size of coal as produced will be conducted by chutes to bins in the structure below, which supply a steady feed of coal to the pneumatic separators.

The plant will contain eight of these arranged on a floor level immediately below the above-mentioned supply bins. Each of these machines will treat a single one of the above sizes except in the case of the two smaller sizes, for which two additional machines will be installed. It has been recently demonstrated by tests that the pneumatic separator will easily treat 25 tons an hour of the coarser coal and 12 to 14 tons per hour of the smallest sizes. It should be noted here that the coal finer than ¼ in. will not be treated in the American plant, arrangements having been made to mix this with the clean coal delivered from the separators.

How Coal Is Separated from Refuse

For the benefit of those readers who are unfamiliar with the pneumatic coal separator a brief description of the appliance is here given: On this machine, air—the weight of which is 1 [illegible] that of water—is used as the floating medium. The separation is made by taking advantage of the difference in the weight of materials. When mixtures containing particles differing in weight, such as coal and refuse, are fed to the deck of the machine, each product is separated by that difference in weight, and the separated material is propelled across the deck surface to suitable discharge spouts.

The table is hollow and airtight, except for the porous cover which distributes the air through the deck load and causes the partial suspension and stratification of the particles. The porosity of the deck and the quantity of air supplied are varied in the different tables to suit the size and kind of material treated. Deck covers are all of punched metal plate, the size and spacing of the holes governing the degree of porosity.

The tables for coarse coal are provided with ¼-in. galvanized iron ribbon riddel over a sheet of large-mesh [about ½-in.] wire screen, which in turn covers the punched plate. This screening adds to the retarding action of the riffles and prevents the back-slip of the deck load on the return stroke of the table.

The action of the table on large sizes [over about ¼ in.] is improved by banking up the refuse by means of "banking bars" or baffles and keeping it on the table until it reaches the discharge edge. This banking causes a sharper line of demarcation between the refuse and the coal and also prevents pieces of coal from rolling on top of the refuse into the refuse compartment. This tendency is prevented also by a current of air through one of the banking bars which blows back into the coal zone coal that may be riding the refuse.

Inside the deck and supporting the cover are strips of wood immediately underneath the riffles and parallel to them. These strips assist in the distribution of the air and also furnish support for the perforated zinc cover.

Sometimes for the finer materials, strips of paper, called "retarding strips," are placed under the cover between the supporting strips. These retarding strips are wider at the fan end of the table and taper to a point at from one-half to two-thirds the distance to the concentrate end. They provide quiet zones between the riffles in which undersized particles of heavy material may be advanced into the concentrate when the feed is not accurately sized. These would be of advantage in coal cleaning for removing fine pyrite from the smaller sizes of feed.

Each Table Provided with Centrifugal Fan

Air baffles are provided within the deck to provide for the proper distribution of the air through the coal and refuse deck load.

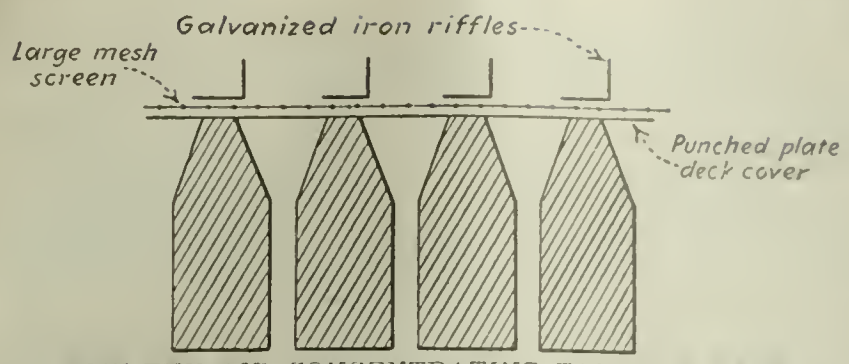
Air for pneumatic separation is provided by a centrifugal fan built integral into the frame of the table. A flexible connection of heavy canvas joins the fan duct to the wind box, or deck, thus allowing for the motion of the table. A shutter over the intake of the fan adjusts the quantity of air which the deck receives.

The longitudinal and side slopes of the deck are adjustable, and both must be set accurately at the proper angles if the best results are to be obtained. The head motion of the table is a simple eccentric, the speed of the vibrations being adjustable through the medium of cone pulleys. The line of motion of the deck crosses the deck proper, due to the angular supports, so that as the deck advances in its stroke, it also lifts. On the return stroke of the eccentric the deck recedes and drops. This combination of motions advances the material toward the refuse end against the longitudinal slope while the lighter particles roll down the steeper transverse slope under partial suspension by the air.

The various adjustments of the table affect each other to a large extent, but there undoubtedly is a certain setting which for any size and any proportion of refuse will give the best results. The feeder also is adjustable so as to get the maximum tonnage over the table for various refuse percentages.

The pneumatic separators in the American plant will make three products, viz: clean coal and refuse and a middlings product that consists of an admixture of coal, refuse and boney coal. These products as they leave the separators are conducted by suitable spouts to conveyors below. The middlings product is conveyed to the elevator which delivers the raw or untreated coal to the sizing screens to which reference has been already made. In this way the middlings are mixed with the untreated coal coming to the plant and again find their way to the separators properly sized for treatment.

The final products made by the plant are only two, viz: clean coal and refuse. The various sizes of cleaned coal from the separators are combined and put into the shipping bins as nut, pea and slack, or any combination of these sizes. The refuse is conveyed to a bin in the tipple adjacent to the dry-cleaning plant, from which it is dumped together with mine rock and



HOW THE AIR CONCENTRATING TABLE IS MADE
Strips of wood are placed underneath and parallel to the riffles. Over these strips are quiet zones on which particles accumulate.

refuse picked from the picking table in the tipple. A further provision has been made in the plant for combining clean coal from the dry-cleaning plant with prepared sizes from the tipple, thus permitting the shipment of cleaned and picked mine-run or any other desired mixture.

An interesting feature of the plant is the means provided for collecting the dust produced by the operation of the various elevators and conveyors, the sizing screens and the pneumatic separators. (This dust-collecting system was furnished by the Clerk Dust Collecting Co., of Chicago.) Dust-collecting hoods are placed at all points where there is any possibility that dust will arise. These hoods are terminals of suitable pipes, which are connected in a continuous system to an exhaust fan and separating and collecting apparatus. The collected dust is delivered through a pipe to the conveyors which carry the slack size to the shipping bins, or it can be marketed separately as powdered fuel.

As will be noted in the illustration, the plant will consist essentially of three floor levels, viz.: the screening floor, the separator floor, and the lower floor, in the last of which will be placed the conveyors and the coal- and refuse-collecting equipment. The present wet-washing building will be remodeled to contain the new system. All equipment in the American plant will be electrically operated. Machines throughout will be direct-connected. In general the motors are of the slip-ring type and are controlled by push-button start and stop stations. The controls for the motors in the dry-cleaning plant are interlocked on the same principle as in the tipple, so that one motor in a group cannot be started in such a way as to cause material to be conveyed where it will block up the continuous flow. A master push button is provided that will start up the motors in a certain group in the correct order. All of the motors and the control equipment are of the Westinghouse type.

The dry-cleaning plant was designed and is being built by the Roberts & Schaefer Co., of Chicago. The screens and pneumatic separators are being manufactured by Sutton, Steele & Steele, Inc., of Dallas, Tex., under patents controlled by the American Coal Cleaning Corporation, of Welch, W. Va.

Trip Runs Wild on Slope, Cuts Conductor; Dust Ignites and Eighty-Six Die

EXCEPT in the number of dead the accident at Dolomite mine No. 3 of the Woodward Iron Co., Dolomite, Ala., that occurred in the afternoon of Nov. 22, is a double apparently of that at the Monongah mine of the Fairmont Coal Co. (now the Consolidation Coal Co.), in West Virginia. In that misfortune 361 men were killed. In both accidents a runaway trip apparently tore down an electric conductor and caused an explosion.

At the Dolomte plant the number killed was 86 and the number injured 59. Later reports may show that the loss is even greater than that stated owing to deaths of some of those now reported as injured. It appears that four cars had just been discharged on the revolving dump (which has capacity for five cars and is inclined on a slope of 15 deg.), when they broke loose, plunging headlong down the 30-deg. grade which leads 880 ft. into the mine, of which about 600 ft. is on the surface. It is easy to realize with what violence the trip reached the bottom. It must have been smashed to fragments. It appears likely that an electrical conductor of some kind—possibly a high-tension line—was torn down and that the short-circuit resulted in a conflagration of dust of such severity that flames are said to have shot up the slope several feet into the air and set fire to woodwork on the top of the tipple, reducing it to ashes. It is said that of all the men around the foot of the slope only one man still remains alive. In this section it seems that the concussion was severe but it is interesting to note a story that on some of the dead calcium carbide lamps were found to be still burning. All the foremen, of whom there were six, were killed.

A number of the victims succumbed to afterdamp. M. D. Wilson, who was seriously injured, relates that he succeeded in getting out by wrapping his woolen shirt about his head after dipping it in a bucket of water. This probably is a protection not against carbon monoxide but against the hydro-carbon constituents of afterdamp that have such a harmful effect. He asserts, however, that he supposes that this precaution kept his face from being burned.

At the time of the accident 475 men were in the mine. Of the 86 men killed, 21 were white and 65 were negroes. Three of the men were alive when removed from the mine but died later. According to the last report of the state mine inspector the mine generates gas, but sufficient fan ventilation and other safety provisions were maintained to cause the mine to be regarded as safe. Gas was not a factor in the explosion, for this slope is the main intake.



WHERE GAS FLICKS AWAY SOLDIER'S SHIRT AS SOFT
The cars at the time of their wild ride down the incline apparently dragged down an electric conductor which in turn was set on fire and exploded the dust of the workings. The dump and tipple at the top of the slope are from an inferior and unsatisfactory type of construction.

Labor's Opinion of Wages in the British Coal Industry

[illegible] by *Frank Hodges*, Secretary Miners' Federation

For the sixteen months since the investigation of the great inquiry the financial situation in the trade has been submitted to the owners and workmen by their joint accountants. Much more is known, therefore, within the trade about proceeds, wages, profits, and costs of production than ever before. From a study of the ascertained facts it is mutually admitted that the coal-mining industry is, and has been, passing through a period of adversity unparalleled in the annals of the trade. There have been unprecedented losses, both in wages and in profits. So much is this the case that the industry is on the verge of collapse. During the whole of this period the workmen and the owners have shared the common adversity in the proportions and in the manner laid down in the terms of the agreement of July, 1921.

The wages of the men have been reduced from the end of the "temporary period," i.e., September, 1921 (during which the government rendered the industry some assistance), by almost unbelievable amounts. This is best illustrated by taking the wage of a minimum wage coal getter in October, 1921, and comparing it with October, 1922. The reduction in the amount per day will give an idea of what the workmen have suffered.

	Wages per Day (Net)		Decrease Per Cent
	Oct. 1921	Oct. 1922	
	s. d.	s. d.	
	10 6	7 2	32
	9 3	8 3	12
	19 2	11 1	42
	14 6	8 7	39
	9 10	7 1	25
	14 3	10 4	27
	14 10	9 10	36
	17 1	9 11	42
	17 1	9 11	42
	16 10	9 8	42
	12 1	8 1	32
	16 10	11 6	42
	13 3	8 7	38
	19 10	11 9	39
	12 4	7 9	43
	15 7	9 0	42
	12 4	8 10	28
	15 7	9 8	42
	16 10	9 9	42
	17 1	10 1	42

The workmen are making a demand for a living wage or at least a wage comparable with the pre-war wage. How the present position compares with that in 1914 is shown in the following table. It sets out the average wage per man-shift worked in June, 1914, and for August, 1922, in the seven large districts in the country. The figures represent the estimates of the average wage of all classes of persons engaged in the mines, excluding the clerical staff, managerial and administrative salaries and wages. The increase above the 1914 nominal wage is shown both in money and as a percentage, whilst the decrease below the actual cost of living today is also shown as a percentage in the several districts.

	Average Daily Wage June, 1914		Average Daily Wage August, 1922		Increase Per Cent	Decrease Below Cost of Living Per Cent
	s.	d.	s.	d.		
	5	8	8	2	56	42 32
	2	11	5	1	81	47 43
	3	5	4	10	47	46 43
	3	11	5	6	41	57 55
	4	7	9	5	44	34 50
	4	11	8	4	80	49 51
	3	9	7	10	115	45 48

The average wage, therefore, is about 40 per cent above the 1914 wage. This wage is not being paid for the first time this month or last month. In South Wales, South Staffordshire and Kent, Cumberland, Forest of Dean, Newbury and Kent deep less no upward movement in wages since December, 1921. During the whole of this period the workmen in these areas have been living at a point far below the cost-of-living level. The public will understand that a great basic industry, such as coal mining, employing nearly a million of workmen and their families receiving an income 40 per cent and more below the standard of living.

The reason for this unhappy situation is that at the pit mouth the revenue from the proceeds of the sale of coal is not adequate to meet the cost of production at the pit. Cost of production should involve a living wage for the men and a reasonable return on capital for the owners. But the revenue has not provided even a poverty wage, whilst many collieries have gone out of production.

The miners do not desire a stoppage of work. They do not desire even to increase prices at the pit. But it is impossible to resist famine conditions much longer. The men are working up to the maximum of their physical ability. They are giving the country all the coal it requires. They have re-established the export market. The country cannot absorb all the coal which could be produced if employment were regular. All those things have been accomplished at the expense of profit, it is true, but principally through the sheer poverty of the men and the suffering of their families, who have endured it in the hope of a later recovery. This hope has been shattered.

Wages Paid Machine Miners, Runners and Helpers in West Virginia

(Year Ended June 30, 1921)

County	Machine Miners Paid For Per Car	Machine Miners Paid For Per Ton	Machine Runners Wages	Machine Runners Paid By	Machine Helpers Wages	Machine Helpers Paid By
Barbour	$0 94	$0 61	$0 14	Per Car	$0 13	Per Car
			11	Per Ton	11	Per Ton
		60	12	Per Car	.12	Per Car
Berry			10	Per Ton	.10	Per Ton
			5 37	Per Day	4 96	Per Day
Braxton	1 37		34	Per Car	32	Per Car
			5 26	Per Day	5 26	Per Day
Brooke	87	75	11	Per Ton	.10	Per Ton
			5 70	Per Day	5 70	Per Day
Clay	1 27	68	12	Per Ton	10	Per Ton
			6 08	Per Day	5 86	Per Day
	1 08	67	16	Per Car	15	Per Car
Fayette			11	Per Ton	10	Per Ton
			5 81	Per Day	5 24	Per Day
	1 11	70	15	Per Car	15	Per Car
Gilmer			11	Per Ton	10	Per Ton
			5 30	Per Day	5 21	Per Day
Grant	1 46	73	6 07	Per Day	5 89	Per Day
	98	75	19	Per Car	.18	Per Car
Harrison			14	Per Ton	14	Per Ton
			6 23	Per Day	6 11	Per Day
Kanawha		68	13	Per Ton	12	Per Ton
			5 55	Per Day	5 39	Per Day
Lincoln	1 01	63	13	Per Ton	13	Per Ton
			5 41	Per Day	5 14	Per Day
	98	67	16	Per Car	.16	Per Car
Logan			14	Per Ton	14	Per Car
			6 22	Per Day	5 91	Per Day
	1 07	66	24	Per Car	22	Per Car
Marion			13	Per Ton	.09	Per Ton
			6 42	Per Day	6 11	Per Day
Marshall		68	11	Per Ton	.11	Per Ton
Mason		68	14	Per Ton	14	Per Ton
	1 23	64	22	Per Car	18	Per Car
McDowell			12	Per Ton	08	Per Ton
			5 41	Per Day	4 94	Per Day
Mercer	1 39	67	20	Per Car	18	Per Car
			5 72	Per Day	4 93	Per Day
Mineral	94	94	11	Per Ton	11	Per Ton
			6 08	Per Day	5 84	Per Day
Monge	95	58	19	Per Car	10	Per Car
			6 13	Per Day	5 92	Per Day
	1 12	67	20	Per Car	18	Per Car
Monongalia			08	Per Ton	07	Per Ton
			6 48	Per Day	6 01	Per Day
Nicholas	1 04	66	5 31	Per Day	5 14	Per Day
	87	68	14	Per Car	.14	Per Car
Ohio			11	Per Ton	.11	Per Ton
			5 52	Per Day	5 10	Per Day
Preston	82	.70	.24	Per Car	24	Per Car
			16	Per Ton	15	Per Ton
	1 04	63	17	Per Car	.13	Per Car
Raleigh			12	Per Ton	.12	Per Ton
			5 66	Per Day	5.30	Per Day
Randolph	1 26	65	21	Per Car	21	Per Car
Taylor	86	.58	19	Per Car	19	Per Car
			12	Per Ton	11	Per Ton
Tucker	1 43	.99				
Tyler	81	64	15	Per Car	13	Per Car
			5 60	Per Day	4 77	Per Day
Wayne		77				
Wyoming	1 05	64	15	Per Car	08	Per Car
			5 62	Per Day	5 43	Per Day
Averages	$1 08	$0 69	$0 19	Per Car	$0 17	Per Car
			12	Per Ton	11	Per Ton
			5 77	Per Day	5 46	Per Day

THE FRENCH ARE TRYING out a new fuel composed of a mixture of alcohol and gasoline. We predict now it won't work. Experiments in this country have proved it is too dangerous.—*Philadelphia Inquirer.*



Problems of Operating Men

Edited by James T. Beard



Dead-Ending the Trolley Wire in Mines

Danger When Dead-End Is Carried too Close to Face of Heading—Keep Dead-End Fifty Yards Back—Improved Wire Splicers — Ohio Law Forbids Wire in Rooms

SOME time ago, I recall, the question was raised in *Coal Age* as to how near the dead-end of a trolley wire should be allowed to approach the face of a heading. (Vol. 17, p. 367.) An interesting discussion followed this inquiry. I believe the general opinion expressed was that the trolley wire should not be carried closer to the face of a heading than the last open crosscut.

For several years, I was in charge of work where trolley locomotives were in use. The mine generated no gas and I followed the practice of never permitting the trolley wire to be extended beyond the outby corner of the last crosscut.

Later, when in charge of a large mine where gathering locomotives were employed and the mine generated considerable gas, I made it a rule not to extend a trolley wire beyond the last room that had an open crosscut, on any entry. In making this the invariable rule in that mine, we took no chances on the ignition of gas through the breaking down of a trolley wire by a fall of roof.

No doubt some of the good readers of *Coal Age* will think that this was an unnecessary precaution; but we were keeping on the safe side, since falls of slate were of frequent occurrence between the last room having an open crosscut and the head of the entry. My fear was that such a fall might knock down the trolley wire and this, coming in contact with the rails, would produce fireworks that would ignite any gas present.

Plan Adopted to Avoid Frequent Splicing of Trolley Wire

Allow me, here, to describe what I consider a good scheme to adopt when driving entries from which rooms are being turned. The plan is to keep on hand two 50-yd. lengths of trolley wire. Then, as the face of the heading is advanced and the gathering locomotive approaches the limit of its reel in reaching the face, attach one of the 50-yd. lengths to the main trolley wire. This will enable the locomotive to proceed another 50 yd., as the heading continues to advance.

When the limit of the reel is again reached, attach the end of the second 50-yd. length to the first, which will permit of another 50-yd. advance of the heading. Now, when that point is reached, replace the two 50-yd. lengths with, say 100 yd. of trolley wire, splicing this permanently to the main wire.

Splicing the Trolley Wire

In attaching the two 50-yd. lengths when following out this plan, a form of trolley wire splicer similar to that shown in the accompanying figure should be used. The splicer shown in the figure is manufactured by the Ohio Brass Co., Mansfield, O. The bottom



IMPROVED FORM OF SPLICER

of the splicer is arranged to give an even run for the trolley wheel and avoid bumps.

On the left end of this splicer, the open lips are shown permitting the ready insertion of the trolley wire, after which these lips are pounded down and fit snugly against the wire, as shown on the right-hand end of the splicer.

In this type of splicer, the wires are held in position by steel chucks, serrated on the inside so as to give a strong grip to the wire. On the outside, these chucks are tapered to fit into a tapered hole in the splicer, into which they are driven after the wire is in place.

In another type of splicer furnished by the same company and adapted to a heavier tension on the wires, the latter are held in place by set screws. Either of these forms of splicer are easily adjusted and readily disconnected when desired.

Advantage of 500-Ft Extension

A considerable advantage will be gained, in the reduction of the number of permanent splices required in the main wire, if a 500-ft length of wire be used to replace the two 50-yd. lengths when the locomotive has reached its limit on the addition of the second length.

This 500-ft. extension of the trolley wire will not approach the face closer than 100 ft. and will enable the locomotive to operate (assuming a 500-ft reel) while the heading is being advanced 200 ft., when it will again be necessary to make use of one of the 50-yd. lengths and proceed as before.

In the previous discussion to which I have referred, mention was made of the Ohio law (Sec. 947) forbidding the extension of a trolley wire into a room that is being worked. I fail to see the practical application of this restriction in the Ohio law.

There are numerous instances, in mining practice, where rooms are worked in groups and, to avoid keeping up the roads in each room, switches are laid through the last inby crosscut and all the coal taken out through a central room of the group.

Saves Extra Trackage in Four Rooms

For instance, assume five rooms are being driven in a group. When these have reached the second crosscut, switches are laid in No.-3 room and cross-tracks extended to the right and left through the crosscuts, to enable all the coal from the five rooms to be taken out through No.-3 room. The scheme saves the extra trackage in four of these rooms. In such cases, I have known the trolley wire to be extended into No.-3 room; but this would not be permitted under the Ohio law. I hope to hear from others on this matter.

Otto Bullock.

Central City, Ky.

Some Points Relating to Use of Safety Lamps

Bent standards in a safety lamp a cause of glass breaking when lamp becomes heated—Careless methods of making tests for gas—Electric cap lamps should not be carried by firebosses

WHEN reading over the several letters that have been written regarding the testing and use of safety lamps, a few points suggest themselves that, I believe, have not been mentioned and yet have an important bearing on safe practice. It would be interesting to see these points further discussed, by the readers of *Coal Age*.

First, a matter of considerable importance, in the examination of a safety lamp to ascertain that it is in condition to be taken into a mine and exposed to gas, is to observe that the lamp standards are not bent or shortened, in any way, but are straight and of equal length.

This may seem an unimportant matter and scarcely worthy of attention, except as we reflect on the fact that any bending of the lamp standards will make some of them shorter than others and cause an undue strain to be thrown on the glass when the lamp becomes heated by exposure to gas.

[illegible] is true if the standards of a lamp are not all of the same height, which may occur as a defect in the manufacture of the lamp. On one occasion I saw a lamp glass break, owing to the standards having been slightly bent by rough usage in the mine. Fortunately, however, this occurred when the lamp was not exposed to an explosive mixture.

It is my belief that mine officials, as a rule, are not sufficiently particular in regard to the use and care of safety lamps by the men in their employ. Many officials seem heedless or, at least, lack a proper regard for the safe handling and inspection of safety lamps used in their mines.

How often do we observe assistant foremen and firebosses; yes, and foremen and superintendents also, for that matter, traveling about the mine and carrying a lamp having one side of the glass covered with soot. We must naturally conclude that if the glass is dirty the gauze is also dirty and the lamp for that reason unsafe. Yet there are hundreds of lamps used every day in that condition.

Examine Mines with Electric Cap Lamp on the Head

Another point has been suggested to my mind by a remark that W. H. Luxton made in his letter, *Coal Age*, Oct. 12, p. 594. Mr. Luxton stated, "Present-day practice, with a large number of our firebosses, is to carry an electric lamp in their cap."

Possibly, I am out of date in considering that any official whose duties require him to test for gas in the mine should carry no other lamp than an approved testing lamp. I am fully aware that many officials will claim that the extra lamp facilitates the examination of the roof. In my own experience, I have not found this to be the case. To my mind, it would be an imposition of old age and incapacity for the work, not to be able to see a crack if one exists in the roof.

With only the light of my Wolf safety lamp, I have run a surveyor's transit and read the verniers to single minutes with very little trouble. There can be no denying the fact that it is practically impossible to make an accurate test for gas with a safety lamp and, at the same time, have an electric lamp on one's head. If any one thinks it can be done, let him try it.

Making Accurate Test by Eyesight Is Difficult

In making this statement, I do not refer to testing a pocket of gas accumulated in a cavity of the roof or other like place. I mean that it is practically impossible to make the test in a return air current for determining low percentages of gas in the air traveling. This is more important than testing for isolated bodies of gas.

The only exception I would make, to my former statement, is that a man should carry a small flashlight when he has to examine falls, or other dangerous places. The flashlight will enable him to reach a place of safety in case he should lose the light in his safety lamp.

A testing lamp is a poor tool at the best, and my observations prove that when a man has a cap lamp along he gives less attention to his safety lamp, which often hangs at his belt, swinging and bumping at every step. If mine officials were taught to give the same care to their lamps as a soldier must give to his rifle, there would be fewer complained failures of standard testing lamps.

O. G. Sharrer.

Kent, Pa.

Using Steel Tamping Bars

Underestimating the danger—Accidents from this cause not common in Tennessee mines—Charging powder in paper cartridges — Practice when drilling with worn augers.

IN HIS ARTICLE, "Charging Holes With Steel-Headed Tamping Bars," *Coal Age*, Oct. 19, p. 637, my friend and neighbor, Oscar H. Jones, appears to be overexercised, in reference to the use of steel bars for tamping holes in blasting.

It appears that Mr. Jones regards this practice as having grown to a considerable extent in his district. He explains that the coal, in that locality, contains much sulphur in the form of balls and streaks, which is troublesome in drilling the holes for blasting.

When a drill strikes a sulphur ball, the latter being very hard, deflects the drill slightly. The result is that the hole is not straight and the sulphur ball is left exposed in the side of the hole, which our friend regards as very dangerous if a steel-headed bar is used to tamp the charge.

Danger of Striking Spark When Steel Bar Hits Sulphur Ball

Continuing, Mr. Jones claims that when such a hole is tamped with a steel-headed bar, there is every chance of the bar striking a spark when coming in contact with the sulphur ball. In that case, he considers an explosion of the charge almost inevitable and adds, "Such accidents are common in our mines, although they are wholly avoidable if proper precautions are taken and steel tamping bars prohibited."

While I do not wish to be understood as approving the use of steel tamping bars, it appears to me that the danger is not as great as Mr. Jones would have us believe. In other words, a premature explosion is not an inevitable result, though always a possible one.

Consider, for a moment, the method ordinarily followed by a miner when charging a hole. The powder is first placed in a cartridge made of strong blasting paper. After inserting the fuse, the miner either ties the mouth of the cartridge tight about it, or doubles the paper back and presses it down in a way to prevent the fuse from being pulled out easily.

This being done, the cartridge is pushed back gently to the bottom of the hole. No miner, having any regard for his own safety would push a cartridge back hard enough to strike a spark, by his bar coming in contact with the sulphur ball. But, suppose that did happen, the paper of the cartride would still intervene between the spark and the powder.

When tamping a hole with coal slack or clay, most miners make a short cartridge, 8 or 10 in. long, called a "dummy," or "dooly." This cartridge is filled with the tamping material and pushed back against the powder before any hard tamping is done. After the dummy is in place, no spark caused by the hard tamping of the charge could possibly reach the powder.

In respect to the material used in tamping a hole, I agree fully with my friend that clay or some other incombustible material should be used, especially if the charge consists of black powder. In my opinion, black powder should not be permitted to be used in many of our mines.

Use of Two Cartridge Pins When Bit Becomes Worn

In the same letter, Mr. Jones speaks of the auger bit becoming so worn that the hole drilled is too small to permit the cartridge to be pushed safely to the bottom of the hole. To say the least, I believe that any attempt to force a cartridge into a small hole would be reckless and particularly dangerous where the coal contains much hard sulphur, in the form of balls or streaks.

It is now several years since I have dug any coal; but, at that time, we kept two cartridge pins, a large pin and a smaller one for use should the auger become worn. This avoided the trouble and danger of bursting a cartridge.

Every miner, also, kept a scraper made of soft iron and having a small spoon at one end and a larger one at the other. These scrapers were used to clean the holes of dust and, at times, miners would use the big-spoon end to push some loose powder back into the hole. I have known a few reckless miners to get their cartridge fastened in the hole so that they could neither push it forward nor pull it back.

Should Not Tamp Holes Too Hard

In that case, the miner would generally tamp the hole and fire the shot. Frequently, the shot would pull its burden very well and no harm would result. However, I consider there is much risk in such a practice and believe it should not be allowed. Just here, let me say that many miners tamp their holes too hard—much harder than necessary. At times, you will hear the tamping bar ring as though it was striking hard coal. In my own practice, I have never tamped shots in that way and have always had good success in shooting.

Speaking of the common occurrence of accidents resulting from the use of steel bars in tamping, allow me to state that during the thirty-five years of my connection with mining in Tennessee, it

has not been my experience to see or hear of such an accident occurring in our mines. For four years, beginning June 1, 1910, I was district mine inspector, and my territory included the Wilder mine, where Mr. Jones is employed.

Every week I see and talk with the present inspector in that district. Yet, he has not mentioned such an accident as having occurred and I cannot think that accidents of that nature are frequent. It will be interesting to hear from others on this point.

JOHN ROSE,
Former District Mine Inspector.
Dayton, Tenn.

Industrial Peace via Golden Rule

Remedy for existing ills lies within reach of everyone—Practice of the Golden Rule the need of today.

WITH deep interest, I read the excellent letter of John Rose, which appeared in *Coal Age*, Nov. 2, p. 719, under the heading "Finding the Way to Industrial Peace." The remarks of Mr. Rose emphasized the present-day need of more religion in our industrial relations, one with another.

To say that I am in hearty accord with the sentiments expressed is putting it feebly. It is my belief that the practice of every-day religion is the only solution to the problems that now confront us on every hand.

It is not in coal mining alone that this need prevails, but in every industry throughout the length and breadth of the land. Operators and miners, employers of labor and workers in every trade and occupation must get together and co-operate if we are to secure the peace that is so much desired. Hard as the fact may be to realize, the remedy is within the reach of everyone. To my mind, no good results will be accomplished until we come to regard the work as beginning with ourselves.

WHERE RESPONSIBILITY RESTS

It is for the profiteering merchant who asks high prices for his goods; for the operator greedy for an unreasonable profit; for the capitalist demanding unreasonable returns on his investment; for the miner, day laborer, and other workers asking higher wages and making unfair demands respecting their labor—on all of these alike rests the responsibility of doing their share in the practice of the Golden Rule.

We might go on forever naming things that contribute to the high cost of living; but nothing will be accomplished that will be of benefit, until each one regards the problem as his own and is willing to do his share to make the world better.

This would be a wonderful world in which to live, if such a wave were to sweep the country and the chief endeavor of everyone was to treat another as he would be treated. There would then be an end to all industrial strife and prosperity would follow.

JAMES THOMPSON,
Mayport, Pa.

Inquiries Of General Interest

By-Products in the Manufacture of Coke

Numerous By-Products in the Manufacture of Coke—Skill and Knowledge Required to Insure Success—Principal Types of Ovens in Use

KINDLY permit me to ask for information, through the columns of *Coal Age*, regarding the by-products obtainable in the manufacture of coke. Also, does the bituminous coal used require to be of good quality, and does the recovery of these by-products require special skill and treatment?

Frontier, Wyo. INQUIRER.

The by-products recoverable in the manufacture of coke are numerous. Beside the coke dust and "breeze," there are the gaseous products, illuminating gas and fuel gas; and tar with its several distillates, consisting of the light volatile oils, naphtha and benzol, with their derivatives carbolic acid, creosote, etc.; followed by the heavier lubricating oils and the residue of pitch or asphalt and anthracene. There is beside the ammonia liquor, obtained in the washing and largely used in the manufacture of soap and allied industries.

All by-product processes require skill and a thorough chemical knowledge of the various hydrocarbon products that are formed, together with their use in the manufactures. Due regard must always be had, however, for the particular products it is desired to obtain. Some of the products named can only be obtained by the exclusion of others.

For example, the quality of illuminating gas, derived from the manufacture of coke, is much impaired if the benzol is taken out for fuel purposes. An expert knowledge of the chemical industries is therefore required to select and utilize these available products to the best advantage.

IMPORTANCE OF SAVING BY-PRODUCTS

The idea of saving the by-products in manufactures, generally, has received much attention in recent years and many industries are now based on the utilization of what was formerly a waste product of another industry. The study of the various by-products in the manufacture of coke has opened a wide field; and by-product furnaces or ovens have been specially designed for particular coals and requirements.

Chief among these is the type known as the "Semet-Solvay regenerative oven." In this type, the gas retorts or ovens are horizontal, while in another type of oven known as the "Koppers's oven," the retorts or flues are vertical. The successful operation of all types of by-product ovens is largely dependent on the uniform application of heat and a careful proportionment of the width of the furnace to the volume of gas generated.

Air Blasts and Bumps

Air blasts of a different nature from bumps—Former due to sudden rush of water accumulated on a pitch—Bumps caused by readjustment of rock masses within the earth.

READING the article entitled "Occurrence and Causes of Bumps in Coal Mines," *Coal Age*, Nov. 9, p. 760, has given rise to a discussion, here, as to the exact difference between an air blast and a bump, as these terms are used in coal mining. It would be interesting to have the nature of these two phenomena explained in *Coal Age*. I have contended that they are due to very different causes, but have been unable to explain in what way they differ. Apparently, each is manifested as a severe shock that often does much damage in the mine. STUDENT.

Nanaimo, B. C., Canada

An air blast, as the term is used in mining, is of a nature wholly different from what is termed a "bump." Air blasts only occur on steep pitching seams, or under conditions where a considerable body of water has accumu-



EFFECTIVE ACTION OF AIR BLAST

lated at some higher point and has suddenly been released and moved bodily to a lower point where it was brought to rest with a violent jar or shock.

An air blast occurring in a mine is of a nature quite similar to what is known as "water hammer" in a pipe system. In the accompanying figure we have attempted to illustrate one condition under which it is possible for an air blast to occur. In the figure as shown a fissure vein of coal, where

a heading has been driven beyond the fault, which is a downthrow.

A water header having been formed at the face of the heading (*F*), the pump was abandoned and a stopping put in (*H*), built to prevent the flooding of the mine. As the water accumulated in the space at (*HF*), it is evident that the rise of water level on reaching the roof at that point would entrap a considerable body of air at *S* and *E*.

As the water continues to accumulate, the pressure on the air at *S* is increased, being equal to the head of water rising toward the face. Nothing happens, however, until a possible fall of roof or coal agitates the water and the air and water tend to change places, the air forcing its way through the water, and the water rushing with great force against the dam. This is called an air blast.

The term "bump" has reference to a readjustment of equilibrium in the earth's strata. Owing to the unequal stresses set up through the extraction of the coal over large areas, or to one or more of the various hidden causes in the earth's crust, there comes a time when the formation is unable to support the strain thrown upon it and a readjustment takes place, which is manifested by a severe shock or jar that the miner term a "bump."

Examination Questions Answered

Miscellaneous Examination Questions

(*Answered by Request*)

QUESTION—*What are the minimum gradients, which should be given to underground roads for the following purposes: Water levels, levels for horse haulage, self-acting haulage, and direct haulage?*

ANSWER—In order to provide good drainage, the ditches, in a water-level entry, should be given a fall varying from 2 to 6 in. in 100 ft. For animal haulage on levels, the grade should favor the movement of the loaded cars. In order that it will require the same pull to move the loaded cars down a grade, as to pull the empties up the same grade, the road should be given a fall of from 1 to 1.5 per cent in favor of the loaded cars.

Self-acting inclines can be made to operate successfully on grades varying from 3 to 15 or 20 per cent, depending on conditions regarding the relative weights of the empty and loaded cars and the condition of track and rolling stock. It is not clear what is meant by "direct haulage." There are various kinds of rope haulage adapted to different grades varying from level to vertical.

QUESTION—*Give the comparative advantages and disadvantages of the longwall and room-and-pillar methods of working a coal mine.*

ANSWER—The chief advantages of the longwall method of mining are: Complete extraction of the coal; good ventilation at the working face; the avoiding of the necessity for building doors and stoppings; less expense for timber; and, finally, more direct route to the working faces.

Where the conditions are favorable longwall working has few, if any, disadvantages. The method requires the building of good packwalls, but this material would otherwise have to be hoisted to the surface, in many instances. A longwall mine can not lay idle for any length of time without serious damage to the work.

The room-and-pillar method of mining has the advantage of providing separate working places for the men, where each man is responsible for the condition of his own place. This method gives a smaller production of coal in the first working, a large percentage being left as pillars for the support of the roof, until the work of robbing is commenced. The room-and-pillar method affords opportunity for a squeeze or creep to develop and much coal is often lost in pillars that can not be recovered.

QUESTION—*What must be carefully considered before the work of drawing pillars is begun?*

ANSWER—Before drawing pillars the possibility of future development must be considered carefully; and the effect that the taking out of the pillars will have on adjoining workings and on the surface. The work must be so arranged that the line of pillar work will be more or less straight, so that no excessive pressure will be thrown on any of the pillars. The question of the presence of water or gas in the overlying strata, must be determined, and provision made to avoid accident on this account.

QUESTION—(*a*) *What are your reasons for or against systematic timbering and should it be adopted?* (*b*) *Can the road and working places be kept more secure than when the timber is staggered and set up irregularly without system as to space and alignment?*

ANSWER—(*a*) The chief advantage of systematic timbering lies in the fact that the miner is not permitted to follow his own judgment and can not postpone the setting of timbers, as he would do, otherwise. The roof pressure is more uniformly distributed in systematic timbering and less timber is crushed by excessive weight than where the posts are set irregularly. There is less danger, also, from a hidden slip in the roof being undiscovered and causing accident. On the other hand, systematic timbering requires a larger outlay for timber than may be necessary, at times. Under uniform roof conditions, systematic timbering is advisable.

(*b*) Roads and working places are always more secure where systematic timbering is employed.

QUESTION—*When is an electric wire said to be grounded?*

ANSWER—An electric wire is said to be grounded when it is in connection with the ground, or with a system of pipes running into the ground, in such a manner that the current will pass from the wire into the ground.

QUESTION—*If a breast is driven a distance of 500 ft. on a rising grade of 10 per cent, what should be the distance represented on the map of the mine, and what height has the breast attained above the gangway level?*

ANSWER—In this case, the pitch distance is 500 ft. and, the grade being 10 per cent, the grade angle or angle of inclination is that whose tangent is 0.1, or 5° 43′. Then, since the cosine of this angle is 0.995, the horizontal distance corresponding to the length of the breast is $500 \times 0.995 = 497.5$ ft., or 4.975 in. as measured on the map.

The total rise of the breast above the gangway is 49.75 ft. In this calculation the percentage of grade is estimated on the horizontal distance, which is common practice in seams of moderate inclination.

QUESTION—*In a non-gaseous mine hitherto worked with open lights, marsh gas has made its appearance in considerable quantity. What lamp would you recommend to be used by the workmen?*

ANSWER—Under these conditions the workmen should be equipped with electric cap lamps, or provided with locked safety lamps of an approved type.

QUESTION—*What first-aid treatment would you give to a workman whose eye has been injured?*

ANSWER—Remove at once any speck of coal or other foreign matter observed on the eye. If the injury is severe, while waiting for the doctor apply absorbent cotton or soft cloth soaked in cool water, bandaging the same, not too tightly, but sufficiently so to prevent movement of the eyelid. Keep the cloth and bandage constantly wet with cool water to prevent inflammation. A few drops of olive oil in the eye will help to allay irritation. Never allow the injured one to rub his eye.

CORRECTION

Examination Question, Nov. 9, p. 762—Last lines of the answer to the first question on the page should read: Finally the velocity of the air current is 80,000 ÷ 64 = 1,250 ft. per min.

Domestic Coal Situation, as Shown by the Government Report on Consumers' Stocks as of Oct. 1*

By W. F. McKenney, E. E. Finn and F. G. Tryon

As time progresses it becomes clear that if there is to be any pinch in the coal market this winter it will be in the supply of domestic fuel. Further, it is clear that if any region experiences difficulty it will be the anthracite-consuming territory of the Northeast. Finally, it is clear that the success of any community in meeting the pinch, if one develops, will be proportionate to its foresight in substituting other fuels—bituminous coal, coke, oil or the smaller sizes of anthracite—for domestic anthracite.

The Geological Survey has made no forecast of the condition of the coal market next winter because forecasting is not consistent with the Survey's regular business of reporting on the facts of supply and demand. Observers outside the government seem to agree that the country ought to be able to pass the winter with no crisis in the supply of steam coal. Anxiety is still expressed in some quarters over the low reserves of household anthracite, but it is generally agreed that by substituting other fuels, the stringency can be met.

It is pointed out that the responsibility for educating the public to the need of substitution and for providing the substitute fuels themselves rests largely with the retail dealer. The real test of his success in meeting the situation, it is agreed, will come with cold weather, when the current consumption of anthracite passes the current production. It is recalled that the consumption of anthracite is vastly greater in January than in October, perhaps four times as great. There can be no doubt of the ability of the bituminous industry to supply substitute fuel, if given time enough. The danger, if any, lies in delaying the demand for the substitute until too late to provide it at reasonable cost and with reasonable promptness.

Because the supply of domestic fuel will assume such unique importance, it has seemed worth while to restate in greater detail the figures on the retail coal situation which were summarized in the recent report on stocks of coal undertaken jointly by the Bureau of the Census and the U. S. Geological Survey under authority of the Federal Fuel Distributor. The figures represent deliveries during the month of September and the condition of stocks on Oct. 1. At this date they are matters of history, but it is a history out of which the events of today have sprung and without which the developments of to-morrow cannot be understood. It must be remembered that these figures represent a sample only, and a rather small sample at that, probably only 20 per cent of the total tonnage handled by retailers. It is, however, a typical sample.

Stocks Outside the Anthracite-Consuming Territory

In discussing the present situation it is necessary to differentiate sharply between territory north and east of the line of the Missouri, Ohio and Potomac rivers, on the one hand, and the territory to the south and west of that line on the other. The first includes all the states where anthracite is a significant element in the domestic fuel supply (Fig. 3), although even in many of these states, notably Iowa, Illinois, Indiana, Ohio and western Pennsylvania, subordinate to bituminous coal.

Outside the anthracite-burning zone practically the entire population cooks its meals and warms its dwellings with soft coal, and there the question of the supply of domestic fuel becomes simply, "How does the condition of retail yards compare with normal at this season?" From the accompanying tables and diagrams it will be seen that stocks on Oct. 1 were low, but that dealers had been endeavoring to make up for the delay during the strike by delivering coal at a faster rate than normal.

First, as to stocks on hand Oct. 1, Table I shows the tonnage in the yards of a selected list of retailers outside the anthracite zone. In comparison with a year ago (Nov. 1, 1921) they showed a decrease almost everywhere (column 6 of Table I and also Fig. 1). On the average the decrease was 67 per cent. But, of course, 1921 was a period of comfortable stocks. In comparison with a time of shortage—such as June 1, 1920—the 1922 stocks outside the anthracite zone showed an increase (last column of Table I). In making this last comparison, however, it must be remembered that they ought to show a large increase, because retail stocks are generally higher in the autumn than in the summer.

Next, as to demand and the rate that retailers were supplying it. The sample retailers outside the anthracite zone, shown in Table I, delivered more coal to their customers in September, 1922, than in the preceding September. From Fig. 2 it will be seen that this increase was general, though not universal, in the non-anthracite territory. It was a natural increase to make up for unavoidable postponement of usual deliveries while the strike was on.

Stocks in the Anthracite-Consuming Territory

Inside the anthracite zone conditions were much less favorable.

Stocks of Anthracite.—Stocks of anthracite itself were very low on Oct. 1. The quantity in the cellars of householders, concerning which no statistics are available, was undoubtedly but a fraction of normal. Stocks in the yards of retailers (anthracite only) were the lowest on record during the period over which statistics extend. The figures given in the government's report need not be repeated here, but in brief they showed that retail yards carried only 13 per cent as much on Oct. 1, 1922, as at the corresponding time last year. At the rate of delivery made by these dealers to their customers in September, 1921, the stocks on Oct. 1, 1922, were sufficient for 7 days.

Anthracite in Massachusetts.—These reports to the Federal Government from a selected list of retailers are confirmed by the records of the Massachusetts Fuel Administrator, which cover all yards in that state. Massachusetts dealers had 73,000 tons of anthracite on Oct. 1, 1922, only 8 per cent of what they carried a year ago, and even barely a third of what they reported on Nov. 1, 1920, at which time a temporary scarcity existed. The anthracite stocks



FIG. 3—HOW RETAILERS STOCKED UP ANTHRACITE AND BITUMINOUS, OR OIL, ON OCT. 1, AS COMPARED WITH THOSE ON NOV. 1, 1920

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[illegible]

reported to the Massachusetts Administrator have been as follows, in net tons:

[illegible]	[illegible]	[illegible]	695,000
[illegible]	[illegible]	[illegible]	727,000
[illegible]	[illegible]	[illegible]	535,000
[illegible]	[illegible]	[illegible]	146,000
[illegible]	[illegible]	[illegible]	47,000
[illegible]	[illegible]	[illegible]	73,000

Anthracite and Bituminous Combined—To speak of anthracite stocks alone, however, means little, for it neglects the efforts of many dealers and consumers to stock up with substitute fuels. Yet even considering anthracite and bituminous as a common source of supply the reserve on Oct. 1 in the anthracite zone was far below normal. Table II shows that, as compared with Nov. 1, 1921, stocks of all coal showed a drop of 66.7 per cent and that even compared with the low point of June, 1920, they showed a decrease of 11.8 per cent. The same story is told graphically by Fig. 1. Not a state in the anthracite zone but exhibits a decrease from November last year even in *all* coal in yards, whether hard or soft, and in many states the decrease was as much as 75 per cent.

Substitutes of Bituminous—Announcement that anthracite will be distributed on the basis of 60 per cent of last year's shipments brings home the fact that consumers must find substitutes for the remainder of their requirements. The reports indicate that during the month of September there was some replacement of anthracite with bituminous coal, but they also show that the replacement had not gone far enough to make up for the deficit in the supply of anthracite.

The extent of the replacement is indicated in Table III. A group of 125 dealers in New England delivered 139,000 more tons of bituminous coal in September this year than last, but delivered 210,000 less tons of anthracite. As a result their total deliveries of all coal were 71,000 tons less this September than last, a decrease of 17 per cent.

TABLE II—PER CENT OF CHANGE IN RETAILERS' STOCKS OF ALL COAL, ANTHRACITE AND BITUMINOUS, IN ANTHRACITE-CONSUMING TERRITORY

State	Number of Identical Dealers *a*	Per Cent of Change Oct. 1, 1922 as Compared with *b* Nov. 1, 1921	Per Cent of Change Oct. 1, 1922 as Compared with *b* June 1, 1920
Total Anthracite Territory	615	—66 7	—11 8
Maine	9	—46 6	+ 13 5
New Hampshire	8	—36 0	+ 17 7
Vermont	6	—84 3	—66 7
Massachusetts	56	—66 5	+ 6 0
Connecticut	27	—64 8	+ 119 4
Rhode Island	11	—45 2	+ 37 0
Total New England	117	—62 7	+ 19 6
New York	31	—58 7	+ 17.7
New Jersey	22	—75 1	—30 7
Pennsylvania	36	—77 5	—72 9
Maryland	11	—38 0	+ 35 1
Delaware	6	—78 6	—33 9
District of Columbia	5	—74 1	— 7 7
West Virginia	6	—76 7	+ 3 3
Ohio	49	—78 8	— 36 2
Indiana	86	—81 8	+ 9 6
Illinois	68	—60 9	+ 120 5
Michigan:			
Northern Peninsula	4	—85 0	+ 211 1
Southern Peninsula	40	—75 0	+ 38 6
Wisconsin	35	—82 9	—11 1
Minnesota	8	—43.7	+ 97 5
Iowa	64	—63 6	+ 38 3
North Dakota	5	—54.8	+ 43 7
South Dakota	4	—62 2	+ 54 9
Nebraska	6	—25 9	+ 48 6
Virginia	12	—86.5	—58 0

(*a*) Includes only dealers from whom reports were available for each of the dates. The dealers reporting include only a fraction of the total.
(*b*) A plus sign denotes an increase; a minus sign, a decrease.

What was true in New England was true of New York, New Jersey and the Lake dock states: deliveries of bituminous increased, but not enough to make up for the decrease in anthracite. In other words, after a five months' strike, retailers were delivering to their customers less coal rather than more than usual.

TABLE III—DELIVERIES OF ALL COAL BY RETAILERS TO CUSTOMERS IN SEPTEMBER, 1922, COMPARED WITH THOSE IN SEPTEMBER, 1921, IN ANTHRACITE-CONSUMING TERRITORY

[illegible]	Dealers Reporting	Tons *a* Anthracite	Tons *a* Bituminous	Tons *a* Total Coal	Per Cent *a* Anthracite	Per Cent *a* Bituminous	Per Cent *a* Total Coal
[illegible]	725	—477,081	+ 82 761	—465 [illegible]	— 70	— 13	—26 4
[illegible]	[illegible]	— 4,884	+ 3,704	— 1,19[illegible]	— 63	— 35	— 6 4
[illegible]	[illegible]	— 2,597	+ 1,370	— 1,227	— 66	— 33	—15 3
[illegible]	7	— 2,98[illegible]	+ 1,138	— 1,851	— 78	— 63	—33 0
[illegible]	[illegible]	—130,734	+ 34,978	—95,756	— 78	— 42	—38 1
[illegible]	27	— 43,671	+ 24,299	— 19,372	— 81	— 154	—27 7
[illegible]	11	— 25,188	+ 73,548	+ 48,36[illegible]	— 86	— 217	+ 76 5
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	149	—210,883	—139,037	— 71,[illegible]	— 79	— 93	—17 0
[illegible]	[illegible]	—[illegible]323	+ 39,798	—[illegible]524	— 68	— 98	—29 0
[illegible]	24	— 29,496	+ 3,331	— 26,167	— 63	— 42	—47 9
[illegible]	[illegible]	— 12,17[illegible]	— 2,803	— 14,976	— 40	— 9	—24 7
[illegible]	[illegible]	— [illegible]396	+ 62	— 5,334	— 52	— [illegible]	—25 0
[illegible]	[illegible]	— 2,437	— 767	— 3,2[illegible]	— 5[illegible]	— 36	—49 1
[illegible]	7	— 6,71[illegible]	+ 9,356	+ 2,637	— 47	— 55	— 8 5
[illegible]	[illegible]	— 1,24[illegible]	— 2,165	— 3,[illegible]	—100	— 23	—32 2
[illegible]	63	— [illegible]167	— 37,610	— 45,717	— 86	— 33	—36 8
[illegible]	[illegible]	— 4,29[illegible]	— 15,377	— 19,657	— 80	— 24	—27 9
[illegible]	77	— 22,174	— 49,654	— 71,828	— 64	— 76	—34 6
[illegible]	[illegible]	— [illegible]858	— 286	— 4,244	— 75	— 4	—34 4
[illegible]	[illegible]	— 28,792	— 11,566	— 38,358	— 92	— [illegible]	—45 4
[illegible]	[illegible]	— [illegible],870	— 2,841	— 16,029	— 83	— 12	—34 1
[illegible]	[illegible]	— [illegible],782	— 10,256	— 6,526	— 72	— 45	—14 2
[illegible]	[illegible]	— [illegible],273	— 1,226	— 4,499	— 85	— 2	— [illegible] 3
[illegible]	[illegible]	— [illegible],274	— 702	— 572	— 78	— 22	—11 [illegible]
[illegible]	[illegible]	— [illegible],063	+ [illegible],180	— [illegible]97	— 81	+ 35	— 1 8
[illegible]	[illegible]	— [illegible]331	— [illegible],604	— [illegible],935	— 57	— 13	—14 [illegible]
[illegible]	37	— 2,29[illegible]	— 744	— 3,042	— 76	— 6	—20 4

[illegible]

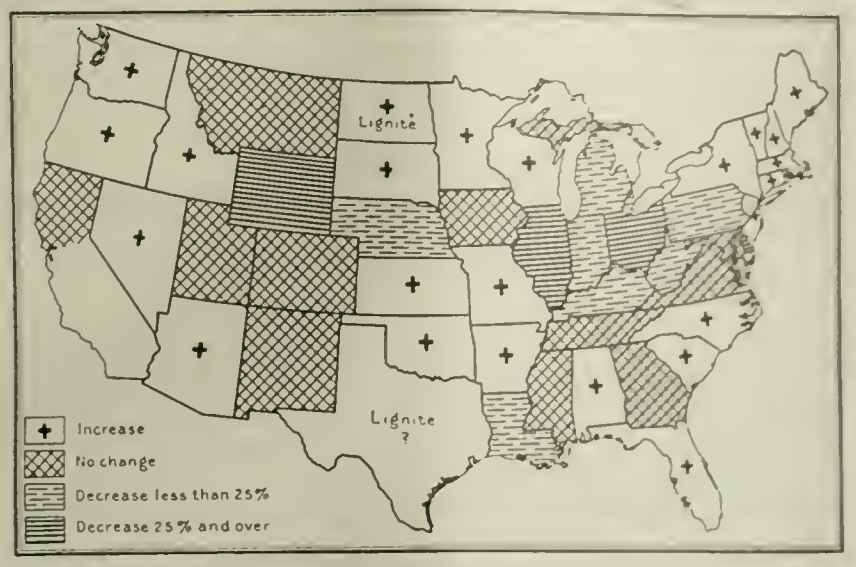


FIG. 2—HOW RETAILERS' DELIVERIES OF BITUMINOUS COAL IN SEPTEMBER, 1922, COMPARED WITH THOSE IN SEPTEMBER, 1921

Deliveries of bituminous coal to domestic consumers were nearly 10 per cent larger in September, 1922, than in the corresponding month a year ago. The map shows that deliveries generally increased or were at least as large as last year, except in the coal-producing states east of the Mississippi and north of Tennessee. The most notable increase occurred in the New England states, where deliveries were 93 per cent larger than during last September.



FIG. 3—HOW RETAILERS' DELIVERIES IN ANTHRACITE-CONSUMING TERRITORY OF ALL COAL IN SEPTEMBER, 1922, COMPARED WITH THOSE IN SEPTEMBER, 1921

As a result of the 23-week anthracite miners' strike, retailers' deliveries of anthracite during September, 1922, were but 24 per cent of the September (1921) deliveries. Deliveries of bituminous coal to domestic consumers in region did not suffice to equal the decrease in anthracite. The map shows that in the anthracite-consuming territory, with the single exception of Rhode Island, less coal was delivered by retailers in September, 1922, than in the same month a year ago.

Still more anomalous was the condition in the other states of the anthracite zone—Illinois, Indiana, Ohio, Pennsylvania and the lower peninsula of Michigan. In these states deliveries of bituminous coal itself, to say nothing of anthracite, were smaller this September than last (Fig. 2). Presumably this was due to a wholesome tendency of the shippers of these states—all coal producing to take care of long-haul destinations first—but it indicates how large a task remained before the retailer after Oct. 1 if his customers were to receive their usual supply.

Deliveries of Anthracite and Bituminous Combined.—The total quantity of all coal, hard and soft, delivered in September, 1922, showed a decrease in every state of the anthracite zone with one exception—Rhode Island (Fig. 3).

Responsibility of Retailer for Substitution.—The foregoing statistics show that the retailers of the anthracite zone, as of Oct. 1, had inherited a serious responsibility. Direction by federal boards and bureaus could do little to lighten the retailers' task. So delicate a thing as readjustment of the consuming habits of millions of householders could be accomplished only by local adjustments made by local dealers. It is a task to capitalize all the skill and restraint of the American retail coal merchant. It is up to him individually to diagnose his local market, advise his customers, forecast the demand for substitutes, and start them moving through his yard before congestion occurs. It is clear that some districts, New England for example, and Rhode Island in particular, had shown much more enterprise than others during the period covered by the stock report. The extent to which other communities have since followed this lead will largely determine the adequacy of their household supply in the winter.

The task of the retailer has been lightened by the unusually mild autumn. The average temperature in November has been decidedly above normal in the anthracite zone, just as November, 1918, was above normal, and November, 1919, below. If the weather man has not boosted the coal man's profits this time, he has at least spared him some undeserved criticism.

Supply of Byproduct Coke.—After the anthracite strike of 1902 many householders got through the winter by buying coke. Continuation of the late strike in the Connellsville region is curtailing the supply of beehive coke which would otherwise be available, but the byproduct ovens are producing heavily. The output of byproduct coke in October was 2,806,000 tons, a figure greater than the monthly average for even 1920. Of this quantity a considerable tonnage is available for domestic use.

Active demand for household fuel has largely absorbed the heavy stocks of unsold coke which had accumulated at byproduct coke works last spring. Statements courteously furnished by 19 byproduct coke operators supplying gas to the municipalities under contract show a decrease of 72 per cent from March 1 to Oct. 1, 1922. As the stocks of surplus coke at such plants on March 1 were slightly over 1,000,000 tons, it appears that the October stocks were about 270,000 tons.

In the Northeast the accumulation of unsold coke had been almost completely liquidated by Oct. 1. A considerable surplus remained, however, in certain cities of the West and Northwest.

Navy Lets Coal Contracts Till Jan. 1; to Ask New Bids for Rest of Fiscal Year

Announcement was made Nov. 22 that the Navy had accepted the bids submitted by the Iron Trade Products Co. of Pittsburgh, for November and December coal requirements at Higham, Mass.; Navy Yard, New York; supply depot, Brooklyn; Lake Denmark, N. J.; Washington Navy Yard, Bellevue Magazine, District of Columbia; Alexandria and Annapolis, calling for approximately 22,000 tons of coal.

No provision was made for the Navy at Philadelphia, it being explained that the successful bidder did not have sufficient tonnage to fill these demands as well as the others.

The acceptance of the short-term bids means that the Navy Department will call for new tenders to be submitted during December, the exact date to be announced later, calling for the delivery of more than 100,000 tons of run-of-mine coal. The reasons given for the failure of the Navy to accept the proposals for the long term were that the price was considered too high for the quality of coal sought and it was believed that more advantageous arrangements could be made later.

There were eleven sets of bids submitted on Nov. 14, but the Iron Trade Products Co. was the only firm to bid on the entire demand.

Following are the awards made, the prices being for delivered coal:

Higham, Mass., 240 tons, $6.35 and $6.45.

Navy Yard, Brooklyn, 4,000 tons, $6.71, $7.37, $7.37, $7.13, $6.74 and $6.74.

South Brooklyn, N. Y., 2,000 tons, $6.71, $7.37, $7.13, $6.74, $7.38 and $6.80.

Long Island, N. Y., 300 tons, Dunn Gr. $6.22, Pr. $5.98, $6.37, $6.00, $5.88, $6.32, $6.00, $7.07 and $7.38.

Lake Denmark, 400 tons, $6.15, $7.45 and $7.75.

Washington Navy Yard, 4,200 tons, $6.35 and $6.45.

Naval Torpedo Station, Alexandria, 370 tons, $6.30, $6.35 and $6.44.

Annapolis, 10,000 tons, $7.09 and $7.37.

Distribution of Lake Cargo Coal Loaded at Lake Erie Ports to Nov. 1*

	1922		1921		1920	
	Tons	Per Cent	Tons	Per Cent	Tons	Per Cent
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

President Would Amend Coal Commission Act to Make Questionnaires Answerable Under Oath

By Paul Wooton
Washington Correspondent of *Coal Age*

President Harding has requested Senator Borah and Representative Winslow to suggest an amendment to the coal commission act which will make questionnaires answerable under oath and which will provide penalties for false statements or failure to reply to questionnaires. The act provides that the commission may issue subpoenas and may demand the presentation of books and records. This process would be cumbersome and it is believed that the situation can be met better under the amendment proposed.

Most of the preliminary work incident to organization and to the threshing out of policies has been accomplished. The commission is now getting into the fundamentals of its work. It is true that no brass tacks have been uncovered as yet but the objectives have been decided upon and the whole organization has started on its march toward them.

In some quarters an impression seems to have been gained that the commission is going to recommend what it considers a just and reasonable wage scale. Apparently the commission has no idea of acting as arbitrator in a wage dispute. Its function is one of fact finding, which differs radically from one of arbitration. It would be manifestly impossible for the commission to undertake to prescribe reasonable wage scales, which vary in each district. That would necessitate a study of the situation in a large number of individual mines. The thought that the commission might undertake some such function may be partly responsible for the polite skepticism of the replies received from the operators and from the mine workers and for the appeal which they made to the galleries.

Doubt Pervades Coal Industry

The coal industry appears to be very much in doubt as to what to expect from the commission. Marshall, Howell, Alschuler and Devine are four names which have been heard infrequently among those engaged in the coal trade. The industry has no preconceived estimate of the ability of those men to pass upon matters which concern them. On the other hand, the industry has a definite appraisal of Hammond, Smith and Neill. It never has thought of Mr. Hammond in connection with coal, but his ability in all matters pertaining to mining is well understood. Dr. Smith is the veteran head of a bureau which has taken a distinctly friendly attitude toward the industry and which does work of high quality. Mr. Neill is recognized as one who has had remarkable success in the arbitration of labor disputes and whose knowledge of employer-employee relationships is profound and constructive.

The public and the industry expect a report that will mark a distinct advance and which will display all the properties of good workmanship. Moreover, the public expects concrete results promptly. Not only does the law specify that there is to be a preliminary report on Jan. 15 but the public generally realizes that if the real purpose of the commission is attained its findings will be needed more as a guide during the next few months than may be the case during years that follow. The commission is functioning during an emergency. The industry needs it though as the work progresses. Most commission reports are leisurely reduced to writing. Proofs are read and re-read. Finally they are made public when the Superintendent of Documents has an ample supply for general distribution. Were the coal commission to follow this procedure, it would miss its main opportunity.

The staff of the President's coal commission at present is made up as follows: C. E. Lesher, engineer in charge of the engineering studies of the production, transportation and distribution of coal; David L. Wing, accountant in charge of obtaining production costs; Prof. Joseph H. Willits, in charge of the study of wages, earnings and wage contracts. Mr. Lesher will be assisted by R. A. Walters, of Reading, Pa., and by C. A. Allen, of Salt Lake City. Mr. Wing is being assisted by H. S. Piers and James E. Black, who have been transferred for the purpose from the Federal Trade Commission. Miss Anne Bezanson, of Philadelphia, who formerly was in charge of a special study on wage earners for the Harvard committee on economic research and who now is connected with the industrial research department of the University of Pennsylvania, will assist Professor Willits.

Under the direction of Commissioner Neill, Miss Marie L. Obenauer will make a survey of living conditions and the cost of living in mining communities. She will be assisted by Miss Frances Valentine.

Commissioners Neill and Alschuler have been assigned the supervision of the investigation relating to labor facts. Commissioners Marshall and Devine will supervise investigations dealing with economic facts while Commissioners Smith and Howell have been assigned the supervision of the studies of engineering facts. In addition, Chairman Hammond will give much personal attention to the engineering phases of the investigation.

Miss Obenauer to Study Living Conditions Among Miners for Coal Commission

Miss Marie Obenauer, widely known as a result of the many industrial surveys which she has made during the past fifteen years, has been retained by the President's coal commission to assist Charles P. Neill in his study of living conditions in coal-mine communities. Miss Obenauer com-



Miss Marie Obenauer

piled an important position with the War Labor Board in which examiners for the employers and for the employees submitted their reports on wages in industry to be for analysis prior to their presentation to the Board. In that capacity she represented neither the employer nor the employee group.

Miss Obenauer came to national notice prior to the creation of the Department of Labor. In the old Department of Commerce and Labor she had charge of the women's division. At that time the department represented the public. When the Department of Labor was created, its organic act provided specifically that it represent labor. Miss Obenauer

[illegible] the government action soon after the division of the department.

Just before the United States entered the war Miss Obenauer undertook a survey conducted jointly by the National League for Women's Service and the federal government to ascertain the number of skilled operatives who could be recruited among women to serve in factories engaged in the manufacture of war supplies.

Miners Will Not Submit to Wage Cut Next Year, Says Searles

Prospects for peace or strikes in the coal-mining industry next year was the topic of an address by Ellis Searles, editor of the United Mine Workers' Journal, before the Business Science Club of Philadelphia at a luncheon at the Hotel Adelphia, in Philadelphia, Nov. 24. Mr. Searles said, in part:

"Whether there will be another strike of coal miners next year is a question that no living man can answer today. But I can say that the miners will not submit to any reduction in their wages, nor will they permit the coal operators to take away from them any of the conditions of their employment which they have won by many years of struggle, hardship and sacrifice. If there are any in this country who are anticipating lower wages for coal miners next year they may as well abandon that anticipation now and devote their spare time to some other subject. The miners are not asking for any general or universal increase in their wages in the bituminous industry, but miners in the anthracite region have asked, they are now asking and they will continue to demand increased wages until their wage rates are brought to the level where they belong and where justice to the mine worker and his family require that they shall be placed.

"For many, many years there has been a wide disparity between the wages of anthracite miners and those in the bituminous industry and in comparison with the wages of men employed in other comparable industries and lines of work. Wages of anthracite mine workers always have been too low and they must be brought up to a decent American level. Next year will see miners of the anthracite region contending as valiantly and heroically for an improved wage scale as they have done heretofore, and they will continue so to contend until they obtain what is justly due them. And they will not abandon their striving for the universal eight-hour day in the anthracite industry. Eight hours is the uniform length of the work day in every soft-coal field of this country, except in those places where the miners are positively denied their constitutional and legal right to organize or to join a labor union. In the anthracite industry, however, men labor eight, ten, twelve or more hours every day in order to earn a living for their families. Such a system is inhuman and unjust and it must give way to the progress that has marked all industry in America in recent years.

"Eight hours is long enough for any man to labor in or around a coal mine. If any of you doubt the truth of that statement, just go out and try it. You will find it is hard labor. More than that, it is work in which there is a greater degree of danger to life, limb and health than in almost any other profitable industry in which men are engaged. Consider the fact that in the anthracite region of Pennsylvania alone there are 500 to 600 deaths each year of men employed in and around the mines, and there are 20,000 injured each year in preventible accidents. This is a frightful toll for men to pay for the privilege of producing coal for the use of us. And we who enjoy the benefits and the comforts that flow from the labor of these men ought to be honest and fair enough to grant them a measure of compensation that will justify them in taking the awful risks that are encountered in the mining of coal. And in the bituminous industry the situation is practically the same. Government statistics show that more than 2,000 men are killed each year in and around bituminous mines and that tens of thousands are injured. The hazard of the coal-mining industry is so great that I am told the insurance companies insure coal miners only if they pay a rate six [illegible] years above their actual age."

Spangler Deaths Laid to Use of Open Lights When Gas Was Known To Be Present

A jury summoned by Coroner M. W. Swabb to hear the evidence and place the blame for the explosion in Reilly mine No. 1, at Spangler, Cambria County, Pa., on Nov. 6, when seventy-seven lives were lost, placed the blame for the explosion on the owners and management of the mine. After an all-day session on Nov. 21 the jury reported on Nov. 22 that: "With the knowledge of the company there was an insufficient number of firebosses employed, that open lights were used in the presence of dangerous gas and that the ventilation in the mine was inadequate."

District Attorney D. P. Weimer of Cambria County attended the inquest but has not decided upon a course of action. A fair summary of the vast amount of evidence submitted to the jury and put into the records would indicate that accumulations of gas were frequent in the Reilly Colliery, that the men who lost their lives and the men who escaped had general knowledge of conditions, that the mine foremen and firebosses knew of this condition and that the officials were kept busy patching up places where there was danger. Foreman Flanagan, in his testimony, asserted that while he knew of the existence of gas and took many precautions at various times to dispel accumulations, he did not consider the mine dangerous to work in. He did believe it was a difficult mine to work in, that general physical conditions were hard, but he did not agree with a number of witnesses that the mine was actually a dangerous place in which to work.

Seward E. Button, chief of the state mining department, in his report submitted to the Coroner's jury, recommends that the Reilly mine be worked exclusively with approved safety lamps. He also recommended that permissable powder be used for blasting, all shotholes to be tamped the full length of the hole with incombustible material, and all shots be fired with electric detonators by shotfirers, coal cutting machines to be of the approved closed type, also that a sufficient number of firebosses be employed to examine a mine thoroughly before each shift.

Spens Revokes Daily Report Requirement

Regulations requiring bituminous-coal operators to furnish the Federal Fuel Distributor with daily statements as to coal loadings, prices obtained for coal, and destinations to which coal is shipped were revoked Nov. 24 by Fuel Distributor C. E. Spens, effective Dec. 1. These regulations, which were promulgated on Sept. 27 and 28 and Oct. 4, required that daily reports of coal shipments in the territory east of the Mississippi River be transmitted to the fifteen naval officers acting as district representatives of the Federal Fuel Distributor. Operators in trans-Mississippi territory were required to make their reports directly to the Federal Fuel Distributor, except that Iowa, Montana and North Dakota operators reported to C. P. White, Assistant Federal Fuel Distributor, at St. Paul, Minn.

Anthracite Tax Adjudged Constitutional

Washington, D. C., Nov. 27.—The Supreme Court of the United States today affirmed the decision of the Pennsylvania Supreme Court holding the Pennsylvania anthracite tax constitutional. The highest court held that there is a difference between anthracite and bituminous coal since anthracite is used only as a fuel whereas bituminous coal is the base of byproducts. Nine states using 80 per cent of the anthracite produced in Pennsylvania intervened in the case, declaring that this will increase the cost of coal to them. The court, however, held that there was no cause for complaint on the part of these states since the tax was levied before the coal is offered to a common carrier, whereupon it would be subject to national legislation.

High Price of Anthracite Attributed to Inflated Wages Demanded by Mine Workers*

When anyone connected with the producers of anthracite is asked to talk about "economic and business aspects" of the coal industry it does not require a great deal of imagination on his part to know that what his auditors want is an answer to the question: "Why do I have to pay so much for coal?"

The public has a deep-seated conviction that the price of anthracite is too high. This belief is the real basis for the public demand for fact finding about coal that led to the passage of the law creating the U. S. Coal Commission. And the main fact that the public expects the commission to find, so far as anthracite is concerned, is that the public can and should get its domesite fuel supply at a lower price. Assuming, as we may, that this able commission will deal only with facts these are some of the things that it will necessarily find:

First, that anthracite production is different in every essential respect from bituminous coal production. There is no overproduction of anthracite, there is no irregularity of production except that occasioned by the acts of the workers and, in spite of the public conviction to the contrary, the industry as a whole makes no excessive profits.

The production of anthracite is a costly and elaborate underground engineering proposition, and after the coal is brought to the surface from depths of from 500 to 1,500 feet it is cleaned, washed and sized in huge breakers which cost today about $1,500,000. Without going into the technical details of anthracite production, let me mention a few facts which indicate why it costs so much to produce hard coal.

For every ton of coal produced 11 tons of water must be pumped out of the workings. Besides the necessity for ridding the mines of some 800,000,000 gallons of water a day, an operation requiring continuous pumping 365 days a year, it is necessary to hoist and dispose of about half a ton of rock and dirt for every ton of coal produced. Every minute of every day two tons of air are forced into the anthracite mines for ventilation. The timbering of the mines requires the use of 500,000,000 board feet of timber every year, or about 7 ft. for every ton of coal produced.

That anthracite mining is in reality a manufacturing proposition is shown by the fact that of the 150,000 men employed in the industry only about 42,000 are directly engaged in mining. The other 108,000 are employed in the handling and preparation of the coal for market.

These operations give a different picture from the conception of coal mining which imagines it to be merely the scooping out of easily accessible supplies and the loading of the coal on the cars for market.

But all of this, you will say, does not justify the price of $14 a ton for anthracite coal. It does not. But it is only a part of the story. In the first place the anthracite producer does not get $14 a ton, directly or indirectly. The coal for which the New York consumer pays $14 or more is sold at the mine at the present time for about $8.25. But don't imagine all of the coal is sold at this price. About one-third of it is the so-called steam sizes, which the mine owner is compelled to sell below the cost of production. In 1921-22 the average realization on the whole production was not more than $6.28 a gross ton.

Let us look into the items that make up the mine price of anthracite. Labor costs $4.11; $1.05 goes for supplies; 58c. for administration, making a total of $5.74. Subtract this from the amount realized on the whole production, $6.28, and there is 54c. left, representing the average margin between production cost and mine price. Out of this margin must come trade discounts and taxes, which reduced the average profit of the anthracite operator in the past two years to not more than 35 or 40c. a ton. In other words, if all of the profits made by all of the anthracite producers in 1921 and 1922 were eliminated, the price of coal could have been reduced by about 40c. a ton.

The labor cost in this computation, which has back of it the authority of S. D. Warriner, based on a most careful investigation, was stated at $4.11. But obviously coal selling for $2 a ton, which is the average price of the steam sizes, constituting about 30 per cent of the commercial production, could not carry a labor cost of $4. In other words, the larger domestic sizes must carry more than the average labor cost. According to Mr. Warriner's computation, a fair allocation of the labor cost would make this item $5.20 per ton in the case of stove coal.

It is going to be fairly easy to convince the coal commission or for the commission to convince itself that the mine price of anthracite on the basis of present labor and other costs is fair, and that it cannot be reduced until these costs are reduced.

But what about the difference between the mine price of $8.25 for the domestic sizes and the price the consumer pays? This is made up of freight, which in the case of New York is about $2.75 per ton, including lighterage, and the costs and profits of retail distribution. The anthracite producer has nothing to do with his product, and derives no profit from it after it leaves the mine. Except for some legal details in the case of one or two companies, anthracite mining and railroad transportation are divorced industries, and whatever profit is made out of the transportation of anthracite goes to the railroad.

Operators Not Responsible for High Freight Rates

If railroad freight rates are too high, if dealers and distributors are adding too much to the mine price for their services, it is something for those interests to account for. The producer can only tell you what he gets for his product at the mine, what it costs him to produce it and the profit he makes out of it. There are some properties exceptionally favorably situated which realize more than the average profit I have stated, but there are many that average less and there are others that make no profit at all. These facts, however unpalatable and however different from the ideas commonly prevailing, are nevertheless facts which the searching investigation of the fuel commission may be expected to confirm.

Even the briefest discussion of economic aspects of the anthracite industry cannot ignore the labor problem, especially in view of the fact that it is labor disturbance that has centered public attention upon the industry in recent months. The labor cost of producing anthracite, according to the U. S. Bureau of Labor Statistics, has increased more than 118 per cent since 1914. Notwithstanding the fact that mine wages alone, among those paid by basic industries, have been increased instead of diminished since the end of the war, the miners presented to the anthracite operators early this year demands which would give them a further increase of wages, and add about $1 a ton to the cost of producing domestic anthracite.

There has never been a break for twenty years in the relations between anthracite producers and organized labor. There was no refusal this year on the part of the anthracite operators to negotiate with the miners' representatives. In fact we were committed in such negotiations and expected to proceed with them when, at the first meeting of the negotiators in March, we had presented to us a notice of suspension of mining on April 1. Protests against the unreasonableness and unwisdom of this step were brushed aside and an anthracite strike was initiated which lasted for five months—possibly one of the most costly and at the same time most useless strikes that this country has ever had—and at the end of it the miners went back to work at their old wages.

The basic rate of pay in the anthracite industry is 53c. an hour for common labor, all other wages grading up from

*Abstract of address by Daniel T. Pierce, of the General Policies Committee of Anthracite Operators, at the meeting Monday evening, Nov. 27, at Town Hall, New York, under the joint auspices of the Women's City Club and the City Club of New York. Other speakers were Senator William E. Borah, of Idaho; Arthur H. Learoyd, of the New York State Fuel Administration, and Thomas Kennedy, vice president of the United Mine Workers.

the figure at least which make the anthracite miner the aristocrat of the world's workers. You may recall that a month or so ago a great deal of attention was centered upon the fact that the Steel Corporation had increased wages 20 per cent, but with this increase the common labor rate in the steel industry was raised to only 50c. an hour, while the anthracite industry pays 85c. Every other class of workers has accepted reductions from war-time wage peaks. Every other worker, therefore, is paying out of declining wages the inflated wages of anthracite workers. By reason of the fact, as stated by President Harding, that the people of the United States are at the mercy of the United Mine Workers the mine workers have been able up to this time to resist any adjustment of their wages corresponding to the adjustments that have taken place in all other industries. Having done this, the miner is not very much impressed by the statement of economists that it could not be done. But as soon as urgent necessities are satisfied, the miner will find that he is going to pay dearly for his victory in the form of interrupted employment which will reduce his earnings, whatever his wage rate may be.

The cost of labor alone is now more than the average selling price of anthracite at the mine before the war. The miner insists upon judging his wage, or the labor cost of anthracite, with relation to the retail price, whereas it can reasonably be judged solely with relation to the mine price.

These are a few of the economic aspects of the anthracite coal problem. Every producer of anthracite will agree that the retail price is too high. He wishes that it could be lower because he is fearful that consumption will be reduced by the high price, and he has not even the consolation of high immediate profits to compensate for this danger. He has an investment of about $8 per ton of annual production in a hazardous industry. A 10 per cent return, which he ought to get on such an investment, would give him 80c. a ton. On the average he gets about half that. Nevertheless he bears on all sides that he is a gouger.

Pittston Miners Threaten to Strike Unless Superintendents Are Changed

Operators committees of two locals of the United Mine Workers of America whose membership is employed at collieries of the Pennsylvania Coal Co. from Dunmore to Pittston, Pa., have voted to call a strike of the 10,000 workers at these collieries on Dec. 1 unless the company by that time accedes to the committee's demand to transfer 13 superintendents at the collieries in question.

This action came after a stormy session of four hours at which Rinaldo Capellini played a leading rôle. The meeting was called to adjust a dispute that came from the Old Forge local, No. 1256, whose members had a one-day strike the forepart of last week as a result of the transfer of Mine Foreman William Campbell from the Old Forge colliery to the Butler colliery and the sending of Arthur Young to the Old Forge colliery. The Old Forge grievance committee alleges that one of the first acts of the new foreman was to discharge two members of the grievance committee.

Illinois Receptive to Almost Any Wage Plan That Can Get U. S. Approval

Illinois has more or less made up its mind on the outstanding question: "What of future wage negotiations with the miners' union?" On Nov. 21 in Chicago, the operators of the state crystallized their opinion for the benefit of Van Horne and W. K. Kavanaugh, their representatives on the joint conference of operators and miners which tried to talk for four days beginning Nov. 14 to agree upon some method of future wage negotiations and which reconvenes Dec. 6 in New York. The Illinois view is, first, that the operators of the country certainly should meet the miners before April 1 in an effort to stave off another strike; second, that negotiations preferably should be by districts or by single states but that, as a second choice, the old Central Competitive Field or some similar group of states should get for the operators after hearing the contentions of the outlying district men, points that the Federal Coal Commission ought to be invited to observe the negotiations whenever they take place; fourth, that in case of disagreement with the miners, arbitration be offered as a last effort to avoid closing the mines, and fifth, that governmental sanction be obtained before any agreement is made. These ideas were put in the form of a resolution as a guide to Messrs. Miller and Kavanaugh.

The Illinois meeting was the fulfillment of an agreement made at the joint conference two weeks ago that the operators at that conference, having failed to unite upon any plan for negotiating the next wage scale, would all go home and talk it over with their constituents. The results of the Illinois meeting are to be carried by Messrs. Miller and Kavanaugh first into a session on Dec. 4 of the operators' half of the joint conference and then into the full conference of Dec. 6 when the operators may have united upon some negotiation plan. Up to the present there has been no unity. Outlying fields strove for, and were refused, a voice in national wage making and there was not even harmony among the four original states of the Central Competitive Field on the question of renewing the old four-state plan of wage making.

The attitude of Illinois is that strong effort be made to avoid a strike but that the operators of the country should do absolutely nothing that would lay them once more liable to indictment on a charge of conspiring with miners to set a wage scale for the country that would elevate the cost of coal to the people.

Attitude of Commerce Commission Turning Against Assigned Car Practice

Such a good showing has been made by the witnesses opposing the practice of assigning cars for railroad fuel that it is apparent that the attitude of some of the Interstate Commerce Commission members is changing. During the opening hearings it was apparent that the commission was disinclined to take any action that would add materially to the expenses of the carriers. The evidence as to the disruptive influence of the assigned car has been so conclusive, however, that none will be surprised if the commission should rule that assigned cars are to be used only during a real emergency and even then the permission of the commission may be required.

A large number of operators have presented figures showing their actual losses as a result of inequitable car distribution. Others testified as to how they have been forced to take railroad contracts at unprofitable figures so as to keep their mines in operation. B. E. Neal, president of the Neal Coal Co., of Indianapolis, was among the most effective witnesses presented by the operators. His earnestness and his fund of concrete information clearly impressed those sitting in the case.

Much credit is due to John Brophy, who spoke for the United Mine Workers. He declared that unequal running time as between mines is inequitable to labor and causes much dissatisfaction.

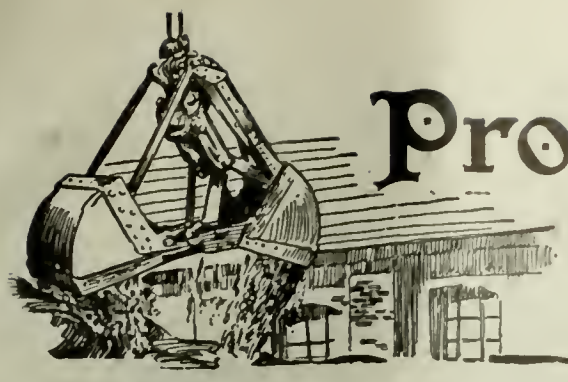
The defense of the railroads has been much weaker than was expected. Their attorneys have not made a good showing. That the railroads recognize the trend against the practice is evidenced by the fact that they have made drastic reductions in the number of assigned cars used since the hearing began.

Several operators who specialize in railroad contracts appeared in support of the assigned-car practice.

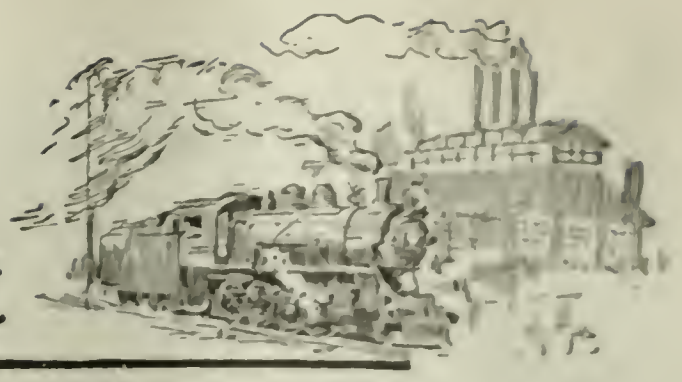
Retailers Submit Proposals to Commission

The National Retail Coal Merchants' Association has submitted a statement to the President's Coal Commission presenting the attitude of the association on the investigation which the commission is undertaking, dealing in detail with both the anthracite and the bituminous situation. Specific recommendations are made to the commission for bettering the situation with regard to each fuel.

ALFRED M. OGLE, president of the National Coal Association, who was stricken with appendicitis last week, is well on the road to recovery.



Production and the Market



Weekly Review

The spot coal market is quiet. Buying is confined to current needs, even in the domestic branch, and the tendency to acquire seasonable reserves has not passed beyond the stage of making inquiries on prices. *Coal Age* Index of spot bituminous coal prices receded to 330 on Nov. 27, as compared with 343 on the preceding Monday. The average price at the mine corresponding to this index number is $3.99; last week it was $4.16.

The market can be divided into two sections today. In the territory served by the regions producing coal for the Lakes there is absolute stagnation. Buyers are marking time while the Lake shipping season closes and "no-market" losses are reported for the first time since the strike. The trade expects a substantial buying movement with the close of the Lakes, however, and hopes that this tonnage will be absorbed with a minimum of price softening. The approach of cold weather always hastens purchases to augment reserves and, having delayed longer than usual this year, the consumer's re-entrance into the spot market is expected to prevent a slump in production.

Markets Tightening in Eastern Centers

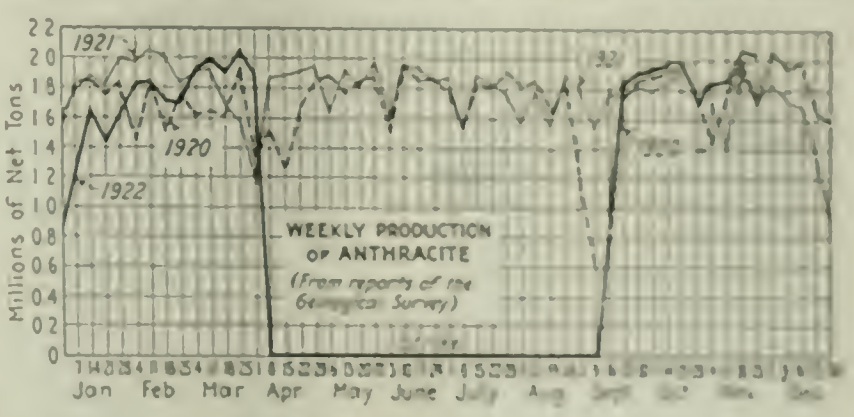
On the other hand, Eastern centers already are experiencing tighter markets. Poor deliveries have boosted prices and inquiries are much stronger. Spot coal is scarce and premiums are paid for quick deliveries. Good grades from central Pennsylvania are finding a ready market and there is a growing production of prepared coal to fill the gap caused by the anthracite shortage. New York, Philadelphia and Baltimore all report a stronger demand for industrial coals. Conditions in New England are improving and although there is no broad inquiry as yet, the reduced receipts from Hampton Roads have increased Southern coal prices and strengthened the position of the all-rail shippers.

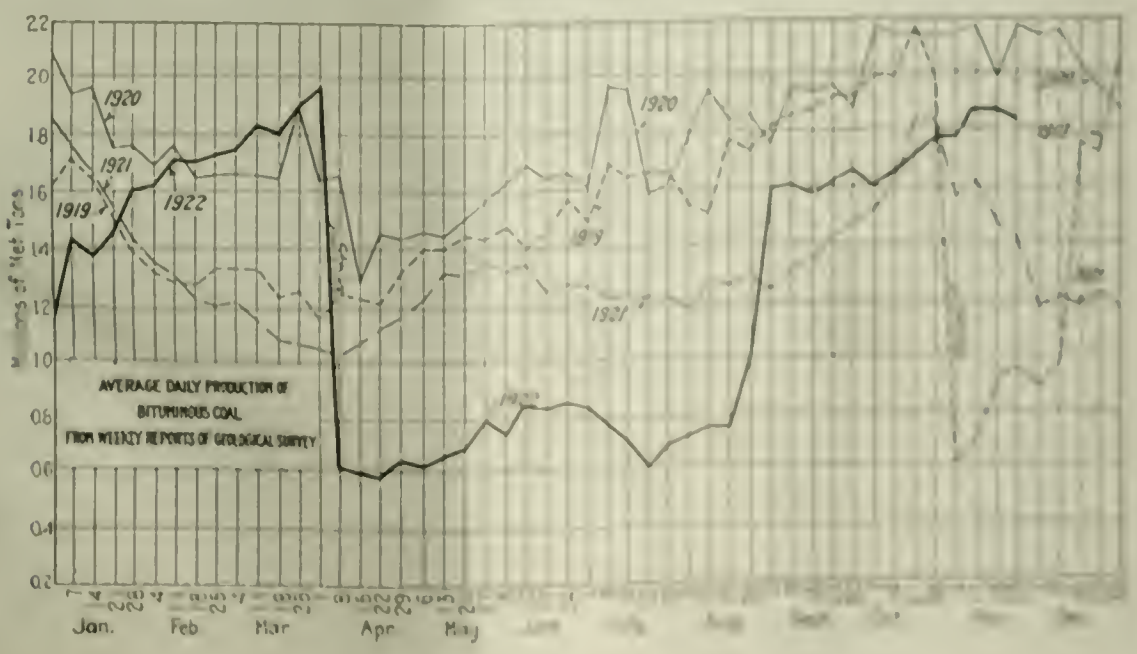
Sellers at the Cincinnati gateway report more diversified conditions. Stodgy Northern demand is turning a larger tonnage south from the Virginia and the southeastern Kentucky fields. Low-volatile agencies are again soliciting orders, quoting reduced figures for early December business.

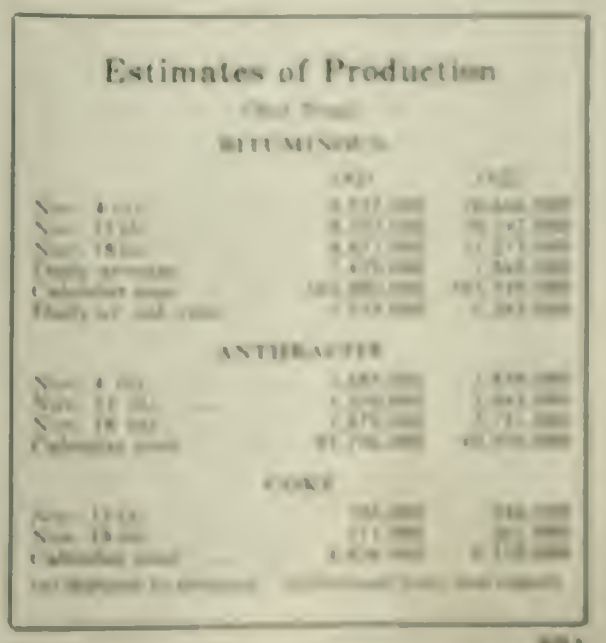
In the Middle West screenings are finding a better market. This is due not so much to improved demand as to lowered production. Domestic grades are in a slump and curtailed operation is reducing the available supply of fine coal.

Transportation conditions are improving. The car supply, however, is so erratic that individual shortages at the mines complicate the market. The uncertainty of the car supply is so great that producers cannot gage their offerings; spot coal, like the demand, therefore is on a day-to-day basis in most sections.

The scarcity of domestic anthracite has become pronounced and with the advent of colder weather more substitutes are being sold. Independent prices have advanced with the shortage. Eastern markets have been promised early relief, as companies will soon divert more domestic tonnage in that direction with the closing of the Lakes. In the meantime these markets are being invaded by prepared sizes of bituminous coal and, once having gained a foothold, soft coal will make some permanent inroad on what has heretofore been an inviolable stronghold for the producers of domestic anthracite.







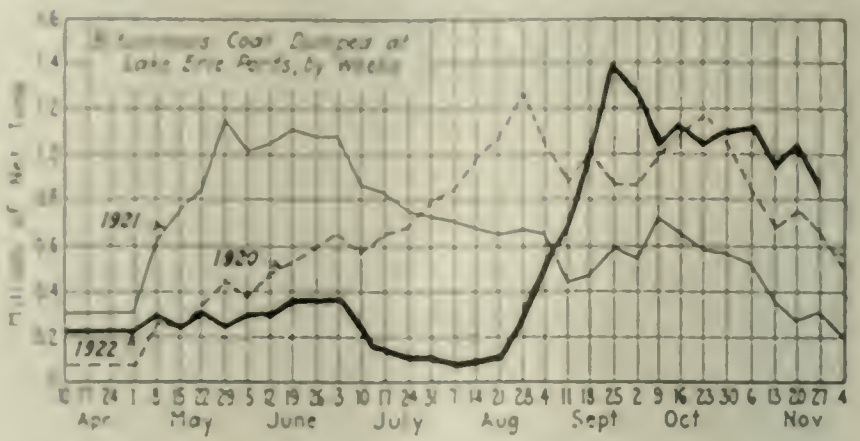
Lower weather has injected some life into the anthracite steam market, but the supply still exceeds the demand and one company has reduced its circular prices to clear the tidewater supply. Buckwheat is in the best position, as many producers insist on a proportionate amount of this size being taken with an order for domestic coal.

The Lake movement is slowing down. Last week's clearings of anthracite at Buffalo amounted to 110,103 net tons, as compared with 151,450 tons in the preceding week. The Northwest's supply by Lakes will not exceed 46 per cent of normal this year.

BITUMINOUS

"Bituminous coal production during the week ended Nov. 18 was 11,215,000 net tons, as against 10,147,000 tons in the week preceding," says the Geological Survey. "Early returns for last week (Nov. 20-25) indicate that 11,000,000 tons were raised. Both bituminous coal and anthracite output in the week ended Nov. 18 were at high rates, and the total coal raised, 13,403,000 net tons, was the highest weekly last turn since the strike and was exceeded this year only in the week ended March 25, when the total was 13,443,000 net tons."

The all-rail movement to New England amounted to 3,289 cars during the week ended Nov. 18, as compared with 3,329 cars in the previous week. Shipments for 1922 are now



21 per cent behind the corresponding period in 1921. Central Pennsylvania is getting into better position to ship to this territory, as the recent strength in prices at Hampton Roads has reduced the competitive advantage of these fuels. The car supply is uneven and keeps operators guessing

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	[illegible] 1922	Nov. 13 1922	Nov. 20 1922	Nov. 27 1922†
[illegible]	Columbus	$4 40	$4 [illegible]	$6 75	$6 [illegible] $7 00
[illegible]	Columbus	6 25	6 25	6 10	**6 00** **6 35**
[illegible]	Columbus	5 [illegible]	5 [illegible]	5 75	5 [illegible] 6 00
[illegible]	Chicago	6 35	6 [illegible]	6 25	6 [illegible] 6 50
[illegible]	Chicago	5 75	5 [illegible]	5 60	5 [illegible] 5 75
[illegible]	Cincinnati	[illegible]	6 [illegible]	6 [illegible]	**5 15** **7 50**
[illegible]	Cincinnati	6 10	6 [illegible]	6 10	[illegible]
[illegible]	Cincinnati	6 10	6 25	6 25	[illegible]
[illegible]	Boston	[illegible]	7 [illegible]	8 [illegible]	7 7[illegible] 8 25
[illegible]	Boston	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Boston	4 75	4 [illegible]	4 35	[illegible]
[illegible]	Boston	5 25	5 25	4 [illegible]	[illegible]
[illegible]	New York	4 [illegible]	4 [illegible]	[illegible]	**5 00** **5 25**
[illegible]	New York	4 25	4 25	4 50	**4 75** **5 25**
[illegible]	New York	[illegible]	[illegible]	[illegible]	**3 75** **4 00**
[illegible]	New York	[illegible]	[illegible]	[illegible]	**3 50** **4 00**
[illegible]	New York	[illegible]	[illegible]	[illegible]	3 2[illegible] 3 50
[illegible]	New York	[illegible]	[illegible]	[illegible]	**3 00** **3 50**
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2 [illegible] 3 40
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	**3 00** **3 25**
High-Volatile, Eastern					
[illegible]	New York	[illegible]	[illegible]	[illegible]	3 [illegible] 3 60
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3 [illegible] 3 75
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3 [illegible] 3 50
[illegible]	[illegible]	[illegible]	[illegible]	4 50	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6 10
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	**6 00** **6 50**
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3 2[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	**3 75** **4 50**

Midwest	Market Quoted	Oct. 30 1922	Nov. 13 1922	Nov. 20 1922	Nov. 27 1922†
Franklin, Ill lump	Chicago	5 35	5 35	5 25	5 [illegible] 5 50
Franklin, Ill mine run	Chicago	4 10	4 10	4 10	4 00[illegible] 4 25
Franklin, Ill screenings	Chicago	2 60	2 60	2 60	2 00[illegible] 3 00
Central, Ill. lump	Chicago	5 00	4 70	4 50	4 00[illegible] 4 50
Central, Ill mine run	Chicago	3 10	3 10	3 10	3 00[illegible] 3 25
Central, Ill. screenings	Chicago	1 85	1 85	1 80	1 60[illegible] 1 75
Ind. 4th Vein lump	Chicago	5 10	5 10	5 10	5 00[illegible] 5 25
Ind. 4th Vein mine run	Chicago	3 85	3 85	3 85	3 75[illegible] 4 00
Ind. 4th Vein screenings	Chicago	2 35	2 05	2 05	1 90[illegible] 2 25
Ind. 5th Vein lump	Chicago	4 75	4 75	4 75	4 50[illegible] 5 00
Ind. 5th Vein mine run	Chicago	3 65	3 60	3 60	3 50[illegible] 3 75
Ind. 5th Vein screenings	Chicago	2 10	1 85	1 85	1 75[illegible] 2 00
Standard lump	St. Louis	4 25	4 25	3 75	**3 50**[illegible] **4 50**
Standard mine run	St. Louis	2 60	2 50	2 50	**2 50**[illegible] **2 75**
Standard screenings	St. Louis	2 00	1 30	1 35	1 25[illegible] 1 50
West Ky. lump	Louisville	5 00	4 75	4 35	[illegible]
West Ky. mine run	Louisville	2 80	2 55	2 50	2 00[illegible] 2 50
West Ky. screenings	Louisville	2 00	1 75	1 50	1 25[illegible] 1 75
West Ky. lump	Chicago	4 10	4 10	4 10	4 00[illegible] 4 25
West Ky. mine run	Chicago	3 10	3 10	2 85	2 50[illegible] 2 75
South and Southwest					
Big Seam lump	Birmingham	3 95	3 95	3 95	3 45[illegible] 4 45
Big Seam mine run	Birmingham	2 60	2 35	2 35	2 25[illegible] 2 50
Big Seam (washed)	Birmingham	2 75	2 60	2.60	2 50[illegible] 2 75
S. E. Ky. lump	Chicago	5 50	5 50	6 10	5 75[illegible] 6 50
S. E. Ky. mine run	Chicago	4 25	4 25	4 25	4 00[illegible] 4 50
S. E. Ky. lump	Louisville	6 75	6 60	6 50	6 00[illegible] 7 00
S. E. Ky. mine run	Louisville	4 00	4 25	4 00	3 50[illegible] 4 00
S. E. Ky. screenings	Louisville	4 10	4 00	4 00	3 50[illegible] 3 75
S. E. Ky. lump	Cincinnati	5 85	6 25	6 50	6 00[illegible] 6 75
S. E. Ky. mine run	Cincinnati	4 25	3 85	3 75	3 25[illegible] 4 00
S. E. Ky. screenings	Cincinnati	4 00	3 60	3 25	3 00[illegible] 3 50
Kansas lump	Kansas City	5 75	5 75	5 75	5 [illegible]
Kansas mine run	Kansas City	3 75	3 75	3 75	[illegible]
Kansas screenings	Kansas City	2 50	2 50	2 50	2 50

* Gross tons, f.o.b. vessel, Hampton Roads
† Advances over previous week shown in heavy type, declines in italics.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

Market Quoted	Prepared Sizes	Independent	Company	Nov. 20, 1922 Independent	Nov. 20, 1922 Company	Nov. 27, 1922† Independent	Nov. 27, 1922† Company
[illegible]	$2 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	$7 [illegible] $7 75	$9 00	$7 75 [illegible] $8 15	$9 00	$7 75[illegible] $8 15
[illegible]	[illegible]	$7 [illegible] $7 50	7 7[illegible] 7 85		7 90[illegible] 8 10		7 90[illegible] 8 10
[illegible]	[illegible]	7 [illegible] 7 75	7 [illegible] 7 75	[illegible] 2 5[illegible] 10 50	7 75[illegible] 8 35	**9 25** **10 75**	7 75[illegible] 8 35
[illegible]	[illegible]	7 25	7 75	9 2[illegible] 9 75	8 10[illegible] 8 35	**9 25** **11 00**	8 10[illegible] 8 35
[illegible]	[illegible]	[illegible]	[illegible]	12 5[illegible] 13 00	6 90[illegible] 8 25	12 50[illegible] 13 00	**7 20** **8 25**
[illegible]	[illegible]	[illegible]	7 [illegible] 8 10	9 2[illegible] 10 50	8 00[illegible] 8 35	**9 25** **10 75**	8 00[illegible] 8 35
[illegible]	[illegible]	[illegible]	[illegible] 8 25	9 2[illegible] 9 75	8 15[illegible] 8 35	**9 25** **11 00**	8 15[illegible] 8 35
[illegible]	[illegible]	7 75	7 2[illegible] 7 60	12 5[illegible] 13 00	7 15[illegible] 8 25	12 50[illegible] 13 00	**7 35** **8 25**
[illegible]	[illegible]	[illegible]	7 [illegible] 8 10	[illegible] 2 5[illegible] 10 50	8 00[illegible] 8 35	**9 75** **10 75**	8 00[illegible] 8 35
[illegible]	[illegible]	[illegible]	[illegible] 8 25	9 2[illegible] 9 75	8 15[illegible] 8 35	**9 25** **11 00**	8 15[illegible] 8 35
[illegible]	[illegible]	7 75	7 2[illegible] 7 60	12 5[illegible] 13 00	7 1[illegible] 8 25	12 5[illegible] 13 00	**7 35** **8 25**
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	8 15	[illegible]	8 15
[illegible]	[illegible]	[illegible]	[illegible]	7 [illegible] 8 00	6 1[illegible] 6 20	**7 00** **10 00**	6 1[illegible] 6 20
[illegible]	[illegible]	[illegible]	[illegible]	7 [illegible] 7 50	6 1[illegible] 6 20	**7 00** **8 00**	6 1[illegible] 6 20
[illegible]	[illegible]	[illegible]	[illegible]	7 [illegible] 8 00	5 4[illegible] 6 03	7 [illegible] 8 00	5 4[illegible] 6 03
[illegible]	[illegible]	[illegible]	[illegible]	3 [illegible] 4 25	4 00[illegible] 4 25	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible] 2 5[illegible] 4 00	4 [illegible]	3 25[illegible] 4 00	4 00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible] 3 00	2 75[illegible] 3 [illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible] 2 75	2 75[illegible] 3 [illegible]	2 00[illegible] 2 75	2 75[illegible] 3 00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible] 2 00	2 [illegible]	[illegible]	[illegible]
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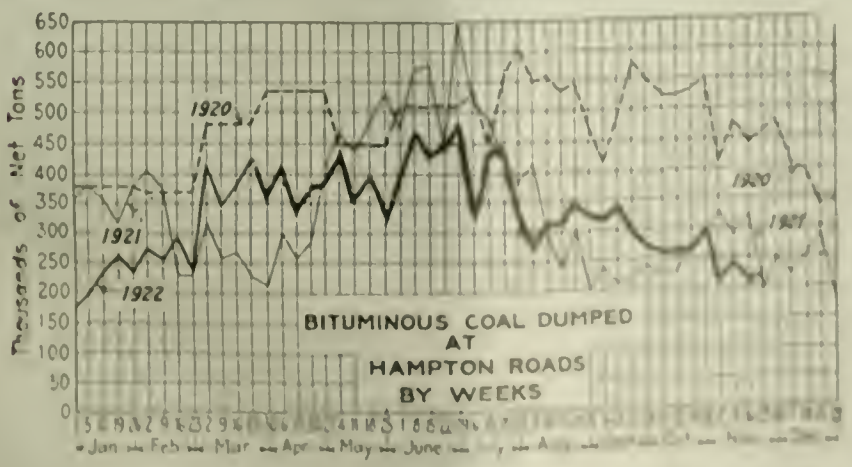
* Gross tons, f.o.b. vessel, Hampton Roads † Advances over previous week shown in heavy type, declines in italics.



Coal Age Index 330, Week of Nov. 27, 1922. Average spot price for same period, $3.99. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

as to whether to sell ahead at present prices or to take the market as they may find it. On the whole, however, orders are only slightly in excess of the current output. The resumption of work at the textile mills, now that the strike has been settled, is expected to increase the demand.

Hampton Roads dumpings were 211,415 net tons during the week ended Nov. 23, as compared with 202,000 tons in the preceding week. Coal on hand at the piers is increas-



ing very slowly, as cars are so short and Western points are taking a heavy tonnage. There is a scattering amount loaded on export, bunkers are holding their own and coast-

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines for fields represented by the U. S. Geological Survey in Table V of the Weekly Report

	Six Months July to Dec. 1921	Week Ended Nov. 11, 1922
U. S. Total	45.6	35.7
Alabama	63.5	64.6
Somerset County	55.5	74.3
Panhandle, W. Va.	55.3	51.3
Westmoreland	54.9	58.8
Virginia	54.8	59.7
Harlan	53.3	54.8
Hazard	51.7	59.4
Pocahontas	49.8	48.3
Tug River	48.1	44.7
Logan	47.6	61.1
Cumberland-Piedmont	46.6	58.6
Winding Gulf	45.7	64.1
Kenova-Thacker	38.2	54.1
N. E. Kentucky	32.9	47.7
New River	24.3	37.1
Oklahoma	63.9	59.5
Iowa	57.4	78.4
Ohio, Eastern	52.6	46.6
Missouri	50.7	66.8
Illinois	44.8	54.1
Kansas	42.0	54.8
Indiana	41.4	53.6
Pittsburgh†	41.2	39.8
Central Pennsylvania	39.1	50.2
Fairmont	35.3	44.6
Western Kentucky	32.5	37.7
Pittsburgh*	30.4	31.9
Kanawha	26.0	33.0
Ohio, southern	22.9	24.3

* Rail and river mines combined
† Rail mines
(a) No report

Car Loadings, Surplusages and Shortages

	Cars Loaded All Cars	Cars Loaded Coal Cars
Week ended Nov. 11, 1922	933,606	488,312
Previous week	946,633	496,871
Same week in 1921	705,272	354,800

	Surplus Cars All Cars	Surplus Cars Coal Cars	Car Shortage	Coal Car Shortage
Nov. 8, 1922	4,000	2,000	174,000	43,000
Oct. 31, 1922	3,710	1,564	128,250	42,379
Same date in 1921	41,000	16,000		

wise business takes the bulk of the tonnage, most of it now going to New England. New York is taking a minimum of the Southern coals, the great portion of it to contract.

Lake business is, of course, dwindling. Mines are discontinuing their shipments to the lower ports and another week should see the end. During the week ended Nov. 27 the lower ports dumped 812,117 net tons. The movement for the season to date now stands at 18,426,125 tons, as compared with 22,932,800 tons during the corresponding period of last year. Softness pervades the Northwestern bituminous-coal market. Prices are being hammered down, all-rail competition is keen and the supply is reassuring consumers who feel that lower prices may be their reward for further delay in placing orders.

ANTHRACITE

Production of hard coal last week was 2,100,000 net tons, as estimated from preliminary reports on hand at this writing. During the preceding week it was 2,181,000 tons, a record which has been exceeded only once in the last six years.

That there is need for record production is evidenced by a clamorous demand for domestic sizes. Turning their attention from the Lake market, producers now provide early relief for other sections.

Steam coals are still taboo-ed, although the mild weather has reduced the accumulations. One company, however, has found it necessary to reduce its prices circular 50c. to stimulate sales.

COKE

Production of beehive coke was 261,000 net tons during the week ended Nov. 18, as compared with 248,000 tons in the previous week.

The resumption of several blast furnaces has increased the demand for Connellsville furnace coke. More are planning to follow at once as enough coke is on hand to warrant it. Active consumers are ready to contract on old crop and as pig iron is in shipping there is considerable price resistance shown by prospective coke buyers.

Foreign Market And Export News

Rhondda Collieries Are Well-Booked

Coal Output continues to produce coal at record-breaking speed. The output during the week ended Nov. 11 was the heaviest of the year—[illegible] gross tons—according to a cable to *Coal Age*, and compares with [illegible] tons in the week preceding. The market is active, especially on the heavier steam sizes.

The condition of the Welsh export market is very satisfactory and the home trade shows some signs of revival. The market is awaiting the usual end-of-the-year contract inquiries and some good business has been done over 1923, including business with French railways, and in South American and Italian directions, and recently there have been inquiries from Egypt.

Many of the leading colliery owners are overbooked and out of the market. Foreign orders have been received from all the regular markets, and the fact that shipments to North America have declined to about 23,000 tons per week has not affected the position.

There has been a decided decline in nearly all values in Durham and Northumberland, and it would appear that the amount of coal available for this year is largely responsible for it, coupled with the general uncertainty of the position. At the same time, the collieries are heavily booked and sold out for December.

Continental inquiry tends to slow down, owing to the unsettled exchanges. France and Italy are taking fair quantities, but business with Scandinavian countries is quiet and Germany is sparing in her new demands. America is still in the market for occasional cargoes of steam and gas coal, and the Argentine and the East are also in evidence.

Hampton Roads Market Indifferent

Indifferent business causes prices to fluctuate slightly, arriving at the end of the week in the previous week's level and with dullness continuing to feature the market. The diversion of coal to the West continued to make itself felt on the trade here.

The situation had only one bright phase—the approach of cold weather, but the trade has not been stimulated

Germany Must Speed Up Production

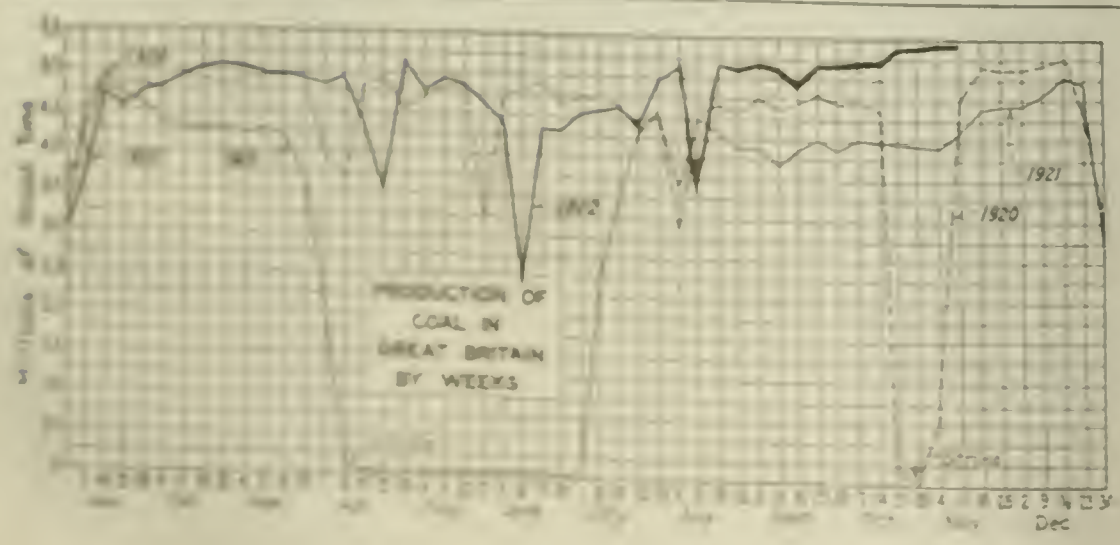
The returns of September coal production have been watched with the greatest interest, in view of the re-establishment of overtime shifts, upon which great hopes for a material increase of the output had been staked. The Ruhr miners consented to work six hours per week in excess of the regulation working time in overtime shifts of two hours, three days a week. The result is so far strongly disappointing. The increase of output compared with August was in September only 7,000 tons per day instead of the 50,000 tons expected.

GERMAN COAL PRODUCTION
(METRIC TONS)

	First Nine Months of—		
	1922	1921	1913
[illegible]	[illegible]	100,602,000	130,177,000
[illegible]	[illegible]	90,922,000	64,132,000
Coke—	22,038,000	20,761,000	22,769,000
[illegible]	4,090,000	4,276,000	4,406,000
[illegible]	22,122,000	21,237,000	50,974,000

Although production of bituminous coal has increased since last year, the total appears less on account of the detachment of Polish Upper Silesia. A survey of this situation shows that hardly any change has taken place in the supply to the interior of Germany. The coal shipments from the German part of Upper Silesia average 100,000 tons per week, and from the Polish part 170,000 tons per week. The shortage which actually exists in the country is due to the grown consumption. Under present conditions the coal production of the country is inadequate, as evidenced by the increased imports, which are a heavy burden on the strained financial situation of the country. The state railways have from May to Dec. 1 required 3,374,000 tons, chiefly British coal; gas works, 487,000, and electricity works, 205,000 tons. The problem of the day is to obviate the disastrous imports or reduce them to a minimum by increased production.

During October, the output has increased to an average of 33,000 tons per day, netting a surplus of 22,000 tons over the August production. Nearly 80 per cent of the miners took part in overtime work during that month. The lowered efficiency of the miners is due to the constant rise in the cost of living, which is keeping the question of wages in a continued state of unrest.



Coal Paragraphs from Foreign Lands

GERMANY—Production of coal in the Ruhr region during the week ended Nov. 11 was 2,033,000 metric tons, according to a cable to *Coal Age*. The output for the previous week was 1,751,000 tons.

ITALY—The price of Cardiff steam first is now quoted at 39s. 9d. on the Genoa market, according to a cable to *Coal Age*. This compares with 40s. 3d. in the preceding week.

BELGIUM—Market firmness is everywhere becoming more marked. Orders are abundant, both for domestic and industrial coals. Sales are active and there is a good deal of delay in consignments. Demand for coke is strong owing to foreign purchases.

Hampton Roads Pier Situation

	Week Ended— Nov. 16	Nov. 23
N. & W. Piers, Lamberts Pt.:		
Cars on hand	509	484
Tons on hand	31,350	31,437
Tons dumped	67,730	70,038
Tonnage waiting	15,550	3,100
Virginia Ry. Piers, Sewalls Pt.		
Cars on hand	840	954
Tons on hand	51,800	58,450
Tons dumped	81,662	79,967
Tonnage waiting	10,527	17,000
C. & O. Piers, Newport News		
Cars on hand	481	382
Tons on hand	24,050	19,100
Tons dumped	30,966	38,759
Tonnage waiting	80	12,270

Pier and Bunker Prices, Gross Tons

PIERS

	Nov. 18	Nov. 25†
Pool 9, New York	$7 50@$7 75	$7 50@$7 75
Pool 10, New York	7 00@ 7 25	6 90@ 7 10
Pool 11, New York	6 25@ 6 75	6 00@ 6 25
Pool 9, Philadelphia	7 45@ 7 80	7 45@ 7 80
Pool 10, Philadelphia	7 00@ 7 15	7 00@ 7 15
Pool 11, Philadelphia	6 60@ 6 80	6 60@ 6 80
Pool 1, Hamp. Roads	7 75@ 8 00	7 75@ 8 00
Pools 5-6-7 Hamp. Rds.	7 50@ 7 75	7 50@ 7 75
Pool 2, Hamp. Rds.	7 75@ 8 00	7 75@ 8 00

BUNKERS

Pool 9, New York	$7 90@$8 15	$7 90@$8 15
Pool 10, New York	7 40@ 7 65	7 00@ 7 50
Pool 11, New York	6 65@ 7 15	6 40@ 6 75
Pool 9, Philadelphia	7 75@ 8 05	7 75@ 8 05
Pool 10, Philadelphia	7 30@ 7 40	7 30@ 7 40
Pool 11, Philadelphia	6 85@ 7 10	6 85@ 7 10
Pool 1, Hamp. Rds.	7 75@ 8 00	7 75@ 8 00
Pool 2, Hamp. Rds.	7 75@ 8 00	7 75@ 8 00
Welsh, Gibraltar	38s. f.o.b.	38s. f.o.b.
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	50s. f.o.b.	50s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	42s. t.i.b.
Welsh, Algiers	38s. f.o.b.	38s. f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b.	65s. f.o.b.
Welsh, Madeira	40s. 6d. f.a.s.	40s. 6d. f.a.s.
Welsh, Teneriffe	38s. 6d. f.a.s.	38s. 6d. f.a.s.
Welsh, Malta	41s. f.o.b.	41s. f.o.b.
Welsh, Las Palmas	38s. 6d. f.a.s.	38s. 6d. f.a.s.
Welsh, Naples	39s. 3d. f.o.b.	39s. 3d. f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore	50s. t.i.b.	50s. t.i.b.
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Welsh, St. Michaels	50s. t.i.b.	50s. t.i.b.
Welsh, Port Said	49s. f.o.b.	49s. f.o.b.
Welsh, Oran	38s. f.o.b.	38s. f.o.b.
Welsh, Fayal	50s. t.i.b.	50s. t.i.b.
Welsh, Dakar	42s. 6d. f.o.b.	42s. 6d. f.o.b.
Welsh, St. Vincent	42s. f.a.s.	42s. f.a.s.
Welsh, Montevideo	50s. f.o.b.	50s. f.o.b.
Welsh, Alexandria	43s. f.o.b.	43s. f.o.b.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff	Nov. 18	Nov. 25†
Admiralty, large	28s. @ 28s. 6d.	28s. @ 28s. 6d.
Steam, smalls	16s. @ 17s.	16s. @ 17s.
Newcastle:		
Best steams	25s. 3d. @ 27s.	25s. @ 25s. 3d.
Best gas	24s. @ 25s.	24s. @ 25s.
Best bunkers	23s. @ 23s. 6d.	23s. 6d. @ 24s.

North Atlantic

Market Has Strengthened With Tightening of Supply

Car Shortage and Slow Delivery Advance Spot Values—Release of Lake Tonnage Counterbalanced — Screened Bituminous Readily Taken as Substitute for Anthracite.

Tightening of the supply has strengthened the market. Cars are so short and deliveries so slow and uncertain that values for spot tonnages have advanced, especially on good grades. Individual cases of acute car shortage further complicate the situation, as producers refuse to cut prices on uncertain future loadings. The poor car supply has so far overbalanced the release of some Lake tonnage. Buying is increasing slowly, but inquiries are numerous, showing that the trend of demand will soon be stronger.

Screened bituminous coal is finding a more ready market as a substitute for anthracite. The cold weather is inducing many consumers to place orders for soft coal and prices for prepared sizes are strengthening daily.

NEW YORK

Irregular car supply, in the opinion of some local houses, caused a slight advance in quotations here. Further stiffening is looked for by the middle of the week. Conditions were better and inquiries were received in greater volume.

High-grade coals are quickly absorbed, operators in some instances being booked ahead to April 1 on the present basis of car supply.

Screened coal is being looked upon with favor here. Several local houses have been sending considerable nut and stove sizes to nearby towns, one firm, shipping the latter size, claiming they have been compelled to refuse orders. One cargo of Welsh anthracite was reported as arriving here during the week.

Southern coals are not coming forward in large volume. There were 1,468 cars at the local terminals on Nov. 24, mostly of Pool 10 and 11. Very little Pool 9 was to be had here, operators being heavily booked for it.

PHILADELPHIA

The car supply still holds back production and shippers are loath to make any promise whatever of prompt shipment. The car shortage this week has has made it somewhat difficult for producers to get forward full shipments of high-grade coals on contracts.

There is still a show of increasing demand for bituminous as a domestic fuel. Some local retailers have bought screened gas coal around $7 at mines. Dealers who handle the low-volatile, best grades of Pennsylvania steam coals, find that while it is difficult to make initial sales on account of the fine coal, they get better reports as it is tried out.

The railroads are still actively in the market for motive power fuel and with assigned car orders are able to keep ahead of current consumption and send some into stock.

At Tide there is no activity out of the ordinary. Two clearances for Havana were made last week. It would seem that normal movement is being resumed, especially with the old-time shippers.

Market prices have been held firm. Some had thought with the near approach of the Lake closing an extra amount of coal would be thrown on this market, with consequent lower prices, but it would seem that the car supply situation has overbalanced this.

BALTIMORE

Dealers say that the present conditions indicate a large increase in the demand and that in view of the scarcity of the better grades it will be necessary for the buyers to satisfy themselves with the lower qualities of coal. It is difficult to secure any of the better grades and it is impossible to guarantee prompt shipments of any character.

With the cold weather many of those who had claimed they were holding off for a reduction in price are now endeavoring to have their wants supplied at the prevailing prices.

To supply the wants of consumers is not an easy task owing to the car shortage on the Pennsylvania and B. & O., which is daily causing the situation to become more and more complicated.

The importation of English coal has discontinued and there appears to be but little likelihood of any renewal of this trade. Even in the face of the present conditions one cargo has been sent to Cuba and another to Porto Rico from Baltimore during the last ten days. There have been ten vessels, consisting of nine steamers and one schooner, to leave Baltimore since Nov. 6 in the New England trade.

FAIRMONT

Except where mines are loading railroad fuel and for the Lakes, much trouble is being experienced in securing enough cars to insure regular operation. Tidewater shipments seem somewhat heavier, notwithstanding weakness in the Eastern markets. In view of the higher price prevailing in Western markets, coal is being shipped to points west of the Ohio River whenever that is possible.

UPPER POTOMAC

Production continues on a large scale in the Upper Potomac and Georges Creek field. It is larger on the Thomas Division of the Western Maryland than on any other railroad division. In Georges Creek territory despite a continuance of the strike on the part of some of the older miners, there are approximately 500 men at work and that number is being daily augmented

CENTRAL PENNSYLVANIA

During the week ended Nov. 19, production amounted to 19,849 cars or a daily average of 3,308 cars, as compared with 17,287 cars in the week previous. The production from Nov. 1, to 19, inclusive, was 48,603 cars, while during the corresponding period in October 46,805 cars were loaded. There has been little or no change in prices.

Operators in Clearfield and Cambria, away from the main railroad lines, are complaining of car shortage. One operator with mines in both places declared that the car shortage has knocked the bottom out of business and it is impossible to hold the men. Under the present conditions, operators contend that they are working at a great loss.

West

KANSAS CITY

The so-called "buyers' strike" and recent warm weather caused the announcement last week of a cut of from 50c.@$1 on Kansas lump and nut. Operators, at the time they announced the reduction, predicted it would be only temporary, and that, with the arrival of cold weather and an increased demand, the price will advance. They are getting between 40 and 50 per cent running time nowadays.

Present quotations for Kansas coal are: Lump, $5; mine run, $3.50; nut, $4.50; screenings, $2.50. Arkansas semi-anthracite is selling at $6 for lump and $4 for nut. Missouri coal is quoted $4.50 for lump and $3.50 for nut.

DENVER

With mild winter weather in Denver coal prices are evenly balanced without much sliding up or down the scale. The car shortage still hampers many mines. However, between 3,000 and 4,000 men more than usual were employed in the Colorado mines during October and production totalled 900,000 tons which is the most the state ever produced in a month.

All of the producing counties except Routt and Fremont, show increases, and are led by Las Animas and Huerfano counties. The car shortage and strike during the summer are believed primarily responsible for the heavy decrease of production in Routt and Fremont counties, except for a period of thirty days when the Moffat road was blockaded at a tunnel.

SALT LAKE CITY

The car situation is still very bad but some relief is expected at an early date. The weather has moderated and retailers are still able to supply all demands. With the car shortage this would not be possible, even with warmer weather, more coal being bought for storage. Many consumers are ordering two and half tons at a time. Lump and screened slack are the sizes in greatest demand.

Anthracite

Crisis Impending as Cold Weather Appears

Low Retail Supplies Force Householders to Take Substitutes—Screened Intermediate Moves Better to East—Briquets and Coke Bring Fancy Prices—Companies Promise Early Relief—Steam Circular Reduced

Cold weather is precipitating a crisis in the anthracite trade. Retail supplies are nearly depleted and householders are forced to take to substitutes. In the East screened bituminous coal is moving better and briquets and coke sell at fancy figures.

Companies promise immediate relief, however, now that they have made an impression on the Northern demand. Independent operators have increased their prices and even pea coal is selling at close to $10. Steam sizes are in better position, but one large company has cut its circular 50c. to move quickly before the price cut overstipply.

PHILADELPHIA

The consumers' need for fuel has become more acute with the coming of the cold weather. Unless prompt relief is given in the way of shipments a crisis is bound to result. The companies have finally promised the dealers to make shipments from Dec. 1 on, as the government has relieved them of some of their obligations to the North. The retailers continue to take orders, but only subject to their ability to make delivery.

The rumors of increased independent prices have now turned into reality. Under the circumstances, $10 for coal at retail will be quite common from now on.

Dealers handling briquets report an active demand, with the price around $14. There is also an increasing use of byproduct coke, which is selling at the ovens in a mixed pea and nut size for $[illegible]. Retail prices on this run $[illegible].

The colder weather has started some improvement in steam sizes, but not sufficient to take up the slack. Buckwheat is still readily obtainable at $[illegible], with rice and barley available at last week's quotation, although barley shows some signs of being lost from.

BALTIMORE

Sharp weather has caused a heavy crisis in consumers' bins and the usual rush orders, which were furnished by the householders earlier in the season are now nearly depleted. Dealers are not getting sufficient amounts to enable them to meet the urgent demands that are being made upon them. A substitute will have to be used as the cold weather increases in its intensity and many of those who have held off from soft coal will be forced to use it. The retail price has not changed since September.

There was a large decrease in the amount of hard coal received here in November as compared with October. During the entire month of October 1,372 cars arrived, while up to Nov. 24 there had been but 700 cars brought in. Like the bituminous coal, the trade is severely handicapped on account of the car shortage.

BUFFALO

The supply is so disappointing that the advice now is that, as so much substitute fuel must be provided, the thing to do is to make up the deficiency by laying in briquets, coke, soft coal and steam sizes of anthracite or wood. Sealed box cars are shipped this way to keep people from seizing the coal on the way. At the same time many towns are without any sort of fuel, according to report.

Meanwhile the Lake trade is about to close for the season. Shipping agents appear to think that no effort will be made to keep it up till the Lakes are closed by ice, though grain will continue to come down as long as it is possible to move it. Loadings at the Lake last week were 110,100 net tons, of which 48,800 cleared for Duluth and Superior, 8,000 for Ft. William, 2,800 for Marquette on Lake Superior, 24,300 for Milwaukee, 10,000 for Chicago, 7,700 for Manitowoc, 6,800 for Sheboygan, and 1,700 for Menominee on Lake Michigan.

NEW YORK

Steam sizes are in better shape but are not moving as rapidly as desired. One of the large producers, it is said, is cutting the regular circular on buckwheat, rice and barley 50c. per ton. It is hoped in this way that movement will be stronger and that the congestion now existing in these coals will be somewhat lightened.

Closing of Lake navigation to domestic coals is being anxiously awaited by the local trade. Retail dealers' stocks are at a minimum. Consumption was much heavier last week because of colder weather.

Many dealers continue to enforce the rule of the State Fuel Administration that consumers when ordering domestic coals include in their order a proportionate share of the steam sizes. Unprofitable buckwheat has been taken care of in this way.

While most of the large independents are asking about $10.50 as the maximum for the domestic sizes, it was said that some of the smaller operators were gunning as high as $12 in line buyers. It is not believed that any of the high-priced coal is coming here.

The surplus of steam sizes at the railroad terminals on the Jersey side of the river is being rapidly reduced. An announcement was made by the State Fuel Administration that during the week ended Nov. 22 the usual supplies of 50,000 tons had been cut 16,000 tons because of the increased demand.

BOSTON

The heavy volume of prepared sizes going forward to the Lakes has kept this market for the most part almost starved for continuing supply. Dealers are looking forward anxiously to see whether an increased tonnage for New England will actually materialize.

In the retail trade there is no change worth reporting. The fuel functionaries are plastering the public with advice to get substitutes while the public goes serenely about its business of using anthracite sizes and acquiring an advance supply as opportunity offers. The impression that people sit idly by while their plumbing freezes is a myth.

South

VIRGINIA

Production was increased during the first half of November owing to better transportation conditions. Production is larger on the Interstate than on any of the other roads penetrating this region. There is also a somewhat more diversified market, with the demand stiffer at Tidewater. Prices too are on a somewhat higher level.

BIRMINGHAM

Carriers are making little progress in providing the needed equipment for moving the production of the mines. Release of open-top cars from the priority use of the coal mines is expected to further curtail the number of cars available, as there is apparently no avenue at present from which this loss can be recouped.

Steam inquiry is lacking in strength and volume. Consuming industries are only buying what is needed for the immediate future, presumably expecting prices to take a further slump. Demand from domestic sources is good. Dealers nowhere have stocks of any consequence, and those having contracts are not receiving their monthly quotas. Some yards in the Birmingham district are entirely clean.

Quotations have not changed during the past week, both steam and domestic prices being practicably stable. Productions during the week ended Nov. 11 was 345,000 net tons, or about the same as the previous week.

TORONTO

Receipts of anthracite continue very light and dealers are frequently refusing to accept orders—some of them eking out small supplies by mixing nut and pea coal. Many consumers are using coke which is retailed $16.90, and a number are burning soft coal. Dealers are anxiously anticipating the close of navigation when it is hoped that the situation will be relieved.

Bituminous is plentiful but prices for carload lots, f.o.b. destination, continue variable, ranging $8.75@$9.75. Pennsylvania smokeless is $9; steam lump retails at $13.25 and domestic bituminous at $13.50.

Chicago and Midwest

Screenings Demand Steady But Prices Do Not Soar

Reduced Output and Some Stock-Pile Buying Stimulate Steam Market—Snappy Weather Has Small Effect on Domestic Trade.

In spite of the cold wave which swept down out of the North about the middle of last week, the domestic market did not liven up much in this region. Instead, steam buyers furnished all the interest there was. This put just enough life into the screenings market everywhere except St. Louis to absorb about all the screenings available.

Many mines have closed down because of flat domestic market, thus reducing the volume of steam sizes offered. Kentucky is full of unsold coal, especially in the western field where car supply is growing better. Eastern Kentucky coal is spreading into many markets now that Lake shipment is stopping.

CHICAGO

Screenings remained the headliner in this market at the end of last week. There is no crying demand for this small steam coal, but interest in it continues to freshen little by little for two main reasons. First the slackening of call for domestic sizes over a period of two weeks or so has shut down a number of mines that had been dumping screenings on all Midwest markets, thus curtailing the volume of steam coal available and second, some of the heavy steam consumers continue gingerly to buy a bit more than their day-by-day demands require.

Southern Illinois is getting the bulk of the business. Mines that produce high class coal and are equipped to prepare it excellently are still getting $3 on certain country contracts but no spot screenings have sold that high in weeks. Good 2-in. usually brings $2.25@$2.40 and 1¼-in. sells generally for $2.25 though there is some shading to $2.15. Poor grades from the southern field range from $2 up. Other fields' screenings run down to $1.50 for Standard district coal. Indiana steam is moving into this market in increasing volume. The freight rate advantage makes it a strong competitor.

Domestic demand continues weak. Most local yards and some in the country are fairly well stocked and it will take a week of the present snappy weather to stir up a good lively demand. The big operators are clinging closely to $5.50 for Southern Illinois lump and egg and are finding just enough market to absorb the output. The lesser operators in the same field have shaded as much as $1 at times in order to move coal on certain troublesome days. Lump from other Illinois fields ranges down to $3. These are days when operators who have spent thousands of dollars in past years advertising the name and quality of their output are cashing in on that investment.

A slight advance in anthracite has been noticed here. This amounts to only 20c. or 30c. on the circulars of those companies whose prices have been lowest. Other company quotations remain unchanged. Very little hard coal is reaching here except through two shippers. Independent prices are too high to win any Chicago business. Railroad congestion and other obstacles continue to choke off the volume of smokeless fuel.

ST. LOUIS

Mild weather up to the middle of last week practically stopped domestic buying, not only in the city but in the surrounding territory. The colder days that followed had only a slight market effect, for all dealers have yards full of coal to be unloaded. Most of it is high priced. Although the mine prices have decreased dealers cannot comfortably reduce retail prices. The public is buying only from day to day, still expecting a drop in price. The local steam trade is easy. Very few plants are storing. They also buy from day to day.

There is a falling off in the country tonnage. Small plants are going to oil and electricity. Even in St. Louis there has been a large business done in kerosene and oil burning devices for residences. Complaint is made by the city that the smoke nuisance this year has exceeded that of any previous years.

A large tonnage—perhaps 400 tons a day—is also coming in by trucks from the mines between East St. Louis and Belleville. There have been no smokeless receipts and only 1,000 tons or so of anthracite during the week. Hard coal has advanced 50c. and coke gets more plentiful now that gas coal is reaching here in some volume.

SOUTHERN ILLINOIS

The car shortage—a plague a month ago—is a blessing now. It has helped to maintain prices in the Carterville field, in the face of mild weather and no demand. The car supply has shown considerable improvement but there is still a shortage. Mines are averaging 2 and 3 days a week. The market is gone on steam sizes temporarily. Domestic prices are maintained at $5.50 by the association operators, but the independents are down to as low as $4.50. Screenings range $2@$2.50, but there is no demand for anything and railroad business that two months ago was secured at is readily sought.

In the Duquoin and Jackson County field prices are softening. The car supply on the Illinois Central has improved. The Mt. Olive district has a surplus of everything and some mines in this field are idle on account of no bills. The tonnage to Chicago and the Northwest is fair on domestic sizes but slow on steam, and St. Louis has almost quit. Prices seem to be maintained, however. Standard district operators are trying to run their mines regardless of loss. There is very little demand for Standard and railroad tonnage is light, excepting on the Mobile & Ohio which is storing.

WESTERN KENTUCKY

The market here, faced with a much better car supply than it has had in months, and with a slow demand for all sizes, is having trouble in selling coal, and prices have been working steadily lower. It is reported that some high cost mines are closing down.

It was reported on Nov. 20, that there were approximately 120 cars of unsold fuel on tracks at western Kentucky mines. Demand for lump has been a shade better the past few days because of freezing weather and this has created a little demand from small steam consumers.

Demand for screenings from industries continues fairly good, and production of lump is creating a fair volume of screenings. Lump is quoted at $3.50@$4; mine run, $2@$2.50; screenings $1.25@$1.75. Most of the lump is reported as selling at around $3.75, and mine run, $2.25.

There has been a big improvement in car supply. The average for the month up to Nov. 20, showed the L. C. at 30.3 per cent; L. & N., O. & N. division, 22.5 per cent and Henderson division, 34.7. This is enough, for mines are not requesting many cars.

LOUISVILLE

Slackening of Lake movement was followed by weakening markets due to large tonnage from eastern Kentucky, West Virginia and elsewhere being offered in the open market. Prices of eastern Kentucky coal are lower, and are expected to go down considerably, as operators will be forced to move coal in order to get prepared business.

Retailers here for months have been disgusted with the action of eastern Kentucky operators in holding lump at $2 or more above mine run, thus preventing retailers from stocking and handling eastern Kentucky coal. Western Kentucky lump has dropped to $3.50@$4 at the mine, and is selling here at $2 or more under eastern Kentucky lump. Cold weather last week put a trace of vigor into the coal market.

Some of the coal men are looking for sharp breaks in eastern Kentucky prices. Right now eastern Kentucky lump is around $6@$6.50 block, $6.50@$7; mine run, $3.50@$4, and screenings, $3.50@$4.25.

INDIANAPOLIS

Colder weather has stimulated the domestic trade a little. However, dealers declare the demand is nothing to what it should be and they are becoming worried over a possible congestion in case of severe weather. Screenings continue to hover around $1 with a slight increase in demand and an occasional sale at as much as $1.25. Prepared coal is bringing $3@$3.50 at the mines and there is a little stronger tendency.

A gradual expansion in industry is reported from nearly every corner of the state. This should increase coal demand. Much optimism is expressed by the coke over coal prices.

Eastern Inland

Markets Are Without Life Pending Close of Lakes

Prices, Except for Domestic, Soften—Buying Movement Expected After Close, Consumers Awaiting Effect of Diverted Tonnage—Trade Sees Ally in Winter Weather.

Lifeless markets are preceding the closing of the Lakes. All prices except that of domestic coal are softening and if demand does not pick up soon no-market losses will again appear in the near future. Dec. 5 should see the final Lake shipments from the mines, however, and a substantial buying movement is indicated after that, as the consumer's tardiness is attributed to the belief that the diverted tonnage will soften the market.

Domestic movement is increasing rapidly, especially in Ohio, where higher prices have been authorized. Retailers are not stocking heavily but frequent replenishments are being ordered as the consumer is forced into the market by the colder weather.

CLEVELAND

With the slowing down and near approach of the complete ending of the Lake movement, the market for industrial fuel continues heatless. Coal is getting in better supply and within the next week or so it will be even more ample. By that time it is expected that a substantial buying movement from industrial consumers will get under way. Cold weather is rapidly approaching and many plants soon will find it advisable to increase their stock piles, against January freight troops.

Prices have been giving ground a shade further. The future course of quotations will be determined by the extent of buying as it develops within the next few weeks. If demand continues dormant, with the increase in available supplies, further declines seem sure. The trade, however, generally expects improvement.

The retail trade is experiencing a better demand. Dealers are now getting more orders and supplies of Pocahontas are expected to become much more liberal as the Lake shipments cease. Pocahontas domestic coal is quoted at $3.50 against $3.75 respectively. Anthracite orders are taking a spurt at delivery, the range being $14@$15.40.

PITTSBURGH

The market has become quiet and prices are off flat, in many cases for domestic lump. It is difficult to distinguish between cargo and offer to consumer, with the latter declining. Mine shipments for the Lake trade are ended, sooner than operators expected. Railroad purchases are greatly reduced, and this may be due to expectation of lower prices or may be assigned as the cause of lower prices now quoted. There is even talk in some quarters of the possibility of production being curtailed soon by scarcity of orders.

It is an hour-to-hour rather than a day-to-day proposition as to cars in the case of most mines. The extreme scarcity explains the curious phenomenon observed for many weeks, of screened gas and gas slack selling at prices making a combination well above the mine run gas price.

The steam coal market is so cut up as not to be very closely quotable, $2.50@$2.75 being probably a fair range at this writing. Youghiogheny gas is down to about $3.25 for mine run, with slack nearly as high and screened, $3.75@$4. Byproduct is not quotable, there having been no transactions of importance in the past few days. Domestic 1¼-in. lump remains quotable at $4.50 but is hardly strong at that figure.

DETROIT

There is still a lack of interest among buyers. There is some business being done every day but the aggregate falls much below the mark which jobbers and wholesalers believe should be attained. The buying is proceeding irregularly and apparently represents the efforts of steam plants to provide only for present needs.

West Virginia and Kentucky 4-in. lump and egg is quoted at $6; mine run is $5.75, and slack $3.50. Hocking lump is $5.50; egg, $5; mine run, $3.50; nut, pea and slack, $2.75. Pittsburgh No. 8 lump is $4.50; mine run, $3.50; slack, $3. Smokeless lump and egg is $8 and mine run $6. Very little smokeless is available.

Domestic consumers who rely on prepared sizes of anthracite are apparently destined for disagreeable times. The daily receipts are smaller than a month ago, averaging about 33 per cent of normal.

BUFFALO

The market sags slowly, but steadily. While prices have not gone off much, it is found that even Pittsburgh, which is always much stronger than Buffalo, has weakened and will no longer insist on former quotations. As a rule Buffalo has steadily refused to pay them and it has used the Allegheny Valley and No. 8 supply to enable it to dictate what it will pay for other coal.

Consumers report that they are offered more coal than they need, so they buy at bottom prices and are satisfied. A few shippers have the confidence of the heavy consumers so fully that they are able to get extra prices for the best coal. To be able to do that a shipper must have a complete knowledge of the quality of all coal handled and be sure to deliver the quality that he offers. It is not an easy thing to do.

Quotations are $5@$5.25 for Youghiogheny gas lump, $4.25@$4.50 for Pittsburgh and No. 8 steam lump, $3.25@$3.50 for all mine run and $3@$3.25 for slack, adding $3.09 to Allegheny Valley and $3.24 to other coals to cover freight.

COLUMBUS

Lake trade is now practically over. This has released a good deal of coal for commercial purposes. As a result weakness in steam sizes is developing, although the domestic trade is still holding up quite well. The weakness is not sufficient to cause any radical change outside of lower prices on mine run and screenings.

Retailers are buying rather actively and a considerable quantity of prepared sizes is finding its way into retail yards. Consumers are still playing a waiting game, believing that prices will be lower and are thus placing small orders as a rule. Retail prices are generally firm at former levels. Only a small quantity of smokeless is coming into this market.

Steam business is more quiet as many of the larger users have succeeded in building up rather good reserves and are only buying for immediate needs.

EASTERN OHIO

By reason of improvement in the car supply, mines produced more coal during the week ended Nov. 18 than during any week since the resumption of mining in August. Output was 348,000 tons or approximately 56 per cent of capacity, and exceeded the previous week by 75,000 tons. The lowest supply was on the Wheeling & Lake Erie, where only 45 per cent of requirements were furnished.

Activity in the domestic trade is reflected through the retailers' efforts to procure lump coal. It is understood that Pocahontas and other West Virginia and eastern Kentucky domestic fuels are now available in larger quantities than heretofore, but retail yards still find it necessary to ration their trade. Since the allowance by state authorities of 50c. per ton additional on lump produced in Ohio, a greater quantity of Ohio lump is now available.

In the steam trade, operators and jobbers report sluggishness and a disposition still exists to defer storage programs because of expectation that not only a better selection can be made but that lower prices will necessarily result from the cessation of Lake shipping. In fact, with Lake shipping already tapering off, slack and nut and slack and mine run can now be purchased in the open market at figures lower than the maximum set by state authorities.

Receipts of bituminous coal at Cleveland show a slight recession from the record figure established during the preceding week. Total arrivals were 2,119 cars during the week ended Nov. 18; divided: 1,551 cars for industries and 568 cars for retail yards.

NORTHERN PANHANDLE

Car shortage and the difficulty of getting coal moved to market alone stands in the way of capacity production. The trouble is in getting coal through the Holloway yards of the B. & O., one of the principal outlets for the field. Railroad fuel buying is on a large scale.

Northwest

May Embargo Soft Coal To Ship More Anthracite

Failure to Get Hard Coal Allotment Is Driving Shippers to Extremes—Prices Advancing — Competition with Rail Men Is Keen.

The crying demand for the full allotment of anthracite—an allotment which was expected to equal 60 per cent of the normal deliveries—is starting a movement which may soon result in an embargo or partial embargo on the part of Lake shippers against soft coal so that more vessels will be available for anthracite transportation. In order to get the allotment, it will be necessary for boats to bring up 160,000 tons a week until Dec. 15, which is almost impossible.

The call for most bituminous coals is comparatively light. Plenty of Illinois and Indiana fuel is arriving by rail in the southern part of this region and the docks have amassed considerable piles of Eastern coals. Docks are making their usual price concessions in competitive sections, in order to get business, and some rail shippers are meeting their quotations but most Illinois domestic sizes are offered steadily at $5.50.

MINNEAPOLIS

The failure of adequate supplies of hard coal to come along has created considerable alarm. Slightly over a third of the allotment had been received up to the middle of November. The period of navigation has been extended for two weeks.

Any shortage will have to be made up by all-rail shipments. To mitigate the situation, it is proposed to ship from present stores of hard coal to the more extreme points, giving them the advantage of the lake and rail freight rate, as the all-rail rate to such places would be prohibitive.

That the proposition to stop soft coal to the docks is seriously considered, shows how well the various soft-coal mines have made up the undoubted deficit which existed at the time of resuming operations. It has not been accomplished wholly by the Eastern mines. On the basis of the usual dock supplies, there is a considerable shortage. But while the soft-coal tonnage has been moving to the docks, the all-rail shippers of Illinois, Indiana, and elsewhere also have been moving soft coal into this district. They have crowded the dock business until a decidedly short tonnage on the docks looks sufficient to meet current demands for the winter, plus what may and doubtless will be received from the all-rail shippers.

Prices have been demoralized, dock coal selling at close to last year's price and all-rail coal having a wide range of values. Some of the rail shippers insist that they are adhering to the $5.50 price at the mine, but many do not. The mild and open weather, prevailing until well toward December, has undermined the expectations of wholesalers who had counted upon a much stronger market.

MILWAUKEE

The week brought little change in the coal market. Mild weather and fair arrivals by Lake combine to allay anxiety as to the winter supply, and hold the demand in check. Enough anthracite has been received to enable dealers to give almost everybody a small amount, but there will be a rude awakening to the anthracite shortage when the first real cold snap develops.

Anthracite is in for a general advance in price. The ruling retail rate for some time has been $16.50 for egg, carried in, $16.75 for stove, $16.70 for nut, and $14.75 for pea. A leading retail company is now holding egg and nut anthracite at $17.25, and pea at $15.25. The chances are that these prices will soon be charged all along the line.

Thirteen cargoes of anthracite were received in November, the aggregate being 110,639 tons. During the same period 31 cargoes of soft coal, aggregating 258,501 tons were docked. Anthracite receipts since navigation opened, now total 252,753 tons, and soft coal, 2,204,401 tons. Last year 938,329 tons of anthracite and 2,533,833 tons of soft coal had been received up to this time. These figures do not include car-ferry or rail receipts.

DULUTH

Definite announcement has been made by the state fuel administrator that the coal now on dock at the Head-of-the-Lakes will be used for upper Minnesota and Superior exclusively because there will be insufficient anthracite for the Northwest, and the bituminous supply must be conserved. Lower state points and North Dakota will receive coal by all rail, although it is supposed that some of the bituminous on docks will be ordered to North Dakota later.

Anthracite shipments are falling off. Last week, of a total of 44 cargoes received, but four were anthracite. There are 27 cargoes en route and of these but two are hard coal. The available supply is negligible and with householders fighting for it as now, it will be exhausted immediately at the close of navigation.

A recent unofficial survey shows 2,300,000 tons of bituminous on the docks as against about 5,500,000 tons at this time last year. This does not include approximately 1,000,000 tons of bituminous at the steel corporation.

Prices remain firm here. Some report comes from lower state points of weakening prices. This will not affect the market here as cold weather has set in and the ground is white. It is said that the lower prices below are caused by lack of present demand because of milder weather.

New England

More Coal Now Available And Inquiry Is Stronger

Improvement at Roads Also Shown in Car Supply—Resumption of Textile Mills a Helpful Factor—Price Advance May Turn Eyes Toward Pennsylvania All-Rail Coal.

There is a perceptible improvement in conditions at Hampton Roads. Not only is car supply somewhat better but prices are 25c higher, and while there is more coal available, inquiry is sufficiently stronger to warrant the steadiness that now seems to prevail. A few agencies were caught with not quite enough supply to meet obligations, and this kind of demand was enough to turn the corner.

There is also observed a slight increase in demand at rehandling points here for shipment inland and spot prices have advanced from $8.50 to $9.25 per gross ton or cars. As yet there is nothing like broad inquiry, but conditions are somewhat better, due partly to resumed work in the various textile mills.

Practically all the Pennsylvania operators who figure at all in this market are satisfied to get contracting orders on present price levels. The few who felt they are opening for small advances have now receded and are making new business at the same prices that prevailed a month ago. It is noticeable, however, that since Southern shippers have asked more for their output that there is renewed interest on the part of a few buyers in the more desirable Cambria grades.

The railroads have central Pennsylvania operators guessing with respect to car-supply. One day practically a full quota of cars is delivered and then for two or three days none at all. In consequence the shippers are in doubt whether to sell ahead at present prices, or whether to take the market as they find it.

While receipts by water have shaded off the past fortnight, railroad figures show that coal is coming through the Hudson gateways in somewhat larger volume. This is due partly to efforts of the railroads themselves to accumulate more reasonable reserves, but is also due to greater increased buying on the part of industrial.

Cincinnati Gateway

Interest Veers Southward From Northern Stodginess

Orders Go to Virginia and Southeastern Kentucky Mines — Empties Return More Freely — Car Accumulation at Lakes Keeps Northern Ohio and Michigan Out of Market

It is a notable fact that coal flows freely through the gateway in almost any direction. Attention can be drawn to the fact that this week offers to the Queen City are turning to the South and mines in Virginia and southeastern Kentucky that are able to direct their offerings to the Southern markets are being supplied with orders. Since the softness developed here business from that quarter is more desirable and attractive than the stodginess of the North.

Movement of empties to the mines has been freer this week. It also is a prime point of consideration that northern Ohio and Michigan has not been a competitive customer for the past week or two, due to the accumulation of cars at the Lakes. This and the open weather have largely been the causes of values here seeking a lower level.

LOW-VOLATILE FIELDS

New River and Tug Gulf

New River mines are finding it just as hard as ever to get anything like an adequate car supply, in consequence of which the average mine is not working more than one full day a week. There is not enough coal produced to take care of the general run of contracts so that little is being marketed on a spot basis. The limited production makes it out of the question to ship much coal to Western markets where there is a better demand.

Production is on a little larger scale in the Winding Gulf region, owing to a somewhat better car supply, but mines are not receiving more than 50 per cent of allotment.

Pocahontas and Tug River

Pocahontas producers are just finding it possible to speed up production to extent of 45 per cent of potential capacity. The N. & W. is not letting much of the larger equipment move to points west of the Ohio River though the open market demand in the West is much bolder than in the East. As a matter of fact, there is little Pocahontas coal being sold for immediate loading to Western centers, most of the coal being under contract.

Little more than half the potential capacity of the Tug River field is being produced, the shortage of equipment being due to the comparatively small number of mines running here. Operations are still forced to plug along with about one full day's work per week inasmuch as the car supply does not amount to more than 25 per cent of allotment. Mines do not find it possible even to keep up with contract orders much less dispose of any coal on a spot basis. In fact, market conditions would warrant a much larger movement to the West. As production costs are so high mine owners claim that it is impossible for them to produce lump at the maximum price of $4.50.

Logan and Thacker

Logan mines are getting a much better supply than heretofore owing to the fact that the C. & O. is trying to make up for a deficiency in the supply of equipment existing since the strike. The larger production after all just about permits mines to catch up with the tonnage for regular customers, there being little or no surplus for spot sale and shipment. There is a better demand for gas coal than for steam grades.

It has not been possible so far to increase production to a point beyond 40 per cent of potential capacity in Williamson and other sections of the Kenova-Thacker district. The product of the field is moving largely to Western markets, most of it on contract.

Northeastern Kentucky

Mines are getting a little better car supply. Production is now at the rate of about 40 per cent of capacity. Larger shipments to the Lakes tended to swell the output, as it was possible to secure the return of cars promptly. Gas coal is in better demand than steam.

CINCINNATI

With all grades of splint and gas dropping down—except the domestic sizes—attention has again been directed to the extraordinary position maintained by the low-volatile coals. Slack has shown a little tendency to weaken with some sales below the $6 mark for the first time in weeks. It is known, too, that more lump coal is getting into the hands of the brokers and their quotations are again appearing. Just as singular is the fact that several of the selling agents continue to take orders at the Hoover prices and that a couple of weeks more will see them caught up on the present bookings unless the weather interferes.

The drop in interest of the takers of byproduct coal has resulted in lowering the price so that the spread is less today than it has been in months. Heavy production of low-grade coals in the steam line and a disposition to cut the price has been reflected by the better grades following suit. Just how far this will go will be largely governed by the weather, which if it continues open for another couple of weeks, may see another quick sliding market. Domestic sizes hold up well even though some of the mines are now specializing in sizes—that is specifying egg, 2-in., lump, and block in their shipments.

Coke

UNIONTOWN

While the coke market, stimulated by the demand from several additional furnaces, is strong, the coal market has been softened by the disappearance of orders from the Northwest for the Lakes trade. The changing status has not been so pronounced as to change prices but a shift upward in coke quotations is expected. A steadily increasing demand since operations were resumed upon a normal basis gives support to the contention that an upward drift is approaching.

Eastern consumers discontinued buying several weeks ago apparently with the expectation of lower prices when the Lakes were closed to transportation. Prices continue at $3 for steam coal and $3.50 for byproduct. Those quotations for several weeks have withstood a steadily decreasing demand and the fact that operators are refusing to close sales below those figures leads to the opinion that the bottom also has been reached in coal prices. A number of cases are known where mines suspended rather than sell tonnage below $3.

CONNELLSVILLE

Prompt furnace coke is up 50c., reflecting the absorption of considerable tonnage by five blast furnaces resuming with Connellsville merchant coke. The market is now quotable $7.25@$7.50. This is for odd lots picked up in the open market. Operators having arrangements to supply furnaces regularly, at a price to be adjusted at intervals, did not recognize the low spot market. Contracts to the end of the year, involving a regular supply of good coke, could hardly be placed at below $8, if even at that figure.

With pig iron sagging furnacemen regard coke as entirely too high but they exert very little actual pressure on the market because in most cases they are covered to the end of the year at higher prices, $8 and upward. There is some tentative inquiry out for first quarter or first half, but it is altogether improbable that producers and consumers will be able to get together. Foundry coke is a shade easier, at $7.50@$8. Demand continues rather light.

The *Courier* reports production during the week ended Nov. 18 at 119,850 tons by the furnace ovens and 62,530 tons by the merchant ovens, a total of 182,380 tons, an increase of 5,500 tons.

BUFFALO

Coke has become very scarce, as consumption by the local furnaces now exceeds the amount turned out by the byproduct ovens. Buying in the open market has been resorted to. Jobbers quote Connellsville foundry at $8, furnace at $7 and stock at $6, with a small supply of chestnut at $10 for domestic use. No byproduct coke of local make is to be had here for house consumption.

News Items From Field and Trade

ALABAMA

John W. Porter, vice-president of the Alabama Company, in charge of sales, has been placed in charge of operations, succeeding **Harry W. Collin,** resigned.

The County Coal Co. will electrify its mines and install Marcus screens for grading its output, according to announcement of C. C. Copperstone, general manager, Birmingham.

COLORADO

James Dalrymple, state inspector of coal mines, is authority for a report that the employment of coal miners in Colorado reached a record mark in October, there being 15,055 engaged in the industry. This registers an increase of 3,000 to 4,000 over the usual number, and is the first time since the establishment of the inspector's office that more than 15,000 have been employed. Records of coal production give October 900,000 tons, an increase of approximately 100,000 tons over September, and the first ten months of 1922 a lead of 189,312 tons over last year.

CONNECTICUT

The City Ice & Coal Co., Bridgeport, large coal retailers, has increased its capital stock from $300,000 to $500,000.

ILLINOIS

The office of the **Henderson Coal Co.** near O'Fallon was burned recently. The origin of the fire is suspected to be incendiary as a few weeks ago the barn at the same mine was burned.

The Condit Coal Co., of Centralia, recently moved into new offices in that city. The company recently completed the erection of a new concrete office building in which the company's business will be located.

The stripping operation at Opdyke, near Mt. Vernon, under the direction of **J. A. Koons, has been stopped** until next spring. The coal when the mine was first started was only 5 ft. from the surface, but as the stripping progressed it rapidly inclined so as to soon be too deep for the shovel employed. The owners now plan to purchase a new and larger shovel next spring together with other equipment and re-open the plant.

The Midway Coal Co., of Ward, has filed papers in Murphysboro conveying its mine property to the **Chicago Fuel Co., Inc.,** Chicago. The mine is located on the main line of the Illinois Central near De Soto and was the scene of a recent disastrous fire. However, the mine is said to have been completely repaired and put in first-class shape since the fire.

The Lemon McKelvey Coal Co. has capitalized with $25,000 at Sparta, to operate an inland mine a few miles back from Sparta.

The washer at mine No. 8 at Clifford of the **Consolidated Coal Co.** of St. Louis was completely destroyed by fire on Nov. 16.

The Shuler Coal Co. has begun mining coal at Alpha, with three eight-hour shifts at work. A high tension electric line is in and the shaft is down to the seam. Work will be rushed on the new mine day and night until it is completed. A temporary hoist has been constructed. The Shuler company has rights to 10,000 acres of coal lands.

The Sunnyside Mining Company, Herrin, has announced that it will soon launch a $450,000 bond issue and has filed with the circuit clerk at Marion, a trust deed for that amount with the Chicago Trust Co. The company will use the sum for further development of its mining properties and will install a large amount of new machinery and equipment.

The Buckley Coal Co., Springfield, has just been incorporated and capitalized at $100,000. The headquarters of the new firm will be at 626 Reisch Bldg. and is composed of the following incorporators: Carl H. Elshoff, E. H. Buckley and Gerald W. Schwaner. The company will mine and deal in coal and coal lands.

The Sharon Coal Mining Co., Chesterfield, has been incorporated with capital of $200,000 by Seymour A. Rhode, Lewis Clements, Robert Pettigrew and [illegible] Donaldson. The company will engage in general mining.

Incorporation papers have been issued to the **Prairie State Coal Co.,** with offices in Chicago. Those interested in the new company are James J. Hickey president, coal broker, Springfield; W. J. Smith vice-president, Chicago, formerly of the Holland Coal Co., and W. M. Ryan secretary, Springfield. Mr. Hickey will continue his coal brokerage business in Springfield.

The Calorie Strip Mine, formerly the Southern Illinois Coal Co., will open for operation sometime in December. A report that the Peabody Coal Co. was to operate this mine was erroneous. This is one of the largest strip mines in southern Illinois. Robert Sherwood is president of the Calorie Coal Co.

INDIANA

The Latta Coal Mining Co., with a capital stock of $50,000 has filed articles of incorporation in Terre Haute. Charles A. Crawford; John F. O'Brien and Bert Beasley are the incorporators of the new company, which is organized for the purpose of mining and selling coal.

Provision for the purchase of 325 coal cars and other equipment for the Cincinnati, Indianapolis & Western R.R. has been made in the organization of a subsidiary company, known as the Cincinnati, Indianapolis & Western Car Equipment Co. Orders for the equipment have not been placed, according to one of the directors of the company. The new company has a capitalization of $150,000 of which $50,000 is preferred stock. E. J. Goebel, secretary of the C. I. & W., is president of the subsidiary corporation.

Officials of **Rose Polytechnic Institute,** at Terre Haute, say that within the next year or two **mining engineering will be included in the course of study.** The department will be placed on an equal footing with the other five departments. The Department of Mines will co-operate with the new department, it was said. R. L. McCormick, professor of applied mechanics, will be asked to take charge of the new course. He has been active in mining engineering for the last 30 years and is conversant with the problems of the industry.

The Chicago Heights Coal Co., an Illinois corporation, has qualified to do business in Indiana. A total of $[illegible] of the corporation's capital stock is represented in Indiana.

A "windy" shot at the Mohawk mine near Linton recently destroyed the framework of the tipple. Prior to the firing of the shot the hoisting engine broke with a loaded car in the tipple. The engine room and the cages were badly damaged. The mine will be idle for six weeks for repairs.

The supply of coal cars to mines along the Southern in Indiana **is improving,** according to **Harry W. Little,** manager of the Southern Indiana Coal Bureau, who has completed the compilation of figures representing the operations of the 18 mines along that railroad last week. The Big Four and the E. S. & N. traction line furnished a total of 196 cars over the Southern, making an average of [illegible] per cent of the cars ordered. The mines were able to work [illegible] of the 765 potential running hours, an average of 25.1 per cent of the running time.

A [illegible] handling the Carlisle coal sold with the Big Four will be built near [illegible] and it is expected the **Pike County Coal Co.** will begin work on [illegible] near Oakville. The mine will have an [illegible] tipple. It is [illegible] Pike County.

The Primrose Coal Producing Co., of Evansville, has increased its capital from [illegible] to $[illegible].

IOWA

Financial activity is [illegible] in this section of Iowa is **prospecting for coal.** A [illegible] was mentioned in the vicinity of Lost Grove, Boone County. Another county in the same coal seam is [illegible] the operations have proved unsatisfactory. What promises to be the largest field in [illegible] is being developed at Harcourt, a few miles east of the city of Fort Dodge. Farmers have found coal under [illegible] of the land formerly occupied by Camp Dodge during the days of the war. In Page County the discovery of [illegible] varying thicknesses [illegible]. In the vicinity of Western Union County rich mines have been opened in recent years.

KENTUCKY

John Hoffman, [illegible] and L. F. Kerling, of the Kentucky Coal Co. [illegible] their interest in [illegible] and [illegible] of their affiliated companies, the Log Mountain Coal Co. [illegible].

C. A. Johnson of the Bankers Fuel Co., Louisville and [illegible] has a contract in the New York market [illegible].

Texas and Kentucky people have organized the **Baum Coal Co.,** with a West Virginia charter, for the purpose of operating in the Kentucky field. The company, having a capital stock of $[illegible], has its office in the [illegible] at Lexington. Largely identified with the new company are H. H. Cole, J. J. Stevens and T. E. Arnold of Fort Worth, Tex., C. P. Hall and W. G. Dunn, of Lexington.

MARYLAND

It has been possible for the **George Creek Coal Co., Inc.,** to resume operations on its Lona mine property on Commencing with about thirty men who are working on a non-union basis. Three cars of coal a day are being loaded, but the company is optimistic of being able to increase production in the near future. [illegible] report for work [illegible] number reported for duty. The mines of the company had been closed down for several weeks. The George Creek Company has delivered to [illegible] operations during a strike and met with a fair degree of success [illegible] to operate [illegible] hand labor.

The George's Creek Coal Co., Inc., has filed a bill in the Circuit Court of Allegany County for an injunction to restrain Francis J. Lynn, President Federal Sign & M. W. Motors and Finishing Co. and [illegible] from [illegible] and operating four [illegible] from [illegible] with employees of [illegible] who refuse to take [illegible].

MASSACHUSETTS

The New England Coal Co. has started work on a new coaling plant in Weymouth. The plant includes a 1,000 ton [illegible] steel and [illegible] with elevating and conveying machinery [illegible].

MICHIGAN

The [illegible] to operate [illegible] and retail coal business established in Detroit in 1892 by the late H. L. Stewart was closed in February, the **H. L. Stewart Coal Co.** has been incorporated to [illegible] with capital stock of $[illegible] all paid in. The officers are [illegible] and treasurer, Harold N. King, vice-president Wallace [illegible], secretary Elizabeth Stewart. Mr. King has been associated with the business since its beginning.

MINNESOTA

The Minnesota Fuel Administrator has completed his report covering the fuel situation from coal facts gathered from the various southwestern part of the state of Minnesota and also those in the north central part at Cleveland. Each report declared the **need of hard coal** to be urgent.

An offer from a North Dakota [illegible] company has been received by the Minnesota Fuel Administrator to furnish [illegible] tons of lignite a day at $[illegible] a ton at the mine.

NEW YORK

The [illegible] office of the branch of the **Maher Collieries Co.** at Cleveland closed up [illegible] will be under the management of **O. E. Sagstad** from that city. **F. B. Sheesley,** [illegible].

OHIO

Frank Collins [illegible] with [illegible] with the H. W. Hampton Coal Co. [illegible] number of years has resigned and will [illegible] as manager of the Home Fuel Co. a [illegible] company in Cincinnati.

The Sunday Creek Coal Co. has declared an [illegible] equal to the **Big Muddy Coal Co.,** of Williamson, Ill., [illegible] Sunday Creek Coal Co. to handle the product. Handling the coal has [illegible] and the Big Muddy Coal Co. has been [illegible] operating this territory.

[illegible] **Cleveland & Western Coal Co.** [illegible]

[illegible] **E. L. Mathis**, manager of the Oakwood Coal Co., at Hagerstown, Md., [illegible] **Ed Towle**, vice-president of the Towle Consolidated Coal Co., Wyatt, W. Va., [illegible] **James A. Reynolds** of the Kanawha Coal Co., Wyatt, W. Va., **J. H. Hanna** and **D. C. Jones** of Huntington, W. Va.; **W. E.** and **David L. Pritchard** of Logan, W. Va., and **E. L. Robbins** of the Low Branch Coal Co., of Jackson, Ky.

Russell Davis, president of the Elk Horn Coking Co., and **Kenneth McKenzie** of the Harlan Coal Co. were recently in the Cincinnati market.

The New Haven Mining Co., Mahaffey, Pa., has been chartered with a capital of $[illegible] to mine coal by W. E. Evans, Albert Evans, Floyd Davis, Rusty Perkins and Elmer Cassell. All of the incorporators are from Carbon Hill.

The Bell Coal Co., Lynchburg, has been incorporated with a capital of $[illegible] to conduct a retail business. The concern was recently conducted as a partnership. Incorporators are Raymond H. Bell, Hope A. Bell, William H. Myers, Desmond H. Bell, Jr., and Bessie A. Bell.

A deal which will **open a great acreage near Pennington Gap, Va.**, has been closed and several officials representing the Hillcrest Coal Co. and other companies and the Burdette syndicate, including the Pendleton estate, which holds title to the property. Conferences have been held in the Cincinnati offices of the Burdette company at which James Honaker, a prominent operator of Pennington, Va., [illegible] president of the Campbell Coal Mining Co. of Knoxville, Robert S. Young, of the Blue Diamond Co., and E. [illegible] Daniels, of Knoxville, were heads of certain interests present.

Recent visitors in the Cincinnati market from the fields were **I. B. Rose**, of Hazard, Ky.; **George Merryman** of the Logan Fuel Co., Charleston, W. Va.; **R. Prettyman**, of the Pine Creek Coal Co., and **Robert S. Young**, of the Colon Coal Mining Co.

The state emergency fuel bill [illegible] for Census passed [illegible] to 11 [illegible] tax for coal shipped in the New [illegible] Ohio Valley Coal Co. and the **George M. Jones** Co. [illegible] for a restraining order to [illegible] the state fuel administrator, [illegible] Davis, and other state officials would be prevented from enforcing the law, [illegible] as the meeting of the hearing in the [illegible] court. These men charge that the [illegible] of threats and coercion and [illegible] with the U. C. C. activities and [illegible] permitted by giving mention of the [illegible] because it failed to file what it was [illegible] to the state fuel officials with [illegible] order.

The Timmons Coal Co., Gallipolis, has sold out to [illegible] at Cincinnati to **Terrick, Hazell & McHose**, a partnership of Gallipolis. The purchasers will continue the output of the mine of about [illegible] tons per month.

A [illegible] petition of the Department of Finance, has asked for bids for about [illegible] tons of coal to be delivered to the various institutions of the state. The new contract is a [illegible] one commencing with the same rate. Bids [illegible] to be opened [illegible] 1. A contract [illegible] will be given each [illegible]

A movement [illegible] petition to one of the local [illegible] coal markets was [illegible] which [illegible] of the organizers and [illegible] have been made on the [illegible] one or more [illegible]

The [illegible] of the [illegible] have been [illegible] **James Honeyman**, who [illegible] has been a resident of the [illegible] and [illegible] of all of the mining [illegible] and [illegible] of the [illegible] [illegible] of the [illegible] [illegible] [illegible]

WEST VIRGINIA

Properties of the **Wyoming Pocahontas Coal & Coke Co.** in Raleigh and Wyoming counties, covering about 31,000 acres in the Sewell and Beckley measures were inspected by a party of officials of the above named company about the middle of November. The inspection was also made with a view to planning for the leasing of the remaining acreage to other operating concerns. Companies having property of the Wyoming Pocahontas Coal & Coke Co. under lease, plan the expenditure of about $5,000,000 toward the development of their properties, the Virginian already having expended about $3,500,000 so as to make possible the development of the property.

Charleston people have organized the **Max Coal Co.**, which will engage in the coal business in Kanawha County, being capitalized at $25,000. Offices will be at Charleston. Having an active part in launching this concern were: E M. Biddison, C. H. Hetzel, D. A. Hogg, Max Moses and W. E. Murrill.

Daniel Howard and others have launched the **Gordon Consolidated Coal Corporation**, of Clarksburg, with a view to operating in Harrison County. This company is capitalized at $100,000. The general office will be at Clarksburg. Others interested in the new corporation are: Hugh Gordon Smith, Paul W. Bailey, Margaret Gibson and George A. Smith, of Clarksburg.

Organization of the **Lubeno Coal Co.** of Wheeling, with a capital stock of $50,000 presages further development of Ohio County coal lands. Interested in this concern are Leo A. Coleman, Vernon Crites, Vernon Travis, Clem E. Peters and D. M. Aikman, all of Wheeling.

Charleston men have organized the **Emmart Coal Co.** of Charleston with a capital stock of $10,000. Active in effecting an organization of this company were: M. C. Jennings, E. L. Estill, L. H. Miller, A. P. Kilburn, N. F. Young, Jim McCreight, all of Charleston.

The Consolidated Gas Coal Co., of Fairmont, a trustee created with John Y. Hite as treasurer and H. H. Staggers as manager, has leased the mine and bought the equipment of Earl and G. Russell Rodgers, who were trading as **Rodgers Brothers**, Clarksburg. The land belonged to the Consolidation company originally, but was leased by the Fairmont Big Vein Coal Co., of which Dan Howard is president. This company sublet the lease to Rodgers Brothers.

The Baldwin Pocahontas Coal Co. will operate on a large scale in McDowell County, headquarters to be at Erin. This company is capitalized at $400,000. It was organized by R. E. Baldwin, Graham; Edwin Mann; Walter Perkins and George P. Crockett, of Bluefield.

The Best Coal Co. will operate on a fairly large scale in southern West Virginia high-volatile territory, having just been launched with a capital stock of $50,000, with headquarters at Charleston. Closely identified with the new concern are: W. A. Reese, J. E. Griffiths, George E. Brown, Roy Cox and G. A. Hinterleitner, all of Charleston.

The Alpha Portland Cement Co. has disposed of its Phoenix coal mine at Wolf Summit, the **Long Coal Mining Co.** taking it over Nov. 16.

Instead of trying the remaining seventy-five defendants charged with the **murder of Sheriff H. H. Duval** of Brook County on July 17, growing out of the attack on Cliftonville on July 17, on a murder charge, it seems probable that the state will elect to **try the remaining defendants on the charge of conspiracy.** It was the original purpose of the state to try the murder cases first but the difficulty of securing a conviction, as demonstrated in the trial of John Kaminski has led the state to indicate that it may alter its plans. There were no eye witnesses to the slaying of Sheriff Duval and it is therefore difficult to fasten the blame on any individual or individuals.

The Morrison Coal Co. will operate on a large scale in Wyoming County and other counties in southern West Virginia, having leased large tracts of smokeless coal. This company has just been organized for the purpose of developing the property leased, and has a capital stock of $500,000. The company was organized by Harry V. Campbell, I. L. Duffield, Fred O. Elue O. R. Purvis, David W. Dunbar, all of Charleston.

Purchase of the **Byrer Coal Co.'s** plant at Byrer, Tigert's Junction, Barbour County from Harry Byrer of Martinsburg and State Senator Hugh Byrer of Philippi is announced by the **Howard Smokeless Coal Co.**, Clarksburg, a new concern, headed by Daniel Howard. The plant has a daily capacity of 1,000 tons and employs 175 men. A new opening will be made.

Increasing its capital stock from $300,000 to $600,000, the **Shriver Coal Co.**, of Morgantown, has devoted a part of its increased capital to the purchase of 300 acres of coal in the Pittsburgh and Sewickley veins, adjoining its present holdings on Scott's Run in the Monongalia field. The price paid for the tract secured was in the neighborhood of $250,000. Eventually the company will enlarge the scope of its operations by installing additional equipment at its tipple. It is also probable that a new opening will be driven to the Pittsburgh vein.

Organization of the **Superior Block Coal Co.**, of Morgantown, with a capital stock of $50,000 presages the development of a tract of coal in Cass District of Monongalia County, west of Cassville, where the new concern has acquired about 200 acres. Previous to the incorporation of the company, work had been started on the erection of a tipple so that it will be possible to initiate operations within a short time. Work has also progressed favorably on the heading. The new company has as its officers, Harold F. Smith, Morgantown, president; Harold G. Hodges, Morgantown, secretary and treasurer. Others interested in the company are Elizabeth Smith, Vesta B. Hodges and Donald G. Lazelle.

Since the purchase of the property, plants and assets of the **Bottom Creek Coal & Coke Co.** by the **Pocahontas Fuel Co.**, of which Isaac T. Mann is president, it is learned the consideration involved was in the neighborhood of $1,500,000. This new plant gives the Pocahontas company seventeen different operations, all but one of which are in the Pocahontas field.

Organization of the **Wise Pocahontas Coal Co.** presages development of smokeless coal land in the vicinity of Welch, which is to be the general office of the company, capitalized at $50,000. Leading spirits in the new concern are: J. W. Strickler, Sadie L. Strickler, W. H. Hatfield, J. W. Price, all of Welch; George R. Hairston, of Iaeger

Following the purchase of a tract of 101 acres in the Bear Mountain section of Harbour County, E. D. Brown and others have organized the **Brown Coal Co.**, which has a capital of $125,000. Flemington is to be the general headquarters of the company. Among those having an active part in forming this concern are, in addition to E. D. Brown: John C. Brownfield, R. W. Henshaw of Uniontown, Pa.; R. J. Brown of Point Marion, Pa.; O. S. Brown of Smithfield, Pa.

Production on a fairly large scale will be undertaken in Harrison County by the **Tygart Valley Fuel Co.**, with general headquarters at Clarksburg. This concern has a capital stock of $100,000. Among those interested in the new enterprise are: E. M. Pendergrast, James G. Kidwell, James Gray, Lloyd Garrett, Jacob Black and O. H. Burgham, all of the Clarksburg.

The following foreign coal corporations, all chartered under the laws of New Jersey, have been authorized by the secretary of state of West Virginia to transact business in the state named. They are the **Blue Ridge Mountain Coal Co., the Barbour-O'Brien Coal Corporation and the Stevens Coal Co.**

The Elk River Coal & Lumber Co., Dundon, has awarded contract to the Phoenix Bridge Co. of Phoenixville, Pa. for six steel bridges for its subsidiary, **the Buffalo Creek & Gauley R.R.** The railroad company recently purchased considerable new rolling stock of heavier type, making it necessary to build stronger bridges to handle the traffic. The road runs from Widen where the mines of the Elk River company are located to Dundon connecting there with the B. & O. giving the coal company an outlet for its products both east and west.

Creditors of the **Mason Coal & Chemical Co.**, of Harford Mason County, having proved for settlement, the entire plant and holdings have been advertised for sale at public auction. The assets of the company are approximately $1,000,000 but claims pending against this concern will practically equal the assets. The company was organized during the war for the purpose of mining coal and for the manufacture of benzine. Just about the time operations were being started on an old and there was no longer any market for one of the principal products of the company.

James A. Burns and George Palmer of Fayette City, Pa. together with West Virginia parties, have incorporated the **B. R. & P. Coal Company**, Fairmont with a capital stock of $50,000.

The Acme Eagle Coal Co. has been organized for the purpose of engaging in the coal business in southern West Virginia high-volatile territory, this company having a capital stock of $10,000. Offices will be at Huntington. W. E. Deegans is one of the principal figures in the new company. Associated with him are J. Frank Grimm, J. M. Turner, J. H. Taylor and O. C. Hoffman.

WYOMING

Heavy storms are [illegible] delaying the surface construction of the **new mine of the M. H. Shields Coal Co.**, six miles from Gillette near the Sheridan field on the Billings line of the C. B. & Q. The coal bed is 99 ft. thick and only about 20 ft. from the surface at the point of attack. Stripping is impractical because it will increase the cover material over most of the acreage. M. H. Shields president of the Bank of Gillette controls the company. **Thomas Hotchkiss** has charge of the mining work.

The Homestake Mining Co. of Lead, S. D., producing the greatest gold mine in the world, has acquired a considerable acreage of coal land near the Shields mine at Gillette. A [illegible] is overlaid by 20 ft. of cover which, with the coal will be mined by a steam shovel strip operation. A model township has been laid out, but heavy snows will delay construction work until spring. H. C. Tate, superintendent of the Homestake will have general supervision, but **Ed C. Ross** will be in actual charge at Gillette.

The Hanna Coal Co. of Rock Springs, recently incorporated with a capital stock of $250,000. The directors named are John W. Hay Mary A. Hay and Logan J. Hay.

The **Community Coal Co.** has filed articles of incorporation. The object is to operate a lease in Platte County. Incorporators are R. E. L. Carroll, president; O. H. Mathews, Evanston, vice-president and general manager; Mrs. M. E. Mathews, secretary-treasurer and two other directors.

CANADA

Construction in Montreal of a **large crushing and screening plant** to handle thousands of tons of [illegible] annually is planned by a group of coal coal importers and dealers who have organized a Welsh colliery firm in the district and have already appointed the Harlow commission in regard to a waterfront site. The scheme was evolved to overcome trouble caused by the recent miners' strike in the United States and is regarded by the brokers as one step in the direction of Canadian independence, so far as American mines are concerned.

The Craig Coal Co., Ltd., recently formed, has opened a wholesale office at Toronto. The head of the company is John Craig, formerly treasurer of the E. B. Wragge Coal Co. and a former secretary of the Toronto Wholesale Coal Dealers' Association.

The William Rogg Coal Co. Ltd. has been organized in Waterloo, Ont., and has been granted an Ontario charter to engage in the wholesale coal business. The authorized capital is $[illegible] and among the incorporators are William Rogg, W. C. Rogg, F. W. Rogg and O. D. Rogg.

A severe "bump" occurred in No. 1 East Mine, **Crow's Nest Pass Coal Co.**, Coal Creek, B. C. on Nov. 14 last. Although haulage and traveling ways in the main entries [illegible] were protected as per mine [illegible] fatal, and only one man was injured. All men in the mine were withdrawn immediately and the working has been closed down temporarily. The management intends to have both general haulage ways [illegible] of Portal a few miles distant.

COMPARATIVE OUTPUT OF WESTERN COLLIERIES

Year to date [illegible]

Mine	Tons
Western Fuel Corp.	[illegible]
Canadian Collieries (D) Ltd.	
Comox	[illegible]
Canadian Collieries (D) Ltd.	
Extension	[illegible]
Canadian Collieries (D) Ltd.	
South Wellington	[illegible]
Brynlo Colliery M. & P. Co.	[illegible]
Nanaimo Wellington Colliery	[illegible]
Loudon Wellington	[illegible]
Total	[illegible]
Nanaimo [illegible] Dominion	
Middlehope Collieries	[illegible]
Pioneer Coal Co.	[illegible]
Dominion Collieries	[illegible]
Dominion Coal & Land Co.	[illegible]
Total	[illegible]
Crow's Nest Pass Dominion	
Crow's Nest Pass Coal Co. Coal	
Crow	[illegible]
Crow's Nest Pass Coal Co. Coke	[illegible]
Corbin Coal & Coke Co.	[illegible]
Total	[illegible]
Total Output	[illegible]

The Craig Coal Co., Ltd. [illegible]

The Pittsburgh government of miners has received a quality of [illegible] for coals sold at [illegible] to [illegible] Co., Ltd., [illegible]

[illegible] Fuel Co., Ltd., [illegible] Co., Ltd., [illegible] Co., Ltd., [illegible]

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, *Editor*

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Standardization an Absurdity

WHATEVER may have been in the minds of Messrs. Borah, Winslow et al. when they framed the act creating the United States Coal Commission and called for reports on standardization of prices, margins, wages, the work to be performed, the mines, the cost of living and about everything else, the idea has been pretty well knocked thus early in the game. In turn the bituminous-coal operators, the miners, the anthracite producers and now the retail dealers have shown the absurdity of the undertaking. It has been remarked, for instance, that the first step in standardizing the cost of living is the standardization of wives, and some such impossible foundation must underlie attempts in the other direction directed by the act.

A standardized price, whether for coal or for labor, if it means anything, means a uniform price. A uniform price, to be not confiscatory, must be high enough to permit the marginal producer—the high-cost fellow—to live and profit. Thus the standardized mine prices established by the Fuel Administration (according to the law creating that organization) were uniform by districts and, in order to be high enough to permit the operation of a majority of the tonnage, allowed abnormally high margins for the lowest-cost producers. Under normal conditions of competitive marketing the low-cost operator is prepared to make a lower price and does when the market requires that policy.

The country wants no subsidized, standardized industry and any attempt to set by edict the cost of living and the wage of the worker or the margin, cost, price, and profit of the producer will produce that result.

Threshing Out the Assigned-Car Question

ASSIGNED cars and the related "private" cars have for many years caused dissension between the carriers and the commercial coal operators. There has just been concluded the second set of hearings before the Interstate Commerce Commission on this question with the final round to come in January. The matter is getting the best threshing out it has ever had. For months both the railroads and the coal operators have been preparing for these hearings and the testimony and exhibits introduced have been voluminous. Every opportunity has been given to interested parties to present their views. The commission has given every indication of seeking a solution of the problem.

In a report to the Senate, dated June 11, 1920, the Interstate Commerce Commission said that prior to 1907 it was a common practice for railroads to deliver to coal mines cars privately owned or leased for the carriers' own fuel loading and to refrain from counting such cars in the current distribution. By its decision in the "Hocking Valley" and "Traer" cases in 1907 and 1908 the commission modified this practice, insisting that such cars be counted unless the mine shipped no commercial coal—that is, unless the arrangement with the railroad was for the entire output of the mine. This continued to be the rule until 1918, when the Fuel Administration prevailed upon the Railroad Administration to abandon all assigned cars for railroad fuel coal and instead to put the procurement of fuel in the hands of the former. From the first half of 1918 until April 16, 1920, there were no assigned cars for railroad fuel.

The reinstatement of this method of assisting the railroads to obtain fuel coal was, according to the commission, necessitated by emergency conditions—insufficient supply of cars available for the transportation of coal. At that time the commission recommended "that until experience and careful study demonstrate that other rules will be more effective and beneficial," this practice be continued. The hearings now under way purpose to find the facts and determine whether such rules can be formulated.

Reduced to simplest terms the assigned-car question becomes a matter of price. Railroads in general in the past have enjoyed a lower price for their coal than that charged other consumers. Their argument as to why this should be so was summarized by the Railroad Administration in the early part of 1918 as follows: (a) The demand is permanent; (b) the superior credit of the carriers; (c) minimum sales expense; (d) the railroads store a considerable portion of their requirements; (e) the railroads quite generally own coal lands and could mine their own coal; (f) the commercial fact that all these conditions have been recognized and have had their bearing in securing the uniformly lower price of coal which the railroads have always enjoyed.

Assigned cars are a factor in bargaining for coal. An output contract with preferred car supply that assures continuous full operation is offered as the inducement for low price. The buyer agrees to take all the coal the mine can produce and this arrangement permits operation under the most favorable conditions and with costs lower than if the same mine were to have intermittent operation. When cars are plentiful the demand for coal is dull and there is no necessity for, or advantage in, preferred car supply. But if and when the demand for coal increases to the point where more cars are required for its transportation than the railroads are able to supply and a car shortage results, then the assigned car becomes a factor. The mine that has this arrangement with the railroad works full time, and other mines on the same road, often adjacent thereto, because of lack of cars, are idle or work, as now, but one or two days per week.

Therein lies the cause of complaint and the basis for argument. Just so far as cars for assigned or certain mines are removed from the total available for distribution to all other mines, that much will the cars for loading, and thereby the coal for sale, be decreased at those other mines. Estimates of the percentage by which operating time would be increased by the elimi-

ration of assigned cars and the complete and perfect distribution of cars range upward from it. The figure would vary with the field and be affected by local conditions. In some, if not many, areas where the practice is general the benefit to the nonmercial producer would be substantial. Even those operators who now or in the past have taken railroad fuel contracts with assigned cars are opposing the practice because of the inequalities it introduces.

Not all railroads use assigned cars for the protection of fuel supply. A number of important systems and many small roads have not found it necessary to resort to this practice. Perhaps the real point to be determined is why all roads cannot abandon the practice. If it be true that some roads cannot get coal sufficient for their operation unless they resort to preferred car supply, how is it that others can and do? An imposing array of railroad presidents appeared before the commission in this hearing and testified not only with respect to the reasonableness of assigned cars but their necessity if the roads are not to be required to pay more for coal, which, by inference, is to say if the roads are not to come before the commission with a request for higher rates to pay for the coal. The public may ask as well whether it is being called on to pay more for coal as a result of the railroads' getting it cheaper.

Wage Making and the Sherman Law

NEARLY two years ago indictments were brought before Judge Anderson in the federal court at Indianapolis against more than two hundred coal operators and miners charging, among other things, conspiracy in violation of the Sherman law in making various wage agreements and contracts. These indictments were obtained under a former administration by a former Attorney General. They have only served so far to raise a doubt as to the legality of interstate negotiations between operators and miners.

When the point was raised early this year the present Attorney General is reported to have scoffed at the idea that these indictments presented any obstacle to the operators meeting with the miners. He later took a trip to Indianapolis and talked with Judge Anderson. He had nothing further to say. We have not been informed whether he concluded that the government had such a poor case that it were best left to perish in oblivion or whether some deeper reason prevails for not quashing it or bringing it to trial.

There certainly can be no wage agreement between the bituminous coal operators and the United Mine Workers to take the place of the contract that expires next April unless they negotiate one. The surest way to avoid a strike next year is to have a peaceful settlement prior to that time. The union appears willing to negotiate on any basis save separate districts. Any other involves interstate relations, to all intents of the sort that has been put under the ban by the action of Judge Anderson's court.

No one save the operators indicted—the United Mine Workers appear to hold the matter lightly—is privileged to judge the seriousness of these predicament. If the Illinois or the Pittsburgh or any other operators say that they are not free to negotiate with operators from other states respecting the wages to be paid to the miners of a common union because they are liable to be held to be acting in transgression of the law, who is to say they are not speaking in good faith?

There is but one answer. Let the administration quash the indictments—if not in full, at least in so far as they relate to interstate wage negotiations. Getting government sanction for the method to be adopted in future negotiations is a legitimate enterprise. Certainly the mine owners of this country have been harassed long enough by the uncertainty which has enveloped them ever since the Indianapolis indictments were returned.

If sufficient evidence to justify prosecution on the conspiracy charge has been obtained, then let the case proceed with dispatch and may the arm of the law descend mightily upon the guilty. If it has not, then in the interest of the public good the indictments should be lifted so that they may not interfere with a proper administration of the coal industry's affairs.

The Future of Anthracite

WITH production of anthracite setting new high weekly records, with every man working at top speed and taking in record earnings, this appears to be an inappropriate time to talk about anthracite as an intermittent industry. Such it has been this year, however, because of the five months' strike. Even with production at 2,000,000 net tons per week the country will have but 60 per cent of its requirements of hard coal this winter. Consumers, whether they wish it or not, will this winter learn the values of substitute fuels. Bituminous coal, coke, gas, oil, each is having its innings in homes, apartment houses, hotels and theaters where never before had any fuel save anthracite been used.

Let us assume that next year the hard-coal miners obtain a renewal of their present wage scale, if nothing better, and the selling prices of the coal they produce remains as high as now, if not higher. Many of those whose experience with substitutes is not unfortunate this winter will hold on to those substitutes. The demand for hard coal will be decreased, particularly for the sizes now most in demand—stove, nut and range. With decreased demand the business of mining will cease to be a full-time occupation. The miners will then demand higher daily and tonnage rates of pay to compensate for short time and the cost and the price will further ascend. The country may thus become accustomed to using some fuel other than hard coal before the limited deposits are exhausted. Coal this country must have, but it may find that it can get along with mighty little anthracite.

Operators show more concern over this than the miners, because they have a fixed heavy investment whereas the miners may more readily pull up stakes and depart for other jobs. It will be a sorry day for the hard-coal industry when the only hope of full-time operation lies in having a strike to reduce supplies and make the consumer coal hungry.

WHILE THE UNITED STATES cannot hope to compete with the low-cost countries in the manufacture of the simpler forms of machinery which are not made on a large scale, there is increasing evidence that this country can compete in any market with machinery which is made in large quantities and with such articles as machine tools, typewriters and locomotives, which are developments of American ingenuity.

WHAT INTERESTS THE CONSUMER is not the number of square miles that contain coal but the number of square people that sell coal.—*Indianapolis Star.*



Pumping the Big Muddy River Out of a Mine to Save Machinery and 300,000 Tons of Coal

Roof Caves Under Flood Extension of River and Water Pours Into a Mine at Murphysboro, Ill.—Big Pumps and Water Hoist Work Months Ejecting Five Million Gallons a Day—Mine Is Saved

By C. L. Moorman*
St. Louis, Mo.

IN THE latter part of the year 1920 the Consolidated Coal Co. of St. Louis acquired the operating coal mines in Illinois of the Big Muddy Coal & Iron Co., including mine No. 9, situated at Murphysboro, which had long borne an enviable reputation for the quality of its product. Coal seam No. 2 is extracted at this mine, a characteristic section of the coal and overburden showing a 6-ft. seam of coal, overlaid with 1 to 3 in. of draw slate under a gray-slate top. Under the coal bed lies 1 in. of fireclay on sand rock. Room-and-pillar methods of mining, in which 6 in. of coal was left under the slate roof, had been followed under the former ownership and were continued by the purchasing company.

The area to be mined from this shaft is traversed on the north and west by the channel of the Big Muddy River, a stream which not only has an unusually flat drainage slope, in this territory averaging only about 5 in. to the mile, but one which is subject to wide and frequent variations in water level. On account of its proximity to the Mississippi River, the Big Muddy at this point is affected by fluctuations in the level of the larger stream.

In the development of this mine, in order that a large body of coal might be entered lying between the river and abandoned mine workings, two main entries had been driven under and across the river bed, one to the north, the other westerly. Gathering was done by mules; three electric locomotives were used for main haulage and the coal was undercut by ten electric mining machines. Twelve electrically driven pumps and three steam pumps were used to eject water from underground, the mine making normally about one million gallons each twenty-four hours. The depth of the hoisting shaft is 115 ft. from the ground surface to the rail at the caging point.

The surrounding surface is rolling prairie with sharp breaks where side streams join the river, much of it considerably lower than at the shaft. The coal seam



*Chief engineer, the Consolidated Coal Co. of St. Louis.

The headpiece shows a lake almost [illegible] formed when the water broke into No. [illegible] of the Big Muddy Coal & Iron Co. The photograph from which the drawing was made was taken after the river receded. The hole leading down into the mine workings, is at the far end of the lake.

undercroath also presents many variations from a horizontal plane. The shallow cover over the coal bed is easily penetrated and many holes for pump columns have been drilled, so that underground pumps may be advantageously placed without resort to long pipe lines.

For many years the men employed at this mine have suspended work when the stage of water in the river reached a certain mark, resuming operations when the water had receded. The objection to working under flood water appears to have been based upon the fact that bad roof had been encountered years ago in some of the most extended workings and not because of any actual unusual seepage of water into the mine. As a rule the Big Muddy rises above the specified mark several times during each year, and such rises occur at any time—there is nothing regular in the flood periods of the Big Muddy.

On Nov. 18 last year the water had reached the point regarded as the limit for safe operation, and work was suspended. One week later the stage of river was 15 ft. above the mark, this being the highest point reached during that particular flood. Five days later the river had fallen 5 ft., but back water still filled all the side streams. Suddenly on this date, at about 3 o'clock in the morning, the river forced into the mine. The underground commotion and uproar was audible to two men who were at the shaft bottom completing a night inspection tour and who were in the act of hailing away the cage for the top.

They were hoisted safely, but within two hours after the break the water rose inside the hoisting shaft to the same level as that of the water in the river, this being 23 ft. below the ground landing. As the river continued to recede in its customary channel a systematic search for evidence on the surface of the ground of the connection between the river and the mine was begun two days later. When found this exhibited itself as a small "lake" about one acre in extent, with fallen trees around the margin and an ebullient surface near the south end, where escaping air bubbled up from the mine. The force of this escape was shown by several geysers in the river where air under enormous pressure had broken through to the surface.

On the morning of Dec. 3 the river had fallen to a plane below the outlet of a small creek along the bed of which the "lake" formation appeared, thus forming a barrier between "lake" and river. The water remaining in the "lake" quickly disappeared into the mine, and opportunity was afforded to examine the position and extent of the damage.

The break in the roof occurred at the extreme edge of long-abandoned work at the northeast corner of the mine, about 400 ft. from the normal water's edge of the Big Muddy. At this point about 40 ft. of earth rested on top of the slate. The terrific inrush of water from the river channel undermined the sides of the creek, carrying the earth into the mine until a chasm about 120 ft. wide and 350 ft. long was produced. Approximately 25,000 cu.yd. of earth disappeared into the underground, together with the small trees and brush with which the acre of territory was covered. The larger trees on each side of the creek fell into and across the depression as the sides assumed verticality from the force and cutting action of the rushing water.

Fearing that another rise in the river again would fill the surface sink with water a hurried attempt was made to block with layers of brush and timber mattresses and earth the opening in the slate roof, which appeared as a ragged roughly rectangular hole measuring about 10 x 12 ft. Subsequently the underground passages leading from the hole in the roof were solidly blocked with timbers, earth and hay. The lake has been full of water for months now, and no perceptible leakage has occurred.

With the cessation of inflow from the river the water level in the hoisting shaft began falling until on Dec 9 it had reached a depth of 86 ft. below the ground landing, a fall of 63 ft. from its highest point. This disappearance of the water from the "lake," being concurrent with the lowering of the level of the water in the shaft, indicated that the stoppings were giving away under pressure and that the old mined-out sections were being flooded. As it was impossible to determine with any semblance of accuracy how many or how few of the underground chambers had been filled with water it was assumed that the mine was entirely flooded, and in that event it would be necessary to pump out about two and a half billion gallons of water (in addition to the normal leakage of one million gallons per day), a rough estimate subsequently proved to be far too large.

To raise this immense volume of water, unusual methods were necessary. Two stout wooden boxes were constructed 7 ft. 4 in. long, 4 ft. 7 in. wide and 3 ft. deep, with hinged horizontal flap valves on their bottoms for the entrance of water and with hinged end gates opening inwardly and operated by double crank mechanisms. The cages were dismantled, and the water boxes hung in the regular cage side irons. Water was hoisted continuously until the bottom landing was clear, so that the mine could be entered from the hoisting shaft. The filling and the discharge of the water boxes was automatic, and an average speed of three hoists per

THEY SAID IT COULDN'T BE DONE

When the news went around that the Big Muddy River in southern Illinois had broken through into the No. 2 mine of the Consolidated Coal Co. of St. Louis and had filled it almost to the shaft top, engineers said the mine was a goner. When W. J. Jenkins, general manager, and C. L. Moorman, chief engineer, began pumping and hoisting water, the engineering fraternity smiled and said they admitted the nerve of these men, but who could save an old mine with an immense cavern torn from the surface clear down into the workings? And anyway it wouldn't be worth the tremendous cost.

But these two men had pumped water before. The mine normally makes a million gallons a day. They were staggered but not whipped when they figured that two and a half billion gallons of flood plus the regular million daily gallons would have to be ejected. The cost might be $75,000. But down in the mine were 200,000 tons of good Murphysboro coal and machinery and trackage worth at least $50,000. So they went after it, working their three pumping shifts 24 hours a day for months. They found the job less than they had figured. And they won.

The 200,000 tons of coal is now coming out of the shaft at the rate of 1,000 tons a day. The motors and other "drowned" machinery, still worth $20,000, have been rebuilt and are in use, and the chasm yawning from the surface down to the coal is so successfully plugged at the bottom with timbers and mattresses of brush, baled hay and dirt that there is not even a sizable seepage, although summer floods have filled this great crater and it stands as a vast, threatening tank directly over the works. The whole cost of the dewatering was something less than $25,000.—EDITOR.



FIG. 2—FULL-GROWN TREES FELL INTO THE CRATER

As much as 25,000 cu.yd. of earth disappeared into the mine. When this hole had been emptied of water down to the level of the coal a puncture 10 ft. in diameter was revealed extending through the 8 ft. roof of slate. This was stopped with logs, mattresses of brush, baled hay and a vast quantity of dirt. Floods since then have filled the hole but no water has leaked into the workings.

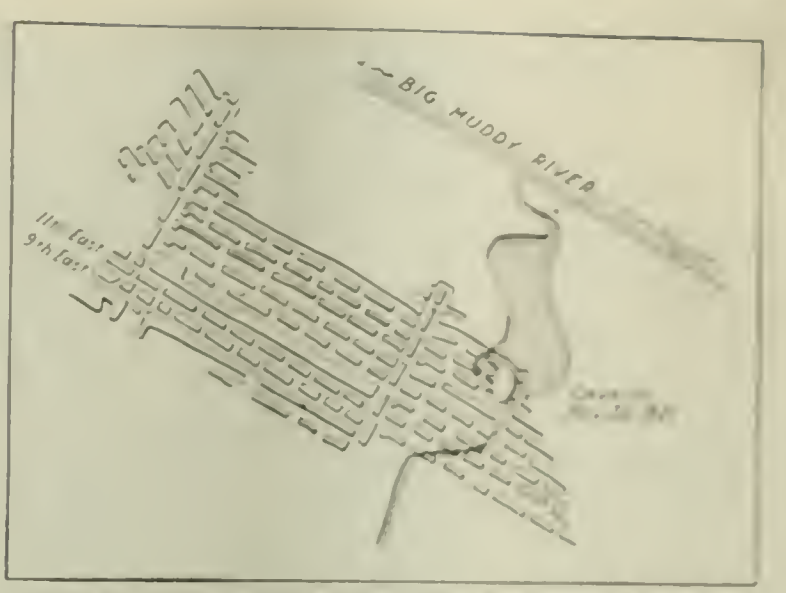


FIG. 3—MINE WORKINGS AROUND THE CAVE IN

The break occurred under the bed of a little creek which crossed the northeast corner of the mine above entry abandoned workings. The swirl of water going down the hole excavated the lake shown in the creek bed.

minute was maintained. One engineer ordinarily made four per minute. Some water slopped over the sides of these hoist boxes and leaked out, so that the average quantity brought by this method to the discharge point was 700 gallons per hoist, or 2,100 gallons per minute.

Soon after this installation began work an electrically operated centrifugal pump was placed on a platform just above the water surface in the airshaft. This pump discharged 1,400 gallons per minute to the surface. Working twenty-four hours, about five million gallons per day was now being discharged.

Nine days after the flooding of the mine, pumping operations were begun, continuing from Dec. 9 to Feb. 7 uninterruptedly, except for minor delays. On the latter date the water level had been lowered to the underground landing and the hoisting of water was discontinued. A record of changes in the water level, gaged in the shaft at the same hour each day, is appended (Fig. 6).

When it is remembered that practically the same quantity of water was being ejected daily, the wide fluctuations in surface level indicate that the flow of water to the mine bottom was often obstructed. On four widely separated dates—Dec. 13, Jan. 8, Jan. 26 and Feb. 5—the water level remained stationary. On Dec. 19, Jan. 16, Jan. 30 and Feb. 1 it reached a higher level than that recorded on the preceding day, the largest increase being on Feb. 1, when the water rose more than 2½ ft. in spite of pumping.

As soon as the shaft bottom was clear of water the three steam pumps near the shaft were reclaimed and put in operation, a second centrifugal pump of 1,200 gallons per minute capacity was installed inside the mine, followed by a third centrifugal of 700 gallons per minute capacity and a fourth of 1,200 gallons per minute capacity, so that for several days, or as long as a large volume of water was accessible, the maximum ejection of 7,000,000 gallons per day, or more than 29,000 tons, was attained.

As the recession of the water level continued, and as high points along the haulageways emerged, a number of disconnected pools were formed and further dewatering became merely a problem of moving pumps from place to place to keep in contact with the receding water, minimizing the length of discharge lines by

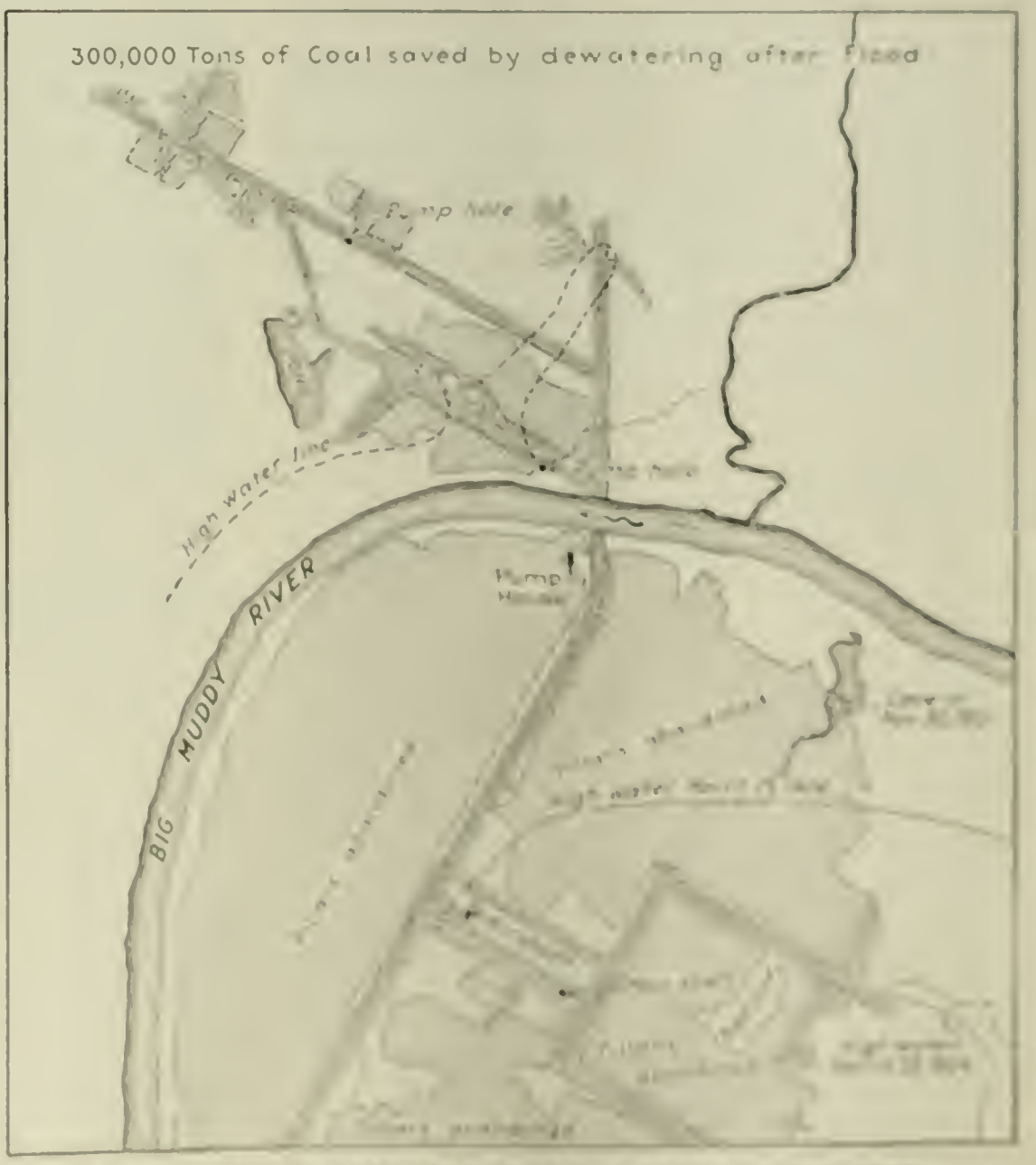


FIG. 4—MAP SHOWING LESS THAN ONE-TENTH OF THE MINE

This shows the position of the mine with respect to the river during the flood, when nearly nine square miles of the surface above the mine were under water. Workings were still under the river when the mine was pumped out.



drilling from the surface in the most economical positions a few additional pump-column holes.

The greater part of the flooded electrical machinery has now been recovered. Three of the reclaimed electrically driven pumps have been repaired and are now in operation. Isolated pools of water remained in dips and were removed with small pumps, which was a rather slow process, and a large part of the underground tracks was covered with mud, though of this and of débris it would seem that only a remarkably small quantity had to be removed in view of what a large body must have entered with the water.

Practically all the former live workings of the mine are now open and dewatering is essentially completed for that part of the mine in which future operation is planned. A few small slate falls to be cleaned up and a number of broken stoppings to be rebuilt represented about all the damage the mine itself suffered. The engulfed motors and some of the other equipment had to be rebuilt, however.

During the nearly seven months of pumping about one billion gallons of water was removed, and the quantity remaining in abandoned workings does not threaten or endanger any part of the live workings.



THE VERTICAL CARBONIZING OVEN constructed at Grand Forks, N. D., in the course of a co-operative investigation by the University of North Dakota and the U. S. Bureau of Mines looking toward the commercial utilization of the northwestern lignites, has recently been operated under the supervision of W. W. Odell, fuel engineer of the Bureau of Mines, in the manufacture of lignite char on a commercial scale. Results were quite satisfactory and valuable information on the production of lignite char without the recovery of byproducts was obtained. The cost of producing this char was reduced considerably below the cost of operation in the carbonizing oven used in 1921. A satisfactory grade of char was produced. Grates for the utilization of this char in the ordinary magazine-feed house-heating stove and for a house-heating boiler have been made at Pittsburgh and sent to North Dakota for distribution to domestic consumers.

THE METHOD OF COLLECTING mine samples of coal by the Bureau of Mines involves selecting a representative face of the bed to be sampled; cleaning the face; making a cut across it from roof to floor, and rejecting or including impurities in this cut according to a definite plan as they are included or excluded in mining operations; reducing the gross sample, by crushing and quartering, to about 3 lb.; and immediately sealing the 3-lb. sample in an air-tight container for shipment to the laboratory.

Comparison of Froth with the Trent Process*

Flotation About as Effective as Trent Process on 65-Mesh Coal of Pacific Northwest—Latter Method Does Better Work on Slimes—Amalgam Water-Free and When Made with Fuel Oil Can Be Burned Economically

By Oliver C. Ralston†
Washington, D. C.

FOR several years the Bureau of Mines experiment station at Seattle has been engaged in a study of washing the coals of the Pacific Northwest, and as one phase of this study the flotation of the fine sizes of coal on oil froths was made by one of the research fellows‡ of the College of Mines, University of Washington.

Simultaneously in 1920 the Trent Process Corporation was testing representative samples of coal from all portions of the United States and arranged for tests to be made in three places—one in Washington, D. C., at the laboratories of the U. S. Bureau of Standards; one in Pittsburgh, Pa., at the experiment station of the U. S. Bureau of Mines, and one at Berkeley, Cal., at the experiment station of the U. S. Bureau of Mines. The Northwest Experiment Station was requested to send representative samples of the Washington State coals to the three laboratories where the Trent process work was performed, and did so, quartering the samples and saving a sample itself on which to make froth flotation tests for purposes of comparison with the Trent work.

The Trent process work done by the U. S. Bureau of Mines at Pittsburgh has already been reported§ by Perrott and Kinney. Unfortunately, only the work done at Berkeley is directly comparable to the Seattle froth-flotation work, for the reason that the Seattle work was done on coal crushed to 65-mesh whereas the Trent work carried on in Washington and Pittsburgh was done on more finely ground coal, usually 200-mesh. At Berkeley the experimenter employed by the Trent Process Corporation, A. H. Heller, tried the Trent process on these 65-mesh samples of coal after grinding them to a series of different sizes. In this article only those Trent process tests will be reported which are directly comparable to the froth-flotation tests, the former being abstracted from Mr. Heller's report.

Froth Flotation Not Suited to Slimes

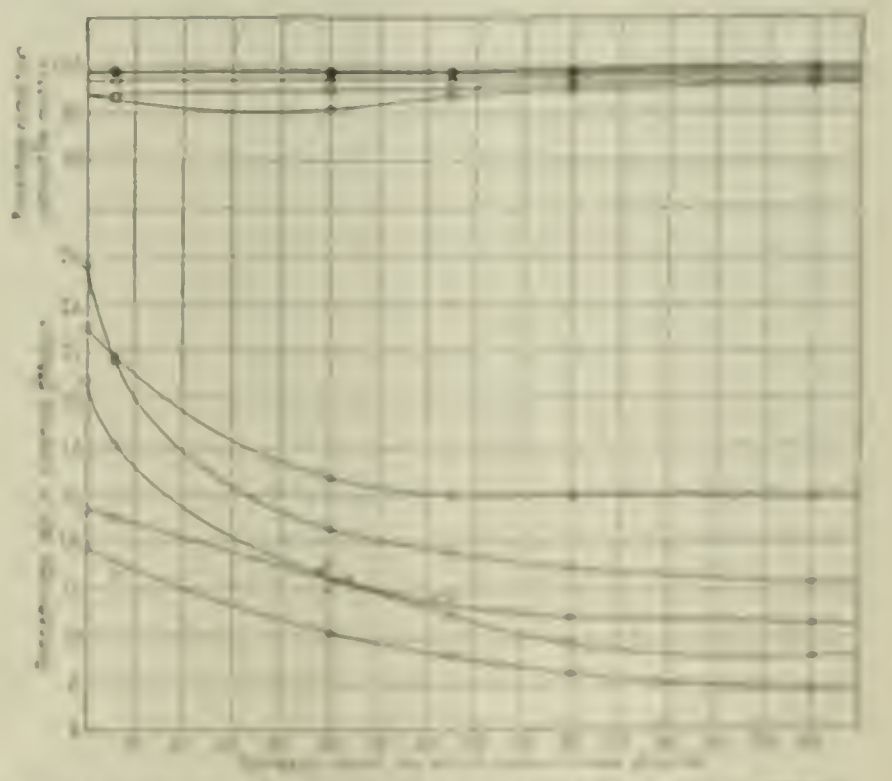
It should be pointed out, in all justice to the Trent process, that it is not limited to the treatment of such coarse coal but seems to work very well on the finely divided slime. Therefore, this comparison is really made only on coal crushed to give reasonably satisfactory work by froth flotation, overlooking the fact that these may not be the best conditions for the Trent work. This will be seen on looking over the figures given in the following paper.

As is well known, froth flotation is one of the modern methods of separating finely divided materials. While the Trent process is even more modern in its development it greatly resembles some of the old "bulk oil" separation processes that preceded flotation. Oil amounting to from 30 to 50 per cent of the weight of the coal is added to a suspension of finely divided coal in water and stirred up with it.

The oil passes into or is absorbed by the coal or the carbonaceous matter, the ash remaining in the water. By a variation in the degree and duration of agitation of the pulp and the quality and quantity of the oil, the resultant "amalgam" of coal and oil can be made either to float or to sink. By prolonged agitation, the time varying with the materials used, the amalgam will collect into little spheres which are well formed and fairly strong so that they can be screened from the pulp or otherwise removed mechanically.

There is a more or less definite ratio of combination between the oil and the coal, and by using the bare minimum of oil the amalgam can be made quite hard. Any excess of oil makes the amalgam softer and more oily, whereas the hard amalgam frequently does not even feel oily. These little spheres of amalgam call to mind the old Cattermole granulation process which immediately preceded froth flotation. Where heavy, cheap oils are used they need not be separated from the coal. Hence the Trent "amalgam" may be used directly as fuel and consequently the "bulk-oil" concentration of coal is not subject to the limitations that were found when ore was thus concentrated, for in that case the large quantity of oil left in the ore concentrate made the process expensive.

The samples taken represented the whole range of



EXTRACTION INCREASES AND ASH DECREASES THE FINER THE MATERIAL IS GROUND

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*Published by permission of the Director, U. S. Bureau of Mines.
†Assistant chief metallurgist, U. S. Bureau of Mines.
‡Wichmann, A. F., whose report was abstracted and presented in a paper published in *Chemical & Metallurgical Engineering*, Vol. 26, pp. 500-503 (1922).
§*Chemical & Metallurgical Engineering*, Vol. 25, No. 8, Aug. 3, 1921, pp. 182-188.

coals between black lignite (low-grade sub-bituminous) and semi-anthracite and were characteristic of the Pacific Northwest coals in being boney or high in inherent ash. It had been hoped that fine grinding would liberate the ash, but it was found that even the very finest grinding attainable commercially (300-mesh) still left a high inherent ash in all the samples. These had been gathered by A. P. Wichmann, who held a graduate fellowship in the University of Washington and who also performed most of the flotation tests herein reported.

Sample No. 1 is a low-grade sub-bituminous coal from the Mendota Coal & Coke Co. property, Mendota, Wash. Sample No. 2 is a good sub-bituminous coal from the Issaquah mine of the Pacific Coast Coal Co. Sample No. 3 is a bituminous non-coking coal from the Carbon No. 10 seam of the Carbon Hill Coal Co., Carbonado, Wash. Sample No. 4 is a bituminous coking coal from the Wilkeson Coal & Coke Co. property, Wilkeson, Wash. Sample No. 5 is a semi-anthracite coal from the South No. 3 seam of the Carbon Hill Coal Co., Carbonado, Wash. The proximate analyses of these samples are given in Table I.

The flotation tests were made in a small "Minerals Separation" type of flotation machine capable of treating 1,000 g. of ore. A number of tests were made on

TABLE I—ANALYSES OF PACIFIC NORTHWEST COALS USED IN SEATTLE AND BERKELEY TESTS

No.	Kind of Coal	Moisture, per Cent	Volatile Matter, per Cent	Fixed Carbon, per Cent	Ash, per Cent	Moisture and Ash, per Cent	
1	Low-grade sub-bituminous	14.81	12.75	39.47	34.29	9,385	13,230	53.18
2	Good sub-bituminous	6.04	14.74	35.82	34.46	9,580	13,420	52.30
3	Bituminous, non-coking	2.11	23.86	29.35	42.64	10,705	14,600	40.80
4	Bituminous, coking	1.48	24.39	30.08	53.95	11,216	15,135	37.90
5	Semi-anthracite	2.86	13.43	11.13	71.44	12,745	15,065	13.15

each coal, using various oil mixtures and varying the physical conditions, for it had been found that coals, like ores, react to flotation differently and that, in consequence, the best conditions must be found for each case. Only the tests made under what proved to be the better conditions are herein reported.

In preliminary tests great difficulty was found in obtaining clean flotation with finely-ground coal and consequently the tests were made with coal ground to a fineness that would enable it to pass a 65-mesh sieve. The Trent tests by Mr. Hofer were made on coal in a whole series of sizes, so that by interpolation of his figures it was possible to get the figures on the Trent process when operated with a 65-mesh coal, thus making it possible to compare the results made with this process with those attained when using froth flotation.

The flotation froth was divided into two parts; the first portion was regarded as more or less clean concentrate and the second was regarded as middlings. Laboratory work has proved that the clean coal tends to float first and that the more boney coal then follows, so that our middlings may be regarded as representing the more boney fraction of the coal.

The figures that have been compared with the Trent figures are the average analyses of the first and second froths together with the total extraction of combustible matter made in these two froths. Frequently the second froth was very high in ash and when averaged with the first froth gave a final concentrate that was

TABLE II—RESULTS OF FROTH FLOTATION TESTS, PACIFIC NORTHWEST COALS

Coal Sample No.	Per Cent Ash in Feed	Products							
		First Froth		Second Froth		Tailing		Total Froth	
		Weight, Grams	Ash, Per Cent	Weight, Grams	Ash, Per Cent	Weight, Grams	Ash, Per Cent	Ash, Per Cent	Combustible Recovered, Per Cent
1	15.26	225	12.24	467	13.50	175	25.28	13.15	81.7
		425	14.38	.	.	20	66.18	14.38	97.1
2	20.81	690	15.52			230	36.82	15.5	80.0
		230	16.65	195	16.29	38	68.55	16.5	76.0
3	26.46	812	18.41			175	63.90	18.4	90.0
		643	15.81	175	35.90	172	60.00	19.68	89.5
4	24.75	785	15.46	108	42.45	100	79.22	18.81	96.4
5	13.70	477	6.33	487	16.63	35	67.23	11.51	98.4
		915	10.08			73	59.87	10.02	95.1

higher in ash than was found necessary by parallel tests in which not so much boney coal was allowed to float. Some of our tests were made without producing a second concentrate but merely first concentrate and tailing. The froth-flotation results used for comparison with the Trent process work are contained in Tables II and III.

The Trent process tests on 65-mesh coal—the same sizing as that used for froth flotation work—were made with a heavy thick fuel residuum oil. No light oils were tried in these tests, but in working with 300-mesh material, results obtained with light oils were far better than those in which heavy oils were used. This is shown in Tables V and VI. The quantity of ash retained in the final product increases with the viscosity of the oil, and the final combustible recovery decreases somewhat.

From this one is led to believe that if in the Trent work on 65-mesh coal, instead of fuel residuum, oils of a viscosity similar to those employed in the froth-flotation tests had been used, the resultant oil-coal Trent product would have been much lower in ash than is shown in Table IV. In the work at Berkeley the Trent Process Corporation experimenter decided to center his attention on the use of heavy oils, owing to their low cost and the fact that the final product could be used directly as a fuel. When using the more expensive lighter oils, the final product must be subjected to a low-temperature distillation for the recovery of the oil, and this was one phase of the Trent process which it was decided to leave for later work. Another phase of the Trent process where heavy oils are used, and which was studied in detail from a laboratory standpoint at Berkeley, was the complete distillation of the final product with the recovery of oil from both the coal and the oil of the amalgam. This latter work will not be reported here.

The coal was ground to pass a series of progressively finer screens and treated with the proper portions of water and fuel residuum oil in an agitator until the coal had passed into the oil and the ash was left in the water. They were then separated and the two products analyzed. The percentage ash in the cleaned coal was determined and from this the percentage recovery

TABLE III—OIL MIXTURES USED IN FROTH FLOTATION TESTS

Coal Sample No.	Oils	Lb. per Ton
1	4 kerosene to 1 pine oil	6
2	5 kerosene to 1 hardwood tar creosote	6
3	Creosote pine creosote	4
4	Creosote pine creosote	2
5	Kerosene	4
1	Pine oil	1.5
4	Mixture X-mineral solvent	3
3	Pine oil	2.5
5	Kerosene	2

of combustible materials was calculated on each test. All of the combustible recoveries were well over 95 per cent and are presented in the curves at the top of Fig. 1. The percentages of ash in the various products are plotted in the lower set of curves of Fig. 1, and the numbers of the coal samples are given in the right-hand margin.

From these curves the data on the behavior of coal ground to pass a 65-mesh screen were interpolated.

The average results of the froth-flotation and Trent heavy-oil tests are given in Table IV, which assembles side by side the percentage of ash in the concentrate and the percentage of recovery of combustible material when the various coals are crushed to 65-mesh and treated by the Trent process or by the froth-flotation process, each using suitable oils.

In Table V are shown also the Trent process results on coal ground to pass a 300-mesh screen, which probably is the limit of any possible commercial grinding, giving a comparison of results with the heaviest and the lightest oils employed. The results with fuel residuum in Table IV on 65-mesh may be compared with the same oil in Table V on 300-mesh. Table VI shows the results in the use of different grades of oil.

With the exception of sample No. 2, which was refractory to froth flotation, the grades of concentrate

TABLE IV—COMPARISON OF WORK DONE BY TRENT AND FROTH-FLOTATION PROCESSES

	Tent Process				Flotation	
	300-mesh		65-mesh		65-mesh	
Coal Sample	Concentrate Ash, Per Cent	Coal Recovery, Per Cent	Concentrate Ash, Per Cent	Coal Recovery, Per Cent	Concentrate Ash, Per Cent	Coal Recovery, Per Cent
1	9.0	99.5	13.5	99.0	13.8	90.4
2	10.6	98.0	13.5	98.0	15.5	80.0
3	12.2	98.0	16.3	96.0	18.4	90.0
4	15.8	99.5	18.0	98.5	18.8	96.0
5	7.7	99.5	10.8	99.0	10.7	97.0

produced by the two processes where fuel residuum is used for the Trent work are very similar, the Trent process seeming to have a slight advantage. In every case the recoveries of the combustible matter were better by the Trent process than by froth flotation. Froth-flotation recoveries were over 95 per cent for the two highest-grade coals (semi-anthracite and bituminous coking) but were lower for the lower-grade coals.

By examining Table II, however, it will be seen that the froth-flotation process can remove part of the coal in a first concentrate which will be much lower in ash than where a single bulk concentrate is made. In other words, the cleanest coal floats first and later the more boney coal. In this manner a cleaner product can be made by froth flotation than that shown in Table IV if recovery of combustible matter is sacrificed. The Trent process makes only one separation: combustible material and relatively clean ash residue. It does not provide any middlings. In other words, most of the bone or boney coal is collected with the clean coal. On the 65-mesh coal tested the first fraction of the flotation froth was lower in ash than the Trent amalgam. Each process evidently has its advantages over the other.

Where it is permissible to burn the mixture of oil and coal produced by the Trent process, froth flotation would be at a disadvantage, as it would be necessary to dewater the concentrate before it could be burned. Where the oil used for the Trent process is too valuable to be used as a fuel, however, it must be recovered and in comparison it probably is easier to dewater and dry a froth-flotation concentrate than it is to distill

TABLE V—TRENT PROCESS TESTS ON 300-MESH COAL

Coal Sample	Fuel Residuum: Concentrate Ash, Per Cent	Fuel Residuum: Coal Recovery, Per Cent	Gasoline: Concentrate Ash, Per Cent	Gasoline: Coal Recovery, Per Cent
1	9.0	98.9	8.10	87.77
2	10.55	98.5	8.95	86.60
3	12.2	97.4	8.80	81.65
4	15.80	98.45	12.80	90.70
5	7.50	99.40	6.15	89.59

and condense the oil from a Trent "amalgam," leaving the coal behind. But where oils of this type are used the final coal is lower in ash than that obtained from flotation.

The ability of the Trent process to operate successfully on finely ground material gives it an advantage over froth flotation, which latter process seems to meet difficulties when treating finely ground or slimed material. On material between 10- and 100-mesh froth flotation promises to be a strong competitor of the coal-washing table. The table does not do very good work on the sizes smaller than about 48-mesh. The way to float 200-mesh coal on an oil froth doubtless will soon be discovered, however, as there are already several promising lines of attack in sight.

It is probable that the laboratory test of the Trent process could be profitably used by froth-flotation experimenters as a check on their work, as the Trent result would represent the best grade of concentrate that could be made consistent with a high extraction of combustible matter, and thus afford a criterion by which to judge the perfection of the froth-flotation tests.

Where clean, finely divided coal is wanted for diluting fuel oil, as used for combustion purposes, the Trent process probably will find an important field. However, for boney coals, which are not cleaned by the Trent process as much as is desirable, the floating of the clean portion of the coal by froth away from the boney portion will give a froth concentrate which can be mixed with the fuel oil immediately, allowing the clean coal to pass into the oil and thus getting rid of the water without filtering or drying the froth concentrate. In this way the two processes could supplement each other.

From the preceding it can be seen that one of the most important things to consider in comparing the two processes from a commercial viewpoint is the use to which the coal concentrate can be put. The froth-flotation concentrate has been used in a number of collieries in England, but so far only in preparing coking coal. A Trent-process plant is now in operation at Alexandria, Va., producing amalgam direct for the market, and several hundred customers are trying it for various purposes, such as industrial fuel, firing boilers, furnaces, etc., as well as for bakers' ovens, glass works, fertilizer works, and even cooking stoves in hotels and restaurants. As a domestic fuel it may also prove to be of great interest, as it is said both to ignite easily without the use of kindling (requiring only a little paper) and burn without forming clinker.

TABLE VI—TRENT TESTS OF NO. 5 COAL, WITH VARIATIONS IN KIND OF OIL USED

Kind of Oil	Relative Viscosity	Ash Obtained, Per Cent	Fuel Ash, Per Cent	Coal Recovery, Per Cent
Gasoline	0.61	10.8	8.8	91.49
Crude kerosene	0.87	10.8	8.4	90.04
Kerosene	1.0	10.8	8.5	89.16
Mixture (kerosene) oil	1.5	10.8	8.4	85.04
Mixture (crude oil)	2.0	10.8	11.4	89.04
Fuel residuum	46.6	10.8	12.1	87.49
Mixture (engine oil)	Very high	10.8	12.1	86.55

It is being used also in the manufacture of municipal gas. From the foregoing these conclusions may be drawn:

(1) Froth flotation and the Trent process, when applied to the cleaning of various coals ground to pass a 48-mesh sieve for the purpose of preparing a low-ash fuel, gave very similar results under conditions which were most favorable to the froth-flotation work and somewhat unfavorable to the Trent work.

(2) Under these conditions the grades of concentrate made by the two processes were almost identical for all kinds of coals tested, with a slight advantage in favor of the Trent process when heavy oils were used and a pronounced advantage when light oils were used.

(3) The extractions of combustible matter are higher in the Trent process, the difference being slight for semi-anthracite and coking bituminous, but up to 8 or 10 per cent for the lower grades of coal.

(4) The Trent process carries the lumpy coal into the "clean" coal product whereas it is possible by froth flotation to carry the cleanest coal into a first concentrate and the boney coal can then be taken off in a second concentrate, which can be segregated, if desired. For this reason the froth-flotation process is the more flexible of the two.

(5) The Trent process has been operated successfully on material that has been ground to pass a 300-mesh screen, whereas froth flotation has been successfully used to date only on material ground to pass a 65-mesh screen, although good flotation work can be done on all sizes of coal but the "slime."

(6) The question of disposal of the concentrate is most important in considering the value of a process and though each process is now in use the field of usefulness of the two products is still largely to be determined; it is possible that the two processes could even be used to advantage to supplement each other.

(7) As at present developed froth flotation is competing with the coal-washing table for cleaning fine granular portions of coal, whereas the Trent process is in use for the more finely divided and slimed coal.

20,000,000 Tons of Byproduct Coke Produced During 1921

Byproduct coke and coke byproducts produced or sold during 1921 in the United States, according to final returns from all operators to the U. S. Geological Survey, amounted to almost 20,000,000 net tons, which was the Survey's earliest estimate of production for the year. Nearly 29,000,000 tons of bituminous coal was charged into the ovens for making this coke, and there was produced from this coal also 1,800,000 net tons of screenings or breeze.

Some of the salient figures for this industry are given by R. S. Moffatt in the following statement, which shows the extent of the development of the industry by the addition of new ovens and the present maximum capacity of the industry for the production of coke.

TABLE I—SALIENT FIGURES OF BYPRODUCT COKE INDUSTRY IN 1921

Ovens—	
Constructed (Jan. 1, 1921)	11,141
Now under construction during year	483
Under construction at end of year	85
Ovens capable of operating continuously at end of year—	
Daily capacity of coke	120,149
Annual capacity of coke	43,854,385
Coal charged into ovens—	
Quantity (net tons)	28,813,111
Average value per net ton	$4.82
Byproduct coke produced (net tons)	19,749,580
Average yield of coke from dry coal	68.5
Coke used for operating coke ovens	13,470,336
Breeze and fuel coke made—	
Quantity (net tons)	3,129,769
Average value per net ton	$7.47
Coke sold—	
Quantity (net tons)	3,678,811
Average value per net ton	$8.22
Breeze sold—	
Quantity (net tons)	1,831,110
Used in producer-run ovens	1,472,810
Sold (net tons)	295,867
Average value per net ton	$2.10

Statistics for each state regarding coal charged, byproduct coke produced, screenings or breeze produced, and the value and value of sales during the year are given in Table II. More than half the coke produced is used by furnaces with ovens as a part of steel or pig-iron plants. Nearly all the coke produced in these plants is used by the producers and is therefore not reported in these tables as sold. The difference between production and sales thus is very large. A considerable part of this difference also was lost, but probably not over 10 to 15 per cent of the output.

Table III is a summary of the production, sale and value of all the important byproducts from coke-oven operations during the year 1921. The quantities of these byproducts were somewhat greater than reported probably from the quantity of coke reported to the Survey currently during 1921, and some of the gas used for heating the coke ovens must therefore a little below the final figures here given.

TABLE II—BYPRODUCT COKE INDUSTRY, BY STATES, IN 1921

State	Coal Charged Into By-product Ovens Net Tons	By-product Coke Produced Net Tons	Screenings Or Breeze Produced at Byproduct Ovens Net Tons	Total Sales of Byproduct Coke and Breeze Net Tons	Value
Alabama	3,476,923	2,401,127	155,568	363,705	$1,935,499
Colorado	417,112	286,755	23,492	18,137	155,071
Illinois	1,952,358	1,322,178	123,061	565,390	5,176,513
Indiana	4,342,467	3,091,263	254,056	228,950	1,865,325
Kentucky	257,854	185,383	10,066	194,010	1,096,192
Maryland	395,526	292,439	19,034	103,110	853,691
Massachusetts	399,935	294,059	23,984	304,214	(a)
Michigan	1,203,524	777,125	58,848	548,920	4,704,141
Minnesota	630,173	435,866	42,329	138,144	1,451,830
New Jersey	1,064,960	739,768	60,621	447,391	(a)
New York	1,098,014	746,916	54,868	385,476	3,108,392
Ohio	4,375,992	2,966,273	327,672	529,799	2,590,988
Pennsylvania	7,865,395	5,303,371	587,287	800,999	4,770,319
Tennessee	79,911	57,723	958	32,538	173,340
Washington	43,570	23,765	6,594	704	4,928
West Virginia	277,345	188,355	15,578	68,204	308,513
Missouri					
Rhode Island	932,052	637,214	67,094	485,796	b10,954,307
Wisconsin					
	28,813,111	19,749,580	1,831,110	5,215,487	$39,149,049

a Included with combined states. b Includes values for states entered as "a" above.

TABLE III—BYPRODUCTS FROM COKE-OVEN OPERATIONS IN 1921

Product	Unit	Production	Sales Quantity	Sales Value	Sales Average Value
Tar	Gallons	253,051,649	135,293,647	$5,645,309	$0.042
Ammonia:					
Sulphate	Lb.	528,638,763	530,641,716	$13,100,703	$0.025
Anhydrous or free Ammonia (NH_3)	Lb.	31,899,398	35,102,561	3,515,416	.100
Other forms (NH_3) contents	Lb.	191,162	53,993	10,135	.186
				16,626,254	
Sulphate equivalent of all forms	Lb.	657,001,003	670,667,932		
Gas:					
Used under boilers, etc.	M cu ft	a310,188,713	12,122,777	1,120,087	.092
Used in steel or affiliated plant	M cu ft	a310,188,713	98,352,049	10,593,204	.108
Distributed through city mains	M cu ft	a310,188,713	43,826,172	14,249,961	.325
			154,300,998	25,963,252	.168
Light oil and derivatives:					
Crude light oil	Gallons	876,917,269	2,433,078	240,111	.099
Refined Crude	Gallons	1,494,329	1,536,312	343,463	.224
Refined	Gallons	4,912,131	5,302,709	1,268,258	.239
Motor fuel (or motor benzol)	Gallons	48,052,882	50,022,573	8,966,686	.179
Toluol Crude	Gallons	26,529	26,529	4,410	.166
Refined	Gallons	942,982	802,964	228,968	.283
Solvent naphtha	Gallons	3,822,776	2,881,656	510,509	.177
Other constituents and products	Gallons	590,173	291,635	12,310	.042
		c60,998,737	63,303,456	11,574,715	
Naphthalene: Crude	Lb.	2,827,756	1,652,466	40,659	.025
Refined	Lb.	115,229	331,057	18,676	.056
		2,942,985	1,983,523	59,335	.030
Other products				121,813	
Value of all byproducts sold					$59,990,678

a Including gas wasted and gas used for heating retorts.
b Of this amount 75,760,334 gallons were refined on the premises to make the finished products listed.
c Includes quantity of crude light oil refined on premises.



Converting Half Time to Full Time by Coal Storage

Safe to Start Operation Without Even Promise of Cars—Steady Work Improves Morale and Makes It Easy to Get Best Men—Cost of Stocking Less Than Four Cents per Ton Mined

By W. R. Peck*
Coal Creek, Tenn

THE Black Diamond Collieries, of Coal Creek, Tenn., first started to store coal at their mines in 1918, during the war period. The plan used that year was not satisfactory, and in 1919 another plan was tried, a pit being used in which the coal was dumped and a derrick with a bucket to handle the coal from pit to storage. This method had such limited possibilities that it could be used only on those days when the mines were supplied with only a part of the cars needed—that is, if the mines had cars to run six hours, the storage would take care of the rest of the day or of the two hours at the end of the run. Due to the limited storage space afforded by the derrick, a locomotive crane was soon purchased, and in 1920 the yard was laid out as shown on page 917 and put into successful operation.

The equipment for the yard at present consists of a 35-ton locomotive, one 12-ton Industrial crane, one 20-ton Orton & Steinbrenner crane and four 24-yd. dump cars. These latter can be made to dump on either side, and are discharged into the pits. The coal is handled from these pits by cranes. The cranes are operated in many ways, as the yard is arranged so that both can work from either pit *A* or *B* at the same time, or so that one crane can work from one pit and the other crane from the other pit, or so that one crane will handle coal from the pit and the other crane will handle it to the back side of the storage yard. Each evening after the run is over, the cranes clean out the pits and, if necessary, work overtime by transferring coal so that there will be plenty of available storage space close to pits for the next day's work.

When the car supply is short, the railroad cars are used for the shipment of the larger sizes of coal and the steam sizes are sent to the storage yard. It has been found that the locomotive cranes will handle about a third more of the steam sizes than they will of run-of-mine coal in the course of a day, for with the former the buckets can pick up their maximum capacity, whereas in handling run-of-mine, lumps often get between the jaws of the bucket and cause the fine coal to spill. Another reason for storing steam coal is that when run-of-mine is stored, the handling of it more reduces it so that it can be sold only for boiler use, whereas the handling of the steam coal has little effect on its size.

Due to the lack of market, these mines operated only 35 days in the first ten months of 1921, but they resumed operations in November, 1921, on reduced wages and operated three to four days per week until May 1, 1922. From that date until the present time they have operated six days per week, with a car supply averaging for that period only 50 per cent; this six-day week's operation is due entirely to the storage pool.

Regardless of the many other evils that exist in the production of coal, the one great evil that always confronts the operator and the miner is that of "No railroad cars." The Fact-Finding Commission now in session should give careful consideration to the short-

*Engineer, Black Diamond Collieries.



SLOW REPORT BUT WORK WITH NOT A CAR IN SIGHT

age of transportation equipment, its direct effect upon the price which the public has to pay for coal and the heavy losses that it causes the mine operator and the mine laborer. The recent coal and rail strikes have emphasized this fact.

On page 817 appears a chart prepared for the month of October, 1922, to show the effect on the mines of the short car supply and how by the aid of the storage yard they were able to operate six days per week with only 60 per cent of their full-car spots. In this, the Coal Creek field for some time past the railroad agent has been unable until the early morning to advise the mines how many, if any, cars they will receive for the day's loading. In many instances the agent has stated that no empty cars will be available, and in less than an hour's time has advised that the engine is on the road with several empties.

Where no storage yard is provided a report of "No cars" will cause the officials to keep the mines closed on that day, even though the railroad agent may be able to announce, after he has called the second time, that empties will be forthcoming. This is the one important advantage of a storage yard, for if you will refer to the chart you will see that out of the 26 work days in that month, on only nine days were there sufficient empties on hand before work time, 7 o'clock, to start the mines. On six of the other days the railroad was not able to place cars until after 11 o'clock. Do you think that the miner would have waited in his working place for the first empty mine car until 11 a.m. or that the shiftman would have remained at his post without pay to go to work at that time? But with the coal going to storage the mines were ready to commence to load railroad empties even when the railroad had to deliver the pieces of them until 2 p.m. In some instances the train crew that delivered the empties have taken away loaded as many as seven of those same cars. This was due to the fact that the miner was loading coal, that the shiftman was at his post and that the storage yard could at once change from the operation of receiving coal to that of loading it into railroad cars.

A storage yard of this kind at the mine is a benefit to the operator and miner. It is an assistance to the railroad company upon whose line it is located, and it is indirectly an aid to the public. Its advantage to the operator is self-evident, for by giving practically continuous operation it materially reduces his costs of operation, maintenance and overhead; it aids the miner by assuring him of regular employment, and these mines have found that this advantage to the mine worker is a benefit to the operator also in that steady employment attracts the best laborers—the men who want to work six days per week, and who save their money, the laboring men that can go to the pay window with a smile and be greeted with a smile, for most operators now realize that the man who draws good pay and saves it is by far the best workman. The storage is an aid to the railroad and to the public in that no matter how late empties are placed, they can be loaded out that day, thus giving a quick turnover of the empty cars.

In the month of October these two mines, for they are small operations compared with the big producing mines of the North, produced a total of 25,990 tons of coal; 21,258 tons was shipped, 7,836 tons was placed in storage, and 3,998 tons was loaded out of storage and shipped. In fact the 11,834 tons of coal was handled by one of the two cranes. This tonnage was handled at a cost of 0.063c. per ton, including the cost of operating and maintaining the locomotive, the "six spot," which of course paid its way in the handling of railroad cars alone, as you can see from the chart that it placed empties by going to the "Y" after them instead of waiting until the railroad crew finished other switching and was able to place them. The storage-yard cost on the whole mine tonnage was 0.037c. per ton.

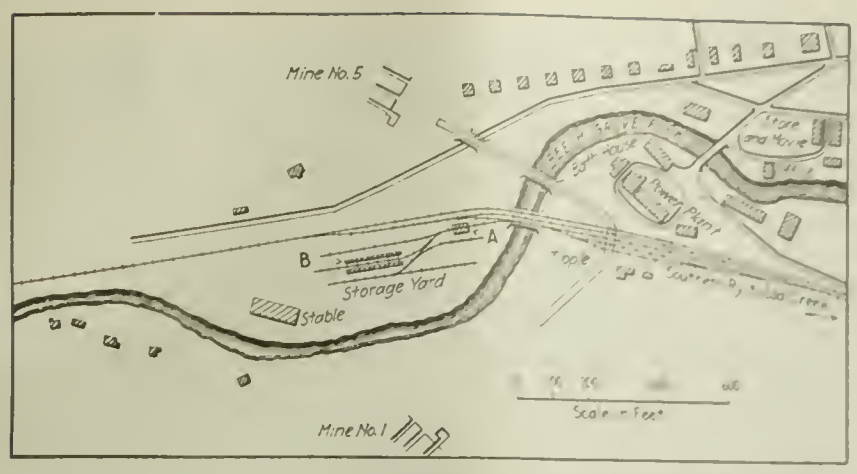
The cost of the installation of this storage was, in round numbers, $10,000 for pits, railroad tracks and the experiment with the derrick. The pits are concrete, *A* being 44 ft. long, 22 ft. wide and 8 ft. deep, with a trestle so that railroad hopper-bottom cars may be dumped if necessary, whereas the two pits at *B*, one on each side of the track, are 120 ft. long, 10 to 12 ft. wide and on an average 4 ft. deep. Concrete retaining walls hold the track between these pits.

Fortunately this coal has so far shown no signs of heating. Thermometers are kept in the stockpile at all times and are read at regular intervals; the coal



WITH A PILE LIKE THIS ON HAND THE RAILROAD NEVER PLACES A SINGLE CAR IN VAIN

Any slack car which is not filled out under the tipple can have its quota completed at the slack pile and so can be billed out and if cars are put in so late that they cannot be loaded that day from the mine, the slack pile is handy and the railroad may be sure of its quota.



PLAN OF VILLAGE, OPENINGS AND TIPPLE YARD

A and *B* are the pits into which the coal is dumped for transference to the storage piles. Pit *A* measures 22 x 44 ft. in horizontal dimensions and is 8 ft. deep. The pits marked *B* are on either side of the track and measure in plan 10 or 12 ft. by 120 ft.

is piled to a maximum depth of 30 ft., and the highest temperature so far recorded has been 96 deg. F. On Oct. 31 27,000 tons of coal was in stock, with room for approximately 13,000 more tons, for the yard has a maximum capacity of 40,000 tons.

Relies on Experience, Despite Car Shortage

Some may wonder how this company expects to dispose of this storage coal without loss with the present railroad car supply, which, in fact, seems to be getting worse instead of better. This company is relying on its past experience, for on Dec. 1, 1920, this yard had 13,000 tons of coal, and on Dec. 24 it was bare, ready for the shutdown of Jan. 1, 1921. This coal was moved at a good profit. What has happened in the past is quite likely to occur again. In this connection it may be said that for accounting purposes this coal is credited to the mines as if it was sold at the cost of production and storage, and when moved a loading charge is deducted from the selling price.

Of course all mines do not have ground available that can be used for the storing of coal, but where it is possible to put in a storage yard with equipment that can handle the mine or mines at their full capacity for a day's running time, it is a paying investment, even if the coal is finally moved only at cost. The profit is in steady operation, in a better class of mine labor, in better satisfied men and in a good organization that will hold together for the better times ahead.

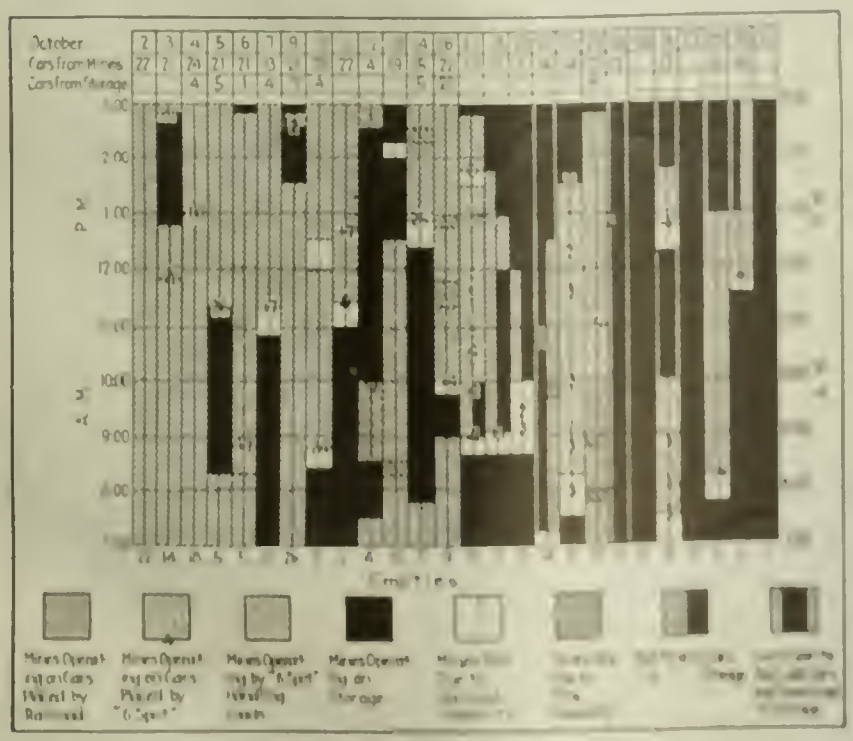


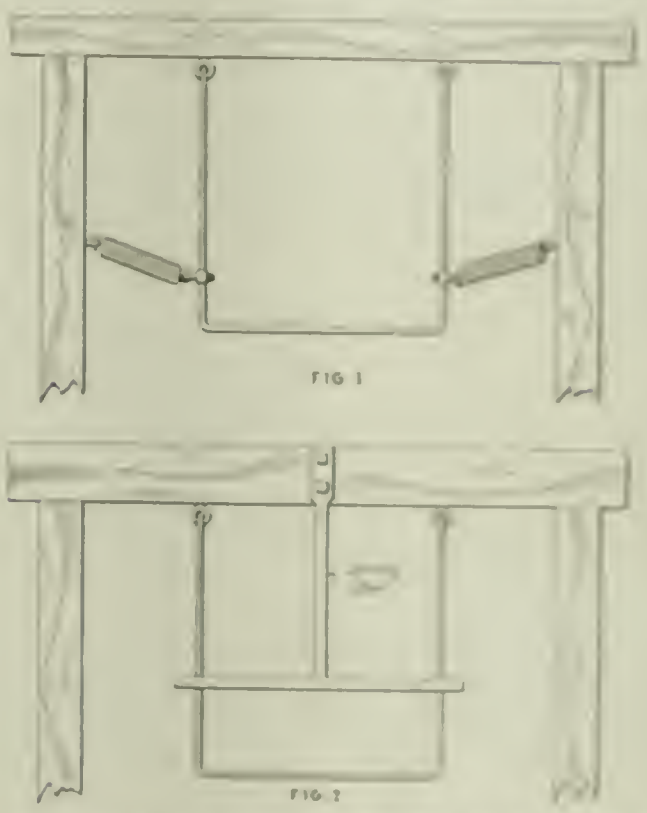
CHART OF OPERATION FOR OCTOBER, 1922

"Six-spot" is the locomotive of the coal company which assisted in keeping the mine in operation. It will be noted that only on nine days in the month were sufficient cars on hand to start the mines.

Springs Steady Gate Hooks of Horn Dump

By Cecil Rowe
Tokay, N. B.

Sometimes when using horn dumps the lugs of the endgate of the car fail to engage in the stirrup, or lifting hook, allowing the car to tip over without the endgate being opened. When the cars used are large and the material to be dumped is heavy, the contents come against the door with much force and several men are required to pry it open. In consequence much time is lost at the tipple. To overcome this difficulty two devices have been used. In *Fig. 1* the pawl to engage with the end lugs of the door was held from swinging by placing a helical spring on either side as indicated. In Fig. 2, which was for a different style of car, the stirrup was held in place by a piece of spring steel securely fastened to the top timber by bolts.



GATE HOOKS THAT DON'T SWING OUT OF PLACE

The upper gate hook has a longer term of service than that below, the long steel spring soon losing its resiliency

The device shown in Fig. 1 was found to be much more satisfactory than that shown in Fig. 2, for the helical springs stood the shock of dumping much better and for a long time continued to return the stirrup to its normal position. The spring steel shown in Fig. 2, soon became distorted, making a frequent change of that part necessary.

*Mining engineer, E. H. Rowe and Son.

Legislation Embodying the Administration's plan for the reorganization of the government's executive machinery probably will be introduced during the December session of Congress. If the draft of the bill cannot be perfected in time to insure action during a session which necessarily must be devoted largely to appropriation bills, it will be taken up at an extra session which it is believed will be called next spring. It is understood that the administration bill will not provide for a Department of Public Works. There will be a grouping, however, of public works activities under an assistant secretary.

How to Make Stubborn Pumps Pick Up Water

By James Wall, Sr.

IN MANY mining districts of the United States are small and comparatively wet mines that cannot or think it unnecessary to afford a complete mechanical department. In these the pump tender is held more or less responsible for the successful operation of the pump or pumps under his charge.

Nothing perhaps causes as much annoyance in the operation of gathering pumps as a failure to advance them as the workings extend. In consequence the tail pipes soon become excessively long. Furthermore, in pumping from working places no foot valve is used, because it is necessary to run the pump on air for some time in order to insure that the plant be thoroughly dried. A stop valve is used, however, in each suction line.

In order to operate gathering pumps successfully under the condition mentioned and yet run the pump until the limit of suction is reached, no better method probably can be devised than to connect the water cylinder and tail pipes with the permanent spraying system by small pipes having stop valves. The pump and tail pipes usually can then be primed at any time, and to insure that the pump will not "lose its water," also to prevent injury to the packing in case the pump is allowed to run on air for a long time, a stream of water can be allowed to enter the pump continually from the spray line or the discharge line, and the suction line can be connected by a small bypass with a stop valve.

But it sometimes happens that no provision is made for priming the pump and keeping it primed, and the pumper is then put to his wits' end to get the pump to "pick up its water." If the pump valves and packing are in doubtful condition they should be tended. They may need scraping and greasing or turning over. This attention may help much to make them seat properly.

Use Short Siphon for Priming Pump

When it is known that the pump is in good condition and that the only disadvantage under which it is laboring is the length of suction line, the latter may sometimes be nearly filled by siphoning from a suction nozzle near the pump. The pump draws water through this nozzle and is stopped as soon as the tail pipes are filled almost to the level of the water supplying this nozzle.

Another way of helping the pump to get into effective action consists in allowing the nozzle of a suction line, where it is long, to get water and air alternately at short intervals until the pump "catches" and "holds" the water. The principle used probably is that of the air lift; the atmospheric pressure is able to support a higher column made up of air and water than if only water were allowed to enter the suction column. The nozzle should be so arranged that it can always be lifted above the water; large nozzles attached to rigid pipes should have a chain attached; the latter should be carried over a pulley and a swivel joint used in the pipe line so that the nozzle can be lifted for inspection or as necessary.

The pump works on the principle that the difference of pressure between that end of the water cylinder that is connected with the suction and the outside atmosphere, forces water through the suction line and into the pump. In common pumping practice this pressure is applied gradually as the water cylinder, valve chambers and suction pipes become depleted of air by exhaustion; but by *suddenly* applying this difference of pressure, wonderful results are obtained in overcoming the obstinacy of pumps to the "picking up of water."

Some station pumps that are provided with large sumps are shut down during week-ends and if the pumper is not careful to make the last run on clear water and shut down before the pump gets on air, he is likely to have much trouble on Monday morning.

I remember being called to assist in priming a large triplex plunger pump that had been closed down during a weekend and had lost all water both in the suction line and the discharge column; the valves were dried out and warped, and a crew of men had to carry water from the sump 100 ft. distant for two hours before this pump could be made to do its duty, although it had only 100 ft. of tail pipe and a 4-ft. lift.

Some of the mine officials were much concerned, as this trouble seemed likely to occur weekly. The assistant superintendent accidentally hit on the plan of applying the atmospheric pressure suddenly, as just stated, and the results have been most gratifying. I have tried the kink myself on many occasions. Even when the pump had been operated by ordinary methods without success until the water cylinders became warm and so long that any mechanic would have pronounced the attempt hopeless, this method never failed provided the pump valves and packing were in good order.

The method, which is as follows, requires a valve in the suction line close to the pump: Start the pump with the valve on the suction line open. Allow the pump to run until little air is being discharged from the waste or starting pipes. Then close the valve on the suction line and allow the pump to run from 5 to 10 minutes longer. That period over, open the valve on the suction line very quickly, then watch the water come. I tried this method also on a large 10x18-in. triplex plunger pump with 400 ft. of tail pipe, an 11-ft. lift and no priming water. The pump had a reputation for obstinacy but it was pumping water 15 minutes after starting and the pump mentioned earlier as causing so much trouble can at any time after a weekend shutdown be made to operate successfully without priming in from 15 to 20 minutes.

IN THE GENERAL STUDY of the heat of distillation of coal, being conducted at the Pittsburgh (Pa.) Experiment Station of the U. S. Bureau of Mines, the problem of the effect of the inert atmosphere in which the distillations are conducted has been studied. In a series of special tests, atmospheres other than nitrogen and hydrogen were tested. Illinois coal which gave 60 c.c. of gas and an exothermic reaction of 22.5 cal. at 600 deg., in nitrogen, gave, in hydrogen, an endothermic reaction of 12 cal. with gas absorption amounting to 60 c.c. All other coals of the series gave gas evolution in nitrogen and gas absorption in hydrogen. This means that the net reaction heat during distillation is dependent on the partial pressure of hydrogen in the reaction products. This heat effect with hydrogen is regarded as the most important development of the whole research.

IN THE COURSE OF TESTS made at Pittsburgh, Pa., by the U. S. Bureau of Mines, lignite char has been found to burn to a gas containing a higher proportion of carbon-monoxide than that from coke. To determine if this relatively high carbon-monoxide content with lignite char is to be attributed to the smaller size of the char, coke of the same size as the char will be burned on the next tests.

Safety Precautions at Dolomite Prevented Explosion From Killing All the Men in That Mine

Blast Took Place in Intake Airway and Burned Tipple Roof a Long Way from Mine, Yet Spread Over Only a Limited Area of the Workings, Thanks to Safety Provisions

BY H. S. GEISMER*
Birmingham, Ala.

A LOCAL dust explosion caused by three cars running wild down an 880-ft. 30-deg. slope resulted in the death of ninety persons and the injury of fifty-five more at Dolomite No. 3 mine of the Woodward Iron Co., near Birmingham, Ala., Nov. 22, 1922. The coal seam which the mine develops is flat but it is approached by a steep slope which serves as an air intake and double-track haulageway to the outside. The trip of cars broke loose at the tipple—a revolving dump handling the cars without uncoupling—and ran back into the mine the full 880 ft. without jumping the track. The gathering sidetrack is about 500 ft. from the foot of the slope. One of the cars ran into the loaded cars standing at this sidetrack, the rest of the cars being scattered along the empty track and badly shattered in consequence.

The explosion occurred almost at the foot of the slope and must have been caused by a cloud of dust stirred up by the runaway cars. The dust was ignited either by a flash caused by the cars coming in contact with a 3,300-volt feeder cable suspended along the side of the slope or else by a flame from the 250-volt trolley wire that the wrecked cars pulled down from its supports. At times the mine generates a little gas in its advanced workings but none could have been present at the point of the explosion, as it is directly in the intake current, where 60,000 cu.ft. of fresh air enters the mine. The explosion traveled back up the slope, coming out of the mine mouth and setting fire to the timber work on top of the tipple. It also traveled into the mine along the main haulageway a distance not to exceed 1,000 ft. To the right of the main haulageway a few brattices were destroyed and to the left of that roadway the explosive force traveled several hundred feet.

The lead-covered feeder cable from the outside is carried down along the side of the slope to a substation a few hundred feet inside of the foot of the slope. Most of the machinery in this substation was damaged by the explosion and the mine fan at No. 2 airshaft, which ventilates this mine, was shut down when the current went off. This fan is equipped with an auxiliary gasoline engine and within three minutes after the explosion the fan resumed operation, and ventilation throughout the mine was immediately established except in a restricted area where the brattices were destroyed.

The explosion occurred about 3 p.m. and by midnight all the bodies had been recovered and the mine was in practically normal condition.

Of the ninety killed, probably about two-thirds met death instantly, the others being killed by afterdamp. Every inside foreman, including the master mechanic, the motor inspector and the section foreman, lost his life. Four hundred and seventy-five men were in the mine at the time of the explosion and the loss of life from afterdamp would undoubtedly have been much higher but for the number of exits that the mine contains.

The seam was originally opened forty-two years ago with No. 1 slope; this was later followed with No. 2 slope and the workings were connected. Later No. 2 airshaft was sunk to reduce the air travel, and this was followed a few years ago with No. 3 rock slope, where the explosion occurred. The connected workings extend several miles along the outcrop of the seam and have penetrated about four miles at right angles to the outcrop.

In all the forty-two years of operation no explosions have occurred. Open lights are used by the miners and electric haulage equipment and mining machines are installed throughout. Gas occasionally is encountered

*Kelser-Geismer Engineering Co.

Tipple After Explosion

Flame from the mine burned down the roof of the tipple and the water tank. Nothing was more remarkable in this explosion than the way the lambent flames from the slope traveled up the surface incline, licking up everything inflammable in their path





FOUR-IN-TRACK ROCK SLOPE INTO MINE

A coal mine has heavy 24-lb. rails that the locomotive cars support, using open wires, the short-circuit from which were no live at under the load caused by the rapid movement of the cars.

in some of the advanced workings but never in troublesome quantities.

The coal mined is of the Pratt Seam and has the following analysis: Fixed carbon, 60 per cent; volatile matter, 30 per cent, and ash, 6 per cent.

That four cars traveling approximately 1,000 ft. down a 7x15-ft. slope cut through solid rock could raise enough dust to cause such an explosion is almost inconceivable, but that apparently is what happened. The Woodward Iron Co. had gone to much expense to make the mine safe. It has a special safety department to report on the condition of its haulageways.

The state mine inspectors have always reported favorably on this mine. Thus in the 1920 report E. E. Echols, the inspector of the First District, says: "Dolomite No. 3 . . . is ventilated by a large Capell fan at the airshaft about two miles from the mouth of the mine. This fan is the same as that mentioned in describing No. 1. It is electrically driven. This mine has another large Capell fan, gas-driven, stationed there for an emergency. Furthermore, a steam-driven 6-ft. Sirocco fan has been installed at the mouth of the mine for emergency use. . . . The mine is kept wet with sprays and hose. Much work has been done in this mine during the past year to improve ventilation. New and larger pipe lines have been laid for sprinkling purposes."

The report also says: "The mine has good tracks and they are kept clear." Dumped as they are on a rotary dump, the cars do not require doors and so do not spread coal along the tracks. Furthermore, there are no large cracks in them through which coal can leak to be scattered along the haulageway.

Dolomite mines are within four miles of Ensley and Bessemer and not more than twelve miles from Birmingham, which accounts for the large crowds that were on hand within a few hours after the explosion. Before nightfall all the roads leading to the mines were blocked with automobiles, and a company of the Alabama National Guard, assisted by deputy sheriffs, was needed to hold back the sightseers and the anxious friends of those inside. All the officials of the Woodward Iron Co., from President Frank H. Crockard down, were on hand and remained until every man in the mine had been accounted for. They were tendered the assistance of more trained rescue men than they could use. This is the first large explosion that has occurred since the Alabama Workmen's Compensation Act of 1919 went into effect.



ANOTHER VIEW OF THE DOLOMITE TUNNEL

This mine runs nearly on the dip, but rails of which the rest is flattened somewhat approaching the mine entrance. The cars at the mine mouth are dumped and by gravity roll down the slope, where they are regularly hauled to the surface, and then returned.

Large Trolley Wheel for Heavy Current

RECENT tendencies in mine-haulage practice are toward the use of larger and larger locomotives which can handle correspondingly heavy trips. This, of course, means heavier currents to be collected from the trolley line, and to meet this conditon the Ohio Brass Co., of Mansfield, Ohio, has brought out a 6-inch trolley wheel and a 6-inch harp.



SELF-ALIGNING TROLLEY HARP FOR BIG LOCOMOTIVES

Graphite bushing with grease-filled reservoir makes the trolley wheel revolve readily. Current is collected through phosphor-bronze contact springs.

The wheel is made of bronze and has a graphite bushing. Around the bushing is a reservoir filled with grease at the factory. The harp collects the current from the wheel through phosphor-bronze contact springs. The pivot is set forward of the axle so that the harp trails freely.

A self-aligning harp made in both the 4- and 6-inch sizes has also been developed and placed on the market. A spring brings the fork casting into line with the pole head when the wheel is not on the wire. This simplifies the task of replacing the wheel in case of dewirements and also enables the harp to operate especially well through frogs and crossings which are in many instances the cause of much annoyance to the motorman.



Problems of Operating Men

Edited by James T. Beard



Humidifying Air Currents in Mines in Utah

The Utah Mining Law and State Industrial Commission —Efforts to Reduce Danger of Mine Disasters— Requirements of the State Mining Law in Regard to Dust

IN conversation with a friend, a short time since, mention was made of the progressive character of the mining law of Utah. The law was described as being particularly enlightening and containing stringent measures designed to make mine disasters less frequent, if not impossible. In that connection, allusion was made to the efforts of the State Industrial Commission.

A little later, being interested in the subject of humidifying mine air, as recently discussed in *Coal Age*, I looked up the Utah regulations pertaining to the wetting of mines in that state. In the revised statute of 1898, I found (Sec. 1516) the following reference to the question of watering:

> Water system: Every owner, agent, manager or lessee of mines within the State of Utah, shall provide and maintain a water system for the purpose of conducting water to the face of each and every working place and throughout the entire open part of the mine, in sufficient quantities for sprinkling purposes to wet down the dust that shall arise and accumulate in and around the mine: provided that in mines or parts of mines where, by reason of the natural wet condition or the moisture derived from the introduction of steam into the air current or both, such sprinkling may not be necessary. And it shall be the duty of the superintendent, mine foreman and inspector to see to it that this is done.

In addition to this, I found that the Industrial Commission had issued certain "safety orders." After drawing attention to the requirements of the state law contained in the section just given, the circular of the commission continues as follows:

> It is further ordered that when and if requested by the mine operator, mine superintendent or foreman, or when conditions warrant, by the Industrial Commission, the water system shall be so arranged and a hose of sufficient length provided, for each working place or pair of working places so that the miners can keep their own working places wet for a distance of at least 50 ft. back from the face. Also, such hose shall be provided by the operators for each and every miner who may make request therefor.
>
> It is further stated that, "when the miner has requested the hose, it is his duty to keep his place wet." Further, "anyone who, without authority, removes or willfully damages any part of a sprinkling system, violates the law creating the Industrial commission."

Not long ago, in an address describing the mining of coal in Utah, Chief Engineer, A. C. Watts, of the Utah Fuel Co., spoke as follows:

"Not the least among mine-safety precautions are the electric shotfiring systems, used in many of our mines, and the sprinkling system. Both of these systems were used by the Utah Fuel Co., as far back as 1889, or 1890, in its Castle Gate mine. At that time, the officials of the company became convinced that coal dust would explode without the presence of gas. In order to eliminate the frequency of local dust explosions, the management caused all shots to be fired from the outside, by electricity.

Installation of Water System and Sprinklers for Wetting Dust

"As a further precaution, a complete water system was installed in the mine and sprinklers were employed to thoroughly wet down the dust. The intake air was also humidified by means of an atomizer, using steam to atomize the water. Later, a state law was enacted making sprinkling compulsory in all mines not naturally wet. In complying with this law, the common practice is to use hose, short lengths of which are attached to the pipe system or other source of supply.

"It is the custom in all our mines to flatten the end of the hose with a stiff wire, so that the water issues in a thin wide spray. In this manner, the sides, roof and floor of all roads and passageways are thoroughly wet down and kept wet. Our company has adopted the plan of running the water pipes up each room and supplying the miners with hose, 20 or 25 ft. long, which are kept attached to the ends of the pipe line. Each miner is required to keep the cuttings and dust in his place thoroughly wet.

Watermen Employed to Sprinkle All Working Places

"In one of our mines, the men are required to sprinkle every two hours. The machine cuttings are carefully piled up, wet down and loaded out in special cars. When these cuttings do not make a full car, mine-run coal is added to top off. The sprinkling of the rooms is not left entirely in the hands of the miners, but regular sprinklers or watermen are employed to wet down the rooms, also. It is customary to wet the cuttings of mining machines while the latter are in operation.

"Only the other day, I was asked how much water was needed to make the mine safe? Now, I will not claim that this wetting can make a mine absolutely 'safe'; for that word must be used conditionally. However, after some figuring, I estimated that we require one gallon of water to every 21 sq. ft. of surface, three times a week, in order to keep the dust in a wet condition.

"We consider that the dust is wet down when it will ball up, on being squeezed moderately in the hand, and will show the imprint of the fingers. Some of the mines make enough water, in certain sections, to sprinkle other sections that are dry; and the necessary connections are then made to utilize the inside pumps. In all cases, however, connections are maintained with the outside pumps, so that, in case of fire, it will not be necessary to depend wholly on an inside pump, which might not be available at the time. Many mines turn exhaust or live steam into the intake during the night."

It has occurred to me that these remarks and references to humidification in the mines of Utah would be of interest to *Coal Age* readers, in connection with the discussion to which I have referred.

CHARLES M. SCHWAB

Denver, Colo.

Underground Official Positions

Responsibilities of mine superintendents and foremen—Dangers to which firebosses are daily exposed make them among the most important

WHEN writing on the subject of "Where Coal Mining Practice Could Be Materially Improved," William Allan has drawn attention to several points where improvement is possible, both in practice and equipment.

At the close of his article, Mr. Allan has incidentally called attention to a question that must interest all firebosses. The question is suggested by the offering of a prize, by a large coal mining company in England, for the best answer to the question, "What is the most important job on the colliery?"

Now, every mine official has his own particular part to play and his own work to perform to insure the safe and economical operation of the mine, which will make the undertaking profitable to the owner. It is very possible that each of the officials of a large company may consider his job of the most importance.

With regard to the underground officials, including the mine superintendent, foremen and firebosses, it must be acknowledged that the superintendent is the responsible head, who must account to the owner or operator for every transaction in the mine.

Self Interest Is Chief Bar to Active Co-operation

Gaining co-operation of employees—Self interest the dominant factor—Duties optional in proportion as this principle is recognized.

MANY suggestions have been made, from time to time, by writers in *Coal Age*, in regard to different methods of securing the co-operation of employees, in efforts to make the business more profitable. It has been urged that much mutual benefit can be derived by mine officials meeting their men regularly for the purpose of discussing subjects pertaining to their work.

The aim in such meetings would be to establish familiar social relations between the officers and men. Most thinking men recognize that many suggestions of practical utility and value can be obtained through an open discussion of the problems that daily arise in their mines. It is generally admitted that this social intercourse will produce kindly feelings and result in the active co-operation of every worker.

Enlisting Men's Interest

In order to succeed along these lines, however, the first essential is to enlist the interest of the men. An interest once aroused goes a long way toward securing their hearty co-operation in the performance of each one's part in the work. Otherwise, efforts in this direction will fail, as has been proved time and again in similar undertakings.

It will be generally admitted that the interest of any class of industrial workers depends primarily on the amount of remuneration received for the work performed. On the other hand, the chief interest of the employer lies in the profits derived from the business. In each case, it is evident that individual, selfish interest is the dominant factor, and forms the basis for the antagonism that so largely prevails between employers and their employees.

Now, the common acceptation of any industrial enterprise is that it is the indisputable property of those who have invested their money in the undertaking. The paid employee, whether working on a wage or salary basis, is considered merely as an auxiliary factor whose interest begins and ends with the remuneration he receives for his services.

Wages and Profits of Business Diametrically Opposed

But, without calling into question the truth of this acceptation, it is quite evident that such a doctrine absolutely debars the worker from manifesting the same interest in the economic welfare of the industry as those having a definite monetary interest, the two factors being diametrically opposed, makes a clash on this basis almost inevitable.

A broader acceptation of industrial economics, however, has demonstrated that greater material benefit results, both to the industry and the community it serves, when the conservation of the energy of the worker is desired. This knowledge has given rise to much judicious welfare work on the part of large employers of labor.

Nevertheless, however beneficient these efforts may be, they fall far short of engendering any permanent personal interest in the daily operation in which one is employed as a factor. Too often, the welfare work of large companies is regarded, by their men, as a matter of policy rather than one of principle, and a harmful suspicion lurks in the mind and renders these efforts abortive.

Old Relations Giving Place to New Assures Industrial Peace

The present industrial crisis demonstrates clearly that the old principles of relationship of employer to employee must give place to one of mutual dependence, before any permanent industrial peace can be assured. The assumed independence of capital and dependence of labor is not in keeping with the principle of equal rights, which is the foundation of our government.

Briefly stated, success in industry depends on the hearty co-operation of every factor in the undertaking; and such co-operation cannot be secured without a mutual recognition of the individual rights of both parties. In its application to industry, this means that the financial success of an enterprise involves the financial betterment of every factor in the undertaking.

So deeply does the element of self interest enter every undertaking, that the problem of securing industrial peace must be approached at this point. Only in proportion as this principle is recognized will success crown our efforts to promote harmony and bring about peace and prosperity in business.

Every Worker Should Feel Himself Part of the Business

Every wage earner must certainly be aware of the fact that if the business in which he is employed is a financial success, he is assured steady employment. This knowledge should be a sufficient incentive to him to insure his hearty co-operation and efforts to make the undertaking profitable. It should make every worker feel and act as though the business was his own.

Much has been said about the application of the Golden Rule in business. I regret to say that, in the present and past history of industrial relations, the Golden Rule is recognized more in the breach than in its observance. Unfortunately, for industrial peace and prosperity, the moral sentiment of mankind is yet in its infancy.

Speaking of practical suggestions for improvement as coming from the men, it is well known that these suggestions are not always received in the spirit in which they are given. Many practical and industrial workers are reluctant to suggest a new plan or method of performing their work, fearing that this would be regarded as reflecting on the present management.

Too often, it must be acknowledged, that men who have expressed their honest and practical opinion, in all sincerity and good faith, have found themselves marked down by some one higher in office, who may fear their ascendancy in the scale of promotion.

On this account, it is not strange that many workers regard well meaning efforts on the part of the management as schemes to trap the credulous. The credulous are invariably a class comprising the most honest and industrious workers who have the best interest of the operation at heart and who would, if given opportunity, prove themselves progressive factors.

GLEN GLONN.

Washington, D. C.

America a Modern Utopia

The ideal in life the beacon light ahead—Ideals spur to action by which worth-while deeds are accomplished.

PRIMARILY, Bolshevism was reared in Russia, under the crude teaching of Lenine & Trotsky, and the transition that has taken place from the first upheaval till now is nothing short of remarkable. Shackled with corruption, oppression and brutality, the people, ground between the upper and nether millstone of monarchical austerity and political greed, groped for light in an effort to work out their own salvation.

The struggle has been that of a downtrodden people who had to grapple with a brutal and hostile world—hostile at least to their ideals—with which, at no far distant day, I believe the world must conjure.

It was not Lenine or Trotsky that caused this enormous upheaval. It was the ideal that shone as a beacon light at the end of the struggle. Washington and Lincoln, today, are not revered so much for what they did as for the ideals for which they strove. Every worth-while accomplishment is only made possible by the ideal that shines as a beacon ahead.

IDEALS THAT HAVE NEVER BEEN REALIZED IN ANY LAND

From the latter end of the fifteenth century when Sir Thomas More wrote his "Utopia," philosophers down through the ages have conceived ideals for which, like Sir Thomas, they have suffered martyrdom. But, the world is better today for those ideals.

Sir Thomas More's "Utopia" (Good Faith) describes an imaginary commonwealth that inhabited an island. The people lived in peace and harmony through the practice of their ideals. It was accounted piety to prefer the public good to one's private interest. To seek one's own welfare at the expense of another was unjust and a crime.

Can we hope that this picture of tranquil life is a foretaste of the future of this country? It must be admitted that our economic condition, at present, is not a happy one. It is rather a reflection on our boasted enlightenment. Hoarded wealth and absolute penury are next-door neighbors. On every hand, affluence and plenty are in sharp contrast with everlasting grind and want.

Reflecting on this present state of affairs we are led to ask ourselves, is this in keeping with our boasted ideals that "All men are created free and equal?" Communism, in the generally accepted meaning of the term, may be all wrong; but the ideal of human brotherhood and equal rights can never go wrong. Such ideals train men's minds to a higher plane of living and open to our view vistas of America as a modern Utopia.

While there are dishonest men in all phases of industrial activity, the vast majority of our fellows are honest and painstaking, while groping for the light of progress in their efforts to

"Make trade a Christian possibility,
And individual right no general wrong."

ALEXANDER BENNETT.

Panama, Ill.

Inquiries Of General Interest

Developing a Steeply Inclined Seam of Coal

Main slope driven three or four abreast, on the full dip of the seam—Gangways or levels turned right and left on the strike.

HAVING in hand the development of a steeply inclined seam of coal, varying in thickness from 8 to 10 ft., roof to floor, I am desirous of ascertaining the best plan to adopt, looking to the economical extraction of the coal and operation of the mine.

The inclination of the seam varies from 42 to 45 deg. from the horizontal. The topography of the ground is such that I could drive a 20-deg. slope, on the strike or end of the coal, and proceed with the development in that way, although the plan does not appeal to me as the best one to adopt when taking all into consideration. I want to ask, would it not be more economical to drive a double-compartment incline on the full dip of the seam and use cages or skips having a capacity of, say, two cars of coal? I should be pleased to have the friendly suggestion of *Coal Age* and its practical readers in regard to this problem.

R. E. RUSSELL.

Evanston, Wyo.

The meaning of this correspondent is not clear in respect to the proposition of driving what he terms a "20-deg. slope on the strike or end of the coal." This statement would seem to suggest that the seam outcrops or reaches the surface along a line having an inclination of about 20 deg.; and it is proposed to drive the main slope heading at some distance inside and parallel to this cropping.

Such an interpretation assumes that the term "strike" and the expression "end of the coal" are used by the correspondent in a general way. The strike of a seam being level, it would not be possible to drive a 20-deg. slope on the strike. Again, the expression "end of the coal" is generally used in reference to the butts or rise cleats of the coal.

The proposed driving of a 20-deg. slope, in the manner suggested, does not appeal to us as a practical proposition in the working of this seam. In general, the main heading, in the development of a highly inclined seam, should be a slope driven on the full dip of the seam. In a large development the main slope headings should be driven three or four abreast so as to provide separate return air-courses for each respective side of the mine, the center headings being made the main haulage road and intake.

To the right and left of these main slope headings, gangway levels are driven at such distances apart as will provide a suitable length for the chutes driven up the pitch from the gangways. The gangway levels are driven in pairs, one entry being the haulage road and the other the air-course and drainage level.

At the mouth of each level there must be arranged a landing where the cars can be run on to the platform of an incline cage operating in the main slope. The cage can be arranged to hold two cars at a time if desired. Some prefer self-dumping skips into which the cars are dumped at each landing and are not taken out of the mine. This, however, necessitates handling the coal twice and is not recommended if the coal is soft and easily broken.

Cost of Sinking Slope

Length of slope computed from the vertical fall on a given inclination—Calculating the amount of material excavated.

I HAVE been asked to compute the cost of sinking a slope 8 x 10 ft. in section. The slope is driven on a 25 per cent grade and has a total fall of 40 ft.; but the length of the slope is not given. Kindly explain how the cost of sinking this slope can be calculated.

the price being $1.40 per [illegible] of material excavated. [illegible]

Ruby, Ind.

The first step is to calculate the length of the slope, for the given fall and horizontal. Estimating from the horizontal, a 25 per cent grade means a rise of 25 ft. per 100 ft. of horizontal distance. To that case a fall of 40 ft. corresponds to a horizontal distance of 160 − 100) = 25 = 160 ft. The corresponding length of the slope is, (hypotenuse = $\sqrt{40^2 + 160^2}$ = 165 ft.

The sectional area of this slope is 5 × 16 = 80 sq.ft. The amount of material excavated is, therefore, (165 × 80) ÷ 27 = 488.9 cu.yd.

Finally, at a price of $1.40 per cu.yd., the total cost of the excavation is 1.40 × 488.9 = $684.44.

Examination Questions Answered

West Virginia Mine Foremen's and Firebosses' Examination, Charleston, 1922

(*Selected Questions*)

QUESTION—*Before giving employment to any person, what information would you require from said person seeking employment in your company?*

ANSWER—The man should state where he had been formerly employed and his reason for making a change. He should be able to give satisfactory references in regard to his character and ability as a miner. He should state his experience in coal mining and in what capacities and how long he had been employed. He should show that he has a knowledge of the mining laws of the state; that he can read and write English and is willing to be governed by the rules and regulations of the mine.

QUESTION—(a) *Explain some source where capital is tied up unnecessarily. (b) State how you would propose to lessen it in amount.*

ANSWER—(a) Capital invested in a mining proposition is unnecessarily tied up when the equipment secured is more than needed, or of a kind that is not adapted to the purpose in hand. This applies to all kinds of tools, machinery and supplies. Sometimes capital is tied up in the acquisition of land and other property that cannot be utilized for a long time to come.

(b) The mine foreman should not order supplies and equipment that he cannot put into immediate use. He should endeavor to dispose of such discarded equipment as may be salable and use what is serviceable where it will eventually be thrown on the scrap pile.

QUESTION—*What instructions would you give to all employees and what precautions would you take to guard against loss of life and damage to property, by reason of what fires in and about the mines?*

ANSWER—All employees should be made thoroughly acquainted with the mine rules and regulations, which must be strictly enforced. Any violations of the rules should be instantly punished. The proper precaution to be taken in respect to danger to life and property by reason of fire in or about the mine should be such as to afford reasonable protection against fire. These rules should relate to the use of open lights; the handling and storing of combustibles and explosives; and the amount of explosives that may be taken into the mine by each miner. There should be provided an efficient water supply and apparatus and appliances for fighting fires, both on the surface and in the mine. A sufficient number of reliable men should be drilled in the use of the apparatus and understand their duties if an alarm of fire is sounded. At such times, it would be the first duty of the mine foreman and his assistant to notify and withdraw all the men from the mine.

QUESTION—*Describe what system of ventilation and general supervision you would adopt in order to keep your mine in a safe condition.*

ANSWER—All ventilating apparatus must be kept in good condition and be capable of supplying the required amount of air in the mine. On entering the mine, the air current should be divided into two or more splits and distributed so as to give to each district or section of the mine a volume of air sufficient for its needs. Each air split should be made to sweep the working faces in such volume and velocity as to dilute, render harmless and carry away the gases that would otherwise accumulate in those places. Wherever necessary, brattices must be erected to conduct the air to the working face. All stoppings, doors and air bridges must be made tight to prevent the leakage of air through them.

QUESTION—*State in detail how you would conserve materials and supplies in and about a coal mine.*

ANSWER—In the first place, all supplies and material of every nature should be properly stored and accounted for. Each should be in charge of a reliable person and no material or supplies should be given out to men, except on the order of the mine foreman or an authorized assistant. All material and supplies should be inventoried as received and an account of stock should be taken each year to check the amount on hand. Again, the mine foreman and his assistant should see to it that no rails, track ties, timber and other material are thrown aside and left to be covered up in the waste. All such material should be gathered up and properly stored when not required for immediate use. When places are to be abandoned, the foreman and his assistant should see that all tracking and available timber are removed and sent to places where they can be used to advantage.

QUESTION—(a) *In an airway 14 × 6 ft., there is passing 63,000 cu.ft. of air per minute; what is the velocity of the air current per second?* (b) *This airway is 6,500 ft. long; what is the rubbing surface?*

ANSWER—(a) The sectional area of this airway is 6 × 14 = 84 sq.ft. The quantity of air passing is, therefore, 63,000 ÷ 60 = 1,050 cu.ft. per sec.; and the velocity of the current is 1,050 ÷ 84 = 12½ ft. per sec.

(b) The perimeter of this airway is 2(6 + 14) = 40 ft.; and the rubbing surface is, therefore, 40 × 6,500 = 260,000 sq.ft.

QUESTION—*What is the weight, in tons, of the air constituting the ventilating currents in a mine when their combined volumes are equal to 2,240,000 cu.ft., assuming the temperature inside to be 62 deg. F.?*

ANSWER—The weight of a cubic foot of air, at this temperature and a barometric pressure of, say 30 in. is

$$w = \frac{1.3273 \times 30}{460 + 62} = 0.07628 \text{ lb.}$$

The total weight of air in the mine is, therefore, (2,240,000 × 0.07628) ÷ 2,000 = 85.43+ tons.

QUESTION—*If the volume of air proves insufficient when the fan is running at its full capacity, what would you do, under such circumstances, to improve the ventilation?*

ANSWER—First, clean up the airways, enlarge breakthroughs, straighten the air-courses, shorten the distance of air travel wherever practicable and repair all leaky doors and stoppings. When this is done, examine carefully to see if the air current cannot be split, at certain points, whereby the ventilation will be improved at the working faces. It is important to remove every obstruction to the free flow of air.

QUESTION—*Find the mine resistance when the water gage reads 2.5 in., in an airway 5 × 12 ft. in cross-section.*

ANSWER—A water gage reading of 2.5 in. corresponds to a pressure of 5.2 × 2.5 = 13 lb. per sq.ft. Since the mine resistance is equal to the total pressure producing the circulation in an airway, and the sectional area, in this case, is 5 × 12 = 60 sq.ft., the total pressure in this airway, or the mine resistance, is 60 × 13 = 780 lb.

Kennedy Predicts Coal Famine in New York; Learoyd Says Danger is Past

At a joint meeting of the Women's City Club and the City Club of New York held in the Town Hall, New York City, Nov. 27, Thomas Kennedy, chief of District No. 1, United Mine Workers of America, declared that New York City will be facing a coal famine after the first big sleet or snow storm.

Mr. Kennedy said he had just returned from an inspection of the mines and that a famine may occur. "The railroad strike has tied up the coal cars, notwithstanding all reports to the contrary," Mr. Kennedy declared. "The railroads are not able to haul the coal from the anthracite region, and with the first big sleet or snow storm New York City will be facing a coal famine."

Arthur S. Learoyd, Assistant State Fuel Administrator, had declared previously that, barring a catastrophe, New York City would be able to pull through without a shortage. There is no shortage now, he said, but the coal received is of poor quality. He said he looked for the supply to increase from now on, because the transportation situation has improved and coal arriving at this port cannot be shipped to distant points in winter.

Mr. Learoyd outlined the activities of the State Fuel Administration to control an equitable distribution of coal and eliminate profiteering. He said that the State Fuel Administrator had no control over mine prices, which were the basic source of the cost of coal to the consumer.

Mr. Learoyd said that under the direction of the State Fuel Administrator an auditing firm has examined the books of twenty dealers in New York and as a result of their examination had discovered only two cases in which a question regarding the fairness of prices arose. These questions, he said, involved only 50c. of the price and were based on varying opinions as to the propriety of the amount.

Senator Borah of Idaho, who was to have been the principal speaker, was unable to attend. He telegraphed Miss Mary Garrett Hay, president of the Women's Club, who presided.

Daniel T. Pierce, chairman of the general policies committee of the anthracite operators, also addressed the meeting. An abstract of his address appeared in *Coal Age* last week.

Pennsylvania About to Collect Tax on Hard Coal and $200,000 in Penalties

Following receipt at Harrisburg, Pa., of information that the U. S. Supreme Court had sustained the Pennsylvania Supreme Court, which had held that the 1921 anthracite coal tax law is constitutional, it was announced by Samuel S. Lewis, Auditor General, that he would proceed at once to collect the coal tax due the commonwealth as the result of settlements effected after the companies had filed their first reports during January and February of this year. These reports covered the period from the effective date of the tax law, in July, 1921, to the close of the calendar year of 1921. The amount of tax due for that period was $3,273,840.61. Of this total but $8,288.58 has been paid to the state; having been received from various small coal operators.

A penalty of 1 per cent a month will be collected from those companies which refused to pay the tax pending the appeal. The penalty is collectable sixty days after the date of the Auditor General's settlement, and it is estimated that on the average the companies are six months in arrears and that the total penalty will be between $196,000 and $200,000.

The tax on this year's anthracite production cannot be collected prior to May 1, next, the Auditor General believes. The reports on the production of the anthracite mines during the present calendar year are not due in Harrisburg before Feb. 1, 1923. If the companies desire a longer period in which to file they can obtain fifteen days additional by making application in writing. Settlements cannot be made until after the reports are checked up and then the companies have sixty days in which to make payment before the 1 per cent a month penalty becomes effective. It is estimated that the tax will amount to between $6,500,000 and $7,000,000 a year in normal years.

Deputy Attorney General Hull has announced that he will ask the Dauphin County Court to enter judgment against the seventy anthracite companies which have appeal cases pending at Harrisburg. These companies made a stipulation in filing their cases that in the event of the U. S. Supreme Court upholding the State Supreme Court and the lower court on the question of constitutionality, judgment would be entered and no further appeal would be taken.

This action will leave but a few cases which may be appealed from the Dauphin County Court. The cases of the Philadelphia & Reading Coal & Iron Co., involving over $500,000 in taxes, and of the Mill Creek Coal Co., involving a small sum, decided in the Dauphin County Court a week ago, related to questions relative to the assessment and method of assessment of the tax and other matters not allied with the main issue in the U. S. Supreme Court case. The Philadelphia & Reading company, it is said, may take an appeal from the Harrisburg decision which held the act constitutional, the opinion following the same general lines of that in the original case.

Several other cases, involving the right to tax coal used in production at the mines, the taxing of briquets and of river coal, are yet to be decided by the Dauphin County Court.

A tax of 12.2c. a ton on domestic anthracite coal will result from the tonnage tax, according to a computation made by the General Committee of Anthracite Operators.

"Based on the value of anthracite production in 1921, $442,924,084, this tax would amount to $6,641,861," says a statement of the operators.

Two companies shipping to Philadelphia have increased the prices of broken and egg coal 15c. to 20c. per ton and on other domestic sizes 10c.

Navy Asks Bids for Coal Needs Till June 30 For Ships and Philadelphia Navy Yard

Bids on coal needed by ships and the Navy Yard at Philadelphia, Pa., during the remainder of the fiscal year, which ends June 30, 1923, are asked by the U. S. Navy Department. The coal must be best quality steaming bituminous or semibituminous run-of-mine, with at least 40 per cent lump, suitable and acceptable for the uses of the naval service and must be furnished from mines on the Navy Acceptable List. Coal must be reasonably dry and practically free from slate, dirt, sulphur and other foreign substances, subject to the usual inspection and test, and must weight 2,240 lb. per ton.

Tenders for ships' use are divided into three classes. Class 1 is for 15,000 tons, to be delivered in New York Harbor between Dec. 15, 1922, and June 30, 1923. Class 3 is for 4,000, to be delivered monthly at Philadelphia—during January, 1,000 tons; February, 1,500 tons, and March, 1,500 tons. Class 4 provides for 200,000 tons, delivery to be made at Hampton Roads, Va., between Dec. 15, 1922, and June 30, 1923.

For the Philadelphia Navy Yard 15,000 tons or more of coal is needed between Dec. 15 and Jan. 31, 20,000 tons between Dec. 15 and March 31 and 35,000 tons between Dec. 15 and June 30.

Affairs in the Connellsville coke region show slight change, a few more men drifting back to work right along and the output increasing, the shortage of cars being quite a deterrent. The holiday last week curtailed output quite a little. The first dynamiting of any consequence for some time occurred early Sunday morning, Nov. 26, when a double house at the Republic plant of the Republic Iron & Steel Co. was literally blown to pieces and two men badly hurt, who are now in the Brownsville hospital. Two other men, a woman and several children received lesser injuries. The Brier Hill Coke Co. has suspended operations indefinitely in order to install some new equipment.

Illinois Mining Institute Wrestles with Mine Power Problems; 72 New Members

What is the cost of a ton of coal hoisted under a coal mine's boilers? Can the mines of the country standardize an equitable method of computing this cost? In what sort of unit should mine power be measured? How should power costs be distributed between the points of consumption? Fifty interested members of the Illinois Mining Institute, in their two-day winter meeting at the University of Illinois, struggled with these related questions on Friday and Saturday, Dec. 1 and 2, and went back to the mining fields of the state with some new ideas to think over.

The discussion was provoked by a paper read by A. J. Hoskin, research assistant professor of mining engineering at the university, who has been making an exhaustive study of the whole question of mine power under the co-operative agreement between the university, the state and the U. S. Bureau of Mines, and who, having encountered all sorts of obstacles which he knew in advance he was going to meet, laid the problems before the Institute and asked for suggestions, just as he is laying the same problems before the whole coal-mining industry of Illinois with the same suggestion. In addition, at the meeting the Institute heard a discussion by Harold E. Culver, who also is working under the co-operative agreement. Mr. Culver is trying to work out some method of infallibly identifying every coal deposit in the state, his research thus far leading him to suspect that the "well known" coal resources of the region may not be so well known after all, in fact they may be much confused in mining men's minds. J. C. Quade described, with the aid of a projecting lantern, the new No. 4 Mine of Big Creek Coals, Inc., the company of which he is chief engineer. All this took place Dec. 1 in the student union building at the university.

That night the Institute banqueted, with John G. Millhouse presiding and with "speaking" by William Hall, Thomas Finch, J. E. Myers (who is a member of the miners' union), F. F. Jorgensen and Martin Bolt. The well-known mining movie, "The Story of Coal," was shown. The next morning the Institute members visited the university laboratories and experiment station, where they saw new ideas in coal washing demonstrated and where they got first-hand information about the new Wadia stage for measuring air pressure, a mechanism which was developed at the university and whose application to mine ventilation is being made by the mining department.

Before the Institute adjourned that afternoon it had decided that it should take a boat trip next summer, leaving the date and course to be charted by the Institute's executive committee. It received 72 new members and elected the following officers: President, John G. Millhouse, of Litchfield, mine inspector for District 6; First Vice-President, O. D. Wilson, of Gillespie, general superintendent for the Superior Coal Co.; Second Vice-President Harvey E. Smith, of Springfield; Executive Committee, George Larrison, E. G. Lewis, William Hall, William Kidd and Prof. H. H. Stock, retiring president of the Institute and professor of mining engineering at the university. Martin Bolt, assistant director of the State Department of Mines and Minerals, who has long served the Institute as secretary-treasurer, was continued in office.

Midwest Waterway May Be Built

There is much agitation in Mississippi River towns as well as in the southern Illinois coal fields over the prospect of Congress itself or Illinois assuming authority granted him to issue permission to locals for the construction of the Illinois section of the proposed deep waterway from Lake Michigan to the Gulf via the Illinois River and the Mississippi River.

There is a further appropriation of $20,000,000 to be voted on in December for the same purpose. This is said to be a forerunner of the opening up of a waterway to the Big Muddy fields from the Mississippi through the coal fields of Jackson, Williamson and Franklin counties.

This will almost eliminate all rail rate from these fields to all points on the Mississippi River from New Orleans up to Dubuque or farther north. The West Kentucky Coal Co., of Paducah, had arrangements partly completed in September for barging retail and steam coal to St. Louis, where dock and yard sites were located. Other receiving points were to have been Cape Girardeau, Cairo, Crystal City, East St. Louis, Alton, Wood River and Hannibal. The low stage in the river channel caused abandonment of the project at that time.

Freedom for Howat Unlikely, Though New Officials Oppose Industrial Court

Recent affirmation by the Kansas State Supreme Court of the Cherokee County sentence of August Dorchy, deposed vice president of district 14, United Mine Workers, ends for the time all talk of Alexander Howat, deposed president of district 14, and the other agitators who went to jail with him early this year, being freed. Subsequently, the Supreme Court overruled an application by Dorchy's lawyers for a rehearing, but allowed a writ of error, which will permit the case to be taken to the U. S. Supreme Court. Howat's appeal was handled in a similar manner some time ago, and the United States court decided it had no jurisdiction.

Howat and Dorchy both are now in the Crawford County jail at Girard, Kan., serving sentences of one year each for calling a strike in the Crawford and Cherokee county mines of the Mackie company in violation of an injunction by Andrew J. Curran, judge of division No. 1, of the Crawford County District Court. They already have served four months of six months' sentences in the Cherokee County jail at Columbus, Kan., for violation of the Industrial Court law in connection with the same strike. At the end of the four months they were released pending an appeal. It was while at liberty by reason of their appeal that they were arrested in Crawford County and began serving the sentences which will expire next April. The denial of Dorchy's appeal, following the Supreme Court's act of some months ago in denying Howat's, will send the two men to the Cherokee County jail upon their release from the Crawford County jail, to serve the remaining two months of their six months' sentences.

Howat's and Dorchy's penal history is further complicated by indeterminate sentences by Judge Curran for contempt of court. These are to be served in the Crawford County jail until such time as the two men shall consent to testify before the Kansas Court of Industrial Relations. Unless something intervenes to prevent, they will begin when Howat and Dorchy are released from the Cherokee County jail.

Since the November elections a new movement has developed among labor organizations in Kansas for the release of Howat.

"Labor organizations seem to interpret the election of Jonathan Davis as meaning that Mr. Howat should be let out of jail," Governor Henry Allen said. "I have received numerous requests in the last few days asking that I release Howat. I have no intention of doing so. Howat was placed in jail after repeated violations of the Kansas Industrial Court law, for contempt of court. It is within the provisions of the Legislature to repeal this law if it sees fit. The fact remains that Howat was found guilty of violating a state law, and as far as I am concerned he must remain in jail."

Howat sympathizers received no greater comfort from Judge Curran when they approached him a few weeks ago with a petition for the release of Howat and his fellow prisoners on parole. Judge Curran was defeated at the elections in November, and both Jonathan Davis, Democrat, who will succeed Governor Allen, and Daniel H. Wooley, Republican, who will succeed Judge Curran, are avowedly opposed to the Industrial Court law. It is not considered likely that Governor-elect Davis, pitted against a Republican Legislature, will be able greatly to change present conditions. He will, however, have the power of parole, as also will Judge-elect Wooley.

Coal Commission Seeks Constructive Remedy for Future Rather Than Placing of Blame for Abuses in Past

By Paul Wooton
Washington Correspondent of *Coal Age*

The chimney at the President's Coal Commission is beginning to draw. The staff is practically complete and its members are getting in step, so that everything will be ready shortly to apply forced draft, which must be used if the preliminary report which must be presented by Jan. 15 is to be of moment.

The point has been reached where the interest of the public and of the industry is beginning to turn to what is to be said in the Jan. 15 report. The anthracite operators evidently expect the commission to say in a concrete way what is a fair and a just wage. It will be recalled that the anthracite operators withdrew their demand for arbitration only when they obtained from Senator Pepper the assurance that a commission would be appointed to determine, among other things, the amount of the wage thought to be reasonable and equitable to all concerned.

There is no disposition on the part of any branch of the industry to expect a complete report on Jan. 15. There is a disposition to avoid pressing the commission now, as it is fully expected that the commission will express itself rather fully on that date and at least will foreshadow the scope of the final report.

The retailers made an exhaustive report to the commission. While much of the material presented hardly is pertinent to what the commission had in mind when it called for suggestions, no effort was made to play to the galleries.

The conference with the transportation representatives revealed the great importance which the commission is attaching to the part transportation plays in the coal business. It already is apparent that the commission is set on working out a constructive remedy for the future rather than trying to determine who may have profiteered in the past. It is equally plain that industry is going to co-operate fully in efforts to suggest economies in the production and distribution of coal, whether or not the same measure of help is given in developing facts with regard to wages, profits and cost of living.

The commission is being helped materially by the fact that the Interstate Commerce Commission is dealing at this time with certain fundamentals of coal traffic. At the same time the Interstate Commerce Commission undoubtedly will benefit by the studies being made by the Coal Commission because the ultimate decision on assigned cars and as to mine ratings can be intelligently made only in the light of the whole business of fuelling the country. The evidence being brought out at the Interstate Commerce Commission hearing could not have come at a more fortunate time for the Coal Commission. The information being developed fits into the needs of the Coal Commission so well that the Interstate Commerce Commission, in effect, is acting as a subcommittee to the Coal Commission. The value of the material is enhanced by the fact that the Commerce Commission is taking into consideration the disruptive influence on labor exerted by assigned cars. This is something of a departure for the Interstate Commerce Commission, since it has usually insisted on confining its inquiries to transportation aspects only. For instance, the Commerce Commission was unwilling to use its powers to prevent export of coal during the emergency, on the ground that it would be using these powers for an ulterior end.

Western Pennsylvania Operators Organize To Assist Commission Probe

Western Pennsylvania coal operators have perfected an organization to map out plans to assist the United States Coal Commission in its investigation of the industry. They held a meeting for the purpose in the William Penn Hotel, Pittsburgh, Pa., Nov. 28. Samuel A. Taylor was chosen chairman and Richard W. Gardiner secretary.

A committee of five was appointed to represent the various interests at the gathering. C. W. Gibbs was chosen to represent the Freeport Thick Vein Association and M. D. Kirk the Pittsburgh Coal Producers' Association. The independent operators will choose a member and the non-commercial operators a member, and a fifth is still to be chosen. An annual output of about 30,000,000 tons of bituminous coal was represented. The committee to be chosen will co-operate with the bituminous operators' special committee under the auspices of the National Coal Association.

J. B. L. Hornberger, vice-president and comptroller, announced the withdrawal of the Pittsburgh Coal Co. Mr. Hornberger said, however, his corporation was in hearty accord with the plans of the conferees and the work of the national organization of the industry as represented by their bituminous operators' special committee.

Operators will be assessed 4 mills per ton of production for the period from October, 1922, to April, 1923, to pay the legal and other expenses incident to the work. John W. Davis, former solicitor general of the United States, has already been retained as advisory counsel for the national committee. Another of equal ability will probably be employed, it was stated.

These were among the delegates to the conference: A. P. Cameron, Westmoreland Coal Co.; K. P. Lewis, Somerset Coal Operators' Association; George H. Hoke, Duquesne Coal Co.; W. W. Keefe, Export Coal Co.; John Jenkins, Oliver & Snyder Steel Co.; J. G. Forsythe, Virginia Coal Co.; F. C. Neale, Kittanning Iron & Steel Co.; A. R. Pollock, Ford Collieries Co.; George H. Moses, Republic Iron & Steel Co.; J. D. Durg, Charters Creek Coal Co.; C. W. Gibbs, Harwick Coal Co.; Thomas F. Fear, Island Collieries Co.; James and J. G. Patterson, Youghiogheny & Ohio Coal Co.; A. H. Stockenbach, Diamond Coal & Coke Co., and J. L. Lowther, National Mining Co., a subsidiary of the United States Steel Corporation.

Mining Congress to Assist Coal Commission

The American Mining Congress has appointed a committee to co-operate with the President's Coal Commission. The committee is composed of the following: S. A. Taylor, Carl Scholz, J. H. Allport, R. V. Norris, Cyrus Carney, Howard Eavenson and W. H. Cunningham.

Railroads Pledge Co-operation with President's Coal Commission

Any assistance within the scope of the American Railroad Association will be rendered the President's Coal Commission, a large committee of transportation men representing that organization told the commission on Nov. 28. The conference was preliminary to discussion and no formal plan for co-operation was submitted. There was a general discussion of the problems of the commission. The transportation men who participated in this conference were: R. H. Aishton, president, American Railroad Association; Judge R. V. Fletcher, Illinois Central; Elisha Lee, Pennsylvania R.R.; D. D. Carr, Atlantic Coast Line; W. J. Harahan, Atlantic Coast Line; W. A. Northcott, Louisville & Nashville; C. M. Smith, New York,

New Haven & Hartford, F. L. Bloodgood, Lehigh Valley; E. E. Gray, Chicago, Milwaukee & St. Paul; W. K. Bassett, Pere Marquette; C. E. Moore, Grand Trunk; M. K. de Tarnoky, Chicago, Burlington & Quincy; W. S. Brennan, Chesapeake & Ohio; and Dr. J. H. Parmelee, Bureau of Railway Economics.

Shortage of Domestic Sizes of Anthracite Will Be 40 Per Cent, Says Spens

After a survey of the present coal situation in Pennsylvania, New Jersey and New York, it is apparent that, although there is sufficient coal in the United States, there is a definite and continuing shortage of domestic sizes of anthracite, according to Federal Fuel Distributor C. E. Spens. It will not be humanly possible to make up during this winter the shortage in these sizes, which will amount to approximately 40 per cent, states Mr. Spens.

The available sizes of domestic, as well as those of all other anthracite sizes, have been allocated to the various states in proportion to their normal consumption, and every effort is being made for equitable distribution along this line. Should any state seize any of the coal allocated to any of the neighboring states the latter will be short just so much coal, and the effect might be far-reaching, the Federal Fuel Distributor points out. In other words, the system is general, and attempts at taking the law into one's own hands will only tend toward chaos and shortage all around.

The answer to all of this is for every consumer to provide himself with a sufficient amount of such substitutes as steam sizes of anthracite, bituminous coal, coke and wood, Mr. Spens declares. There is an ample supply of steam sizes. It is a comparatively simple matter for people to learn how to supplement domestic sizes of anthracite with the steaming sizes, and there is no restriction on the amount that may be purchased and stored.

Watkins and Posten Prove Interesting Witnesses at Assigned-Car Hearing

Rather than interfere with the orderly development of the mines of his company, Thomas H. Watkins, testifying in the assigned-car case, told the Interstate Commerce Commission that he recently had purchased one thousand coal cars. The loss of these private cars means a direct loss of $250,000 a year; nevertheless, Mr. Watkins said, it is profitable to use them because it decreases the losses occasioned by inability of the railroad companies to furnish cars regularly. Mr. Watkins has been one of the outstanding opponents of the assigned-car practice for many years. His recommendations on this subject were regarded of sufficient importance by the bituminous coal commission of 1920 to embody them, as a whole, in its report to the President.

E. M. Poston, president of the New York Coal Co. and of the Interstate Coal & Dock Co., evidently impressed the commission with his contention that the assigning of cars adds as low than $1 per ton to the cost of all coal—that used for railroad fuel and for all other purposes—because the demurrage effect of assigned cars on labor is one of the principal reasons why mine workers have to be paid a high daily wage. He pointed out that only 12 per cent of the mine workers are employed in the properties which supply the railroads with coal. The remaining 88 per cent of the mine workers are engaged in producing the output going to other consumers. It is this 88 per cent which insists on a high daily wage to tide them over the idle time, much of which is caused by lack of cars.

The men in the mines furnishing railroad fuel, Mr. Poston said, have an annual wage entirely out of proportion to the annual earnings of men in other coal mines and out of proportion to the wage in other industries. This is a potent cause of dissatisfaction among railroad workers, especially those whose positions require training and skill. They are tempted constantly to demand higher wages by the fact that they see much lower grade labor paid more than they themselves receive.

In answer to questions from the bench, Mr. Posten explained why there is a surplus of coal-mine labor. One of the principal reasons, he said, grows out of the frequent periods of car shortage. During these periods the price of coal goes up to a point where a large number of small mines can be brought into operation. So as to take full advantage of the short time they will have to operate, they offer labor more than the regular scale. He cited this example: A blacksmith who is receiving $8 a day at a well-equipped mine is offered $10 by one of the mines expecting to operate only during the period of high prices. As a result the well-equipped mine has to break in another blacksmith. As prices fall the smaller mine closes up and its blacksmith is looking for a job. This example, when applied to thousands of workers, was held by Mr. Posten as being one of the main causes for the surplus of mine labor.

In addition Mr. Posten made a plea for the storage of coal by all large consumers. He declared it would be profitable to the consumers and would do much to stabilize the coal industry. He cited the practice of the Standard Oil Co. and other concerns which operate plants where great losses would entail were they forced to close, who store coal successfully. Had the railroads stored all the coal they could in 1921, he said, it would have resulted in large savings to them and might have averted the strike.

Mr. Posten told Commissioner Aitchison frankly that the service orders of the commission are frequently disregarded. When coal mines were supposed to have first call for open-shop equipment, other commodities were using these cars in greater proportion than coal, he said. Some of the divisions of the New York Central lines, he said, had 100 per cent car supply when others had only 20 per cent of the cars necessary to take care of the tonnage the mines had to offer.

Dr. Smith, Governor Marshall and Judge Alschuler, of the President's Coal Commission, have attended some of the sessions of the hearing and have interrogated witnesses.

Ohio Fuel Administration Disbands; Emergency Considered Past

On Dec. 1 the Ohio Fuel Administration ceased to function. The administration was called into being as an emergency and had been functioning slightly more than one month. It was disbanded upon the recommendation of C. J. Neal, Administrator, and Governor Harry L. Davis on the ground that the emergency which created it had passed and that the matter of fair price and adequacy of supply had been established. The administration spent about $15,000 out of the total appropriation of $1,045,967.

In disbanding the administration machinery Governor Davis commended the personnel of the office for their efficient work, stating that the people of Ohio had been saved more than one million dollars by the functioning of the administrator and his staff.

Attention is called to the fact that the law creating the administrator is in force still and if another emergency occurs another administrator can be named and will be able to start work at once.

Illinois Chamber of Commerce Avoids Union Trap Regarding Herrin Prosecution Fund

"It's none of your business" is the substance if not the words of the Illinois Chamber of Commerce in replying Nov. 28 to the demand of the United Mine Workers for a statement as to how the money is being spent which the chamber has raised for the prosecution of the Herrin massacre case. The union, exerting every effort to make it appear that the prosecution of the men charged with slaughter of non-union miners at Herrin, June 22, is nothing more or less than an attack on unionism, wrote a letter to the chamber asking seven carefully phrased questions about the defense fund. While this letter was dated Nov. 14 and appeared in newspapers throughout the state Nov. 17 and Nov. 18, it did not reach the chamber in Chicago until Nov. 21.

Agreement with Miners at Chicago on Wage-Making Plan for Country Seems Unlikely

Chicago, Ill., Dec. 5.—On the eve of the second joint conference of miners and operators at Chicago, Wednesday, Dec. 6, it was evident that no agreement with miners on a new wage-making system for the country was likely. After two days of preliminary sessions the operators were ready to propose on Wednesday to the miners that district agreements be made to replace the present plan, which expires April 1.

It was almost certain that President Lewis and his miners would refuse such a plan and the indications were that nothing else would be offered by the operators. In such a case Lewis would call the Jan. 3 wage conference on the assumption that the old four-state Central Competitive Field remains in existence until supplanted. Nobody guesses what would be the result of that.

The operators' advance meeting started Monday but did not make any definite decisions because Delegate Michael Gallagher, of Ohio, and the three men from Indiana, including Phil Penna, chairman of the joint conference, did not arrive until Tuesday. The Indiana men were delayed by a difficulty arising out of a check-off dispute. By Monday night it seemed evident that no decision could be made upon proposing to re-establish the four-state plan, which is so favorably regarded by the union. Many regions were for district agreements or nothing, feeling that some new element may be injected into the situation before January and that the four-state plan needs federal approval before it is adopted again. The bulk of sentiment was for proposing district agreements, no matter what the outcome.

On Tuesday, when the last delegates got in, this sentiment did not materially change and the battle of the outlying districts for the creation of a national policy committee got nowhere, though it was fought hard. At noon a committee was named to draft a resolution proposing that a district plan be adopted together with provision for arbitration in case of dispute and with a flexible scale to allow regions such as central Pennsylvania to fairly meet non-union competition. On this committee were both friends and foes of this plan, which everybody knew would be refused by the union as soon as they got a chance at it.

Tidewater Exchange Members Invited to Join Plea for Cut in Demurrage

Charles A. Owen, Edward Adams and James E. Manter, receivers of the Tidewater Coal Exchange, Inc., in dissolution, have sent a letter to members of the exchange inviting them to become partners to its case in presenting to the Interstate Commerce Commission a petition seeking to reduce the demurrage charges collected on coal at New York, Philadelphia and Baltimore during the two years preceding the filing of complaint, on Nov. 6, 1922, the period during which the commission has authority to order refunds.

The receivers state that they are primarily interested in this matter only so far as it concerns members of the incorporated exchange. At the same time, as they are satisfied that there is more than a fair chance to have refunded a substantial portion of these demurrage charges, which appear to have been illegally assessed, they feel that all members of the trade should be given an opportunity to join with the exchange in this matter.

Spens to Remain Until Jan. 1.

Urged by President Harding, C. E. Spens will continue as U. S. Fuel Distributor until Jan. 1. By that time, the President believes, it will be possible to declare the coal emergency at an end and suspend enforcement of the fuel distribution act.

At the expiration of his sixty days' leave of absence from the Chicago, Burlington & Quincy R.R. Mr. Spens held a conference with the President relative to his future plans. Mr. Spens is reported to have believed that the emergency had been sufficiently relieved to make it unnecessary for him to remain any longer. In compliance with the President's wishes, however, he agreed to remain.

Illinois Miner Draws $301 in a Single Pay, Averaging $2.69 an Hour

Laurels for high, wide and handsome pay drawing might descend upon E. Friese, a miner employed in the new Zeigler No. 2 mine at Zeigler, Ill., operated by the Bell & Zoller Mining Co. Friese won attention the first two weeks in October by earning $301.29, which netted him $276.24 after various deductions had been made. The deductions were $4.71 for supplies, $14 for powder and union check-off, and special dues totaling $6.34. Computing his pay by the hour, this man can be credited with earning at the rate of $2.69 per hour.

Woodin Asks Aid to Curb Gougers

With improved prospects for larger coal deliveries, William H. Woodin, State Fuel Administrator for New York, Dec. 4 took steps to curb profiteering in the prices of steam sizes of anthracite coal, which he has recommended to householders as a suitable substitute for domestic sizes.

After a conference with a committee of anthracite operators Mr. Woodin sent a letter to Mayor Hylan of New York City stating that the mine owners had agreed to give emergency aid to parts of Brooklyn, and this relief probably would become effective within forty-eight hours. Similar aid for other sections of the city suffering from inadequate fuel supplies, it was explained, may be given if the situation requires.

Announcement that several railroads had stopped coal deliveries to the Northwest via the Great Lakes was construed by coal dealers to mean that additional shipments probably would be turned into New York and other Eastern districts.

While he could not authorize a maximum price for domestic sizes, such as nut, grate and egg coal, between the mine prices of such coal varied, Mr. Woodin said he wanted information from persons who believed that they had been charged too much for coal, particularly the steam sizes. He said that buckwheat sizes should range from $8.20 to $10.50 a ton.

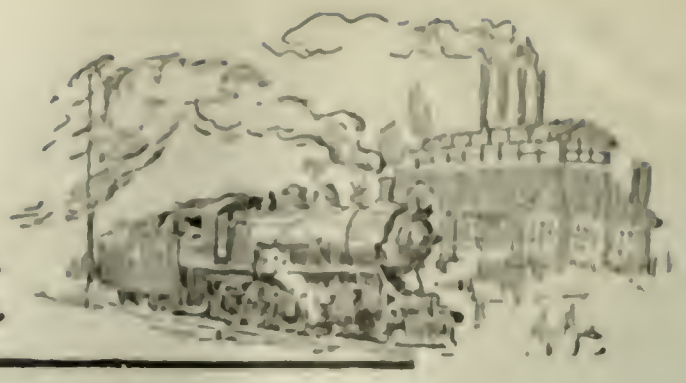
Short-Circuit in Powder Keg in Cherokee Mine Blast Traced to Carelessness

Carelessness in transporting powder within the mine was the cause of the explosion, Nov. 25, in Hamilton mine No. 6, near Cherokee, Kan., operated by the Cherokee Coal Co. under lease, according to a report by James Sherwood, Kansas state mine inspector. Thirteen men were severely burned in the accident, which followed the contact of a 25-lb keg of powder with the positive post of the battery and the metal frame of the motor of the car in which the powder was being hauled. A short-circuit was caused, which ignited the powder.

Mr. Sherwood declared he warned George Folsom, mine foreman, the week before the accident against carrying exposed powder kegs on the motor. The Kansas mining law requires that all powder hauled by electric motor shall be protected by an insulated box. The steel cover of the motor which was carrying the powder at the time of the explosion had been torn off, and the insulating plate of wood fiber beneath it had been broken to such an extent that the terminals of the battery were exposed.



Production and the Market



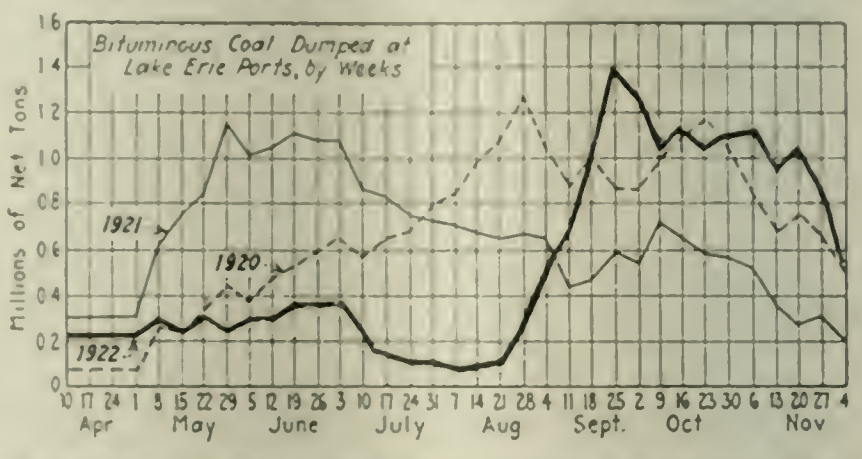
Weekly Review

Cold weather has injected more life into the domestic bituminous-coal market but has failed to stimulate the call for industrial fuels for the country as a whole. Steam prices continued to slump last week, more than overlapping the strength in domestic fuels. *Coal Age* Index of spot bituminous coal prices dropped to 326 on Dec. 4, as compared with 330 on Nov. 27. The average mine price stood at $3.91, a drop of 4c. from the previous week.

Strongest Market in Eastern Sections

Eastern sections present the strongest market today both for industrial and prepared coals for home consumption. Good steam grades are increasingly difficult to obtain and this distinct evidence of a growing scarcity has enhanced the values of medium and low qualities. Transportation conditions make deliveries difficult and requests for tracers show how closely the consumer has been buying. Although buyers feel that the flurry is only temporary and will be relieved now that the Lake season has closed, the market is very sensitive, as evidenced by immediate price raises when demand increases even slightly.

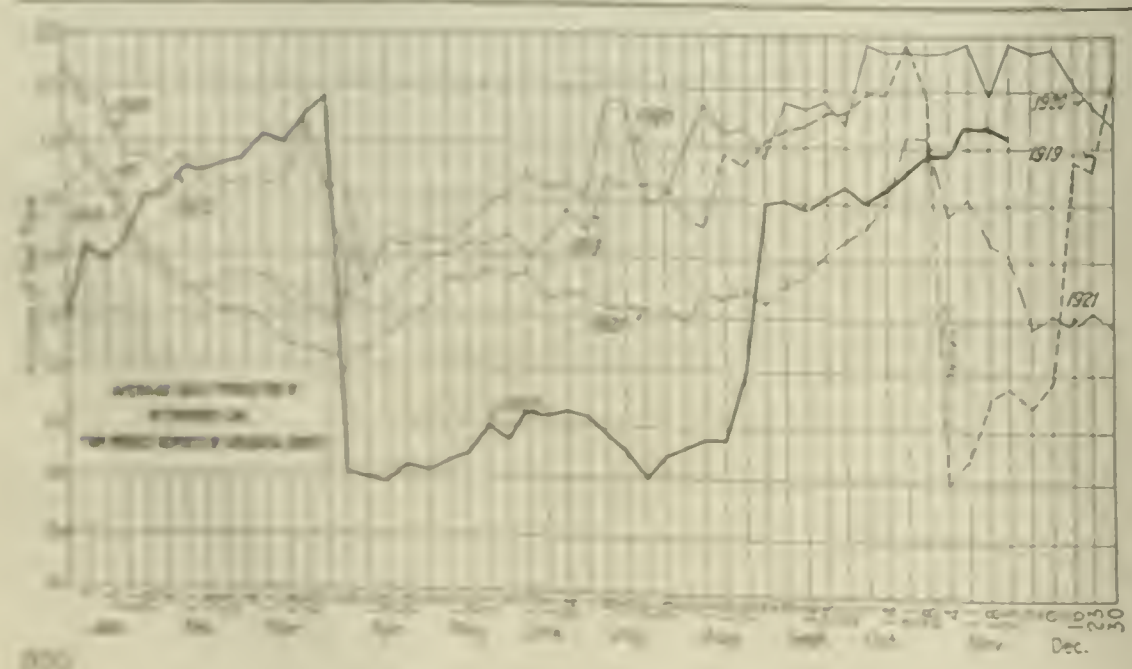
Cessation of Lake shipments has had a depressing effect on Eastern Inland markets and the Cincinnati territory also has felt the softening tendency caused by the diversion to commercial channels of 1,000,000 tons per week of Lake coal. Consumers are not apprehensive over a coal shortage despite the warnings issued by the trade that transportation conditions undoubtedly will be inadequate when severe weather comes. With prices far from showing any stiffening, industrial users have no incentive to make forward commitments and demand is not commensurate with output. Domestic coal, on the other hand, is increasing in price and cold weather is steadily enlarging the market. Control of prices in Ohio was suspended Dec. 1, which has resulted



in a better movement of home-mined coal within that state.

Chicago and Midwest markets have experienced enough of a pick up in demand to hold prices firm. Domestic buyers are taking coal sparingly and steam users are still extremely cautious. Screenings are steadily stronger, however, evidently because large consumers are not so sure they can get the necessary tonnage so promptly at a later date. Kentucky fields—eastern and western—are in a price battle, with the latter taking more of the domestic business by selling at slashed figures.

The Northwestern market is full of soft coal. Steam demand is only fair but wintry weather has strength-



Estimates of Production

(Net Tons)

	1921	1922
BITUMINOUS		
Nov. 11 (b)	8,592,000	10,147,000
Nov. 18 (b)	8,871,000	11,215,000
Nov. 25 (a)	7,101,000	11,038,000
Daily average	1,184,000	1,840,000
Calendar year	370,181,000	354,990,000
Daily av. cal. year	1,335,000	1,275,000
ANTHRACITE		
Nov. 11 (b)	1,350,000	1,863,000
Nov. 18 (b)	1,879,000	2,191,000
Nov. 25 (a)	1,650,000	2,174,000
Calendar year	83,446,000	43,124,000
COKE		
Nov. 18 (b)	111,000	264,000
Nov. 25 (a)	110,000	285,000
Calendar year	4,936,000	6,598,000

(a) Subject to revision (b) Revised from last report.

ened domestic coals. Docks are cutting prices on industrial fuels to meet all-rail competition in the lower part of the region and the markets in this section are upset.

Consumers of domestic anthracite are now faced with an immediate shortage. Colder weather has increased consumption to the point where retailers are unable to cope with the demand. Thus the householder is forced to buy substitutes for the desired family sizes. Buckwheat is moving better, coke and briquet sales are improving and bituminous coal in domestic sizes is in increasing demand in Eastern sections where hard coal has always been used.

The Pennsylvania state tax, having been upheld by the Supreme Court, has caused two companies to increase domestic prices 10c.@20c. at the mines. At this writing no price changes have been announced by the balance of the old-line producers, although the tax question is the subject of much comment in the trade. Independent quotations are higher, much of the coal moving at the increased prices recently authorized by the Pennsylvania fuel authorities.

BITUMINOUS

"Bituminous coal production appears to have found a temporary level just above 11,000,000 tons per week," says the Geological Survey. "The total estimated output during the week ended Nov. 25, including coal coked, mine fuel and local sales, was 11,038,000 net tons. Preliminary reports of cars loaded during the first three days of last week (Nov. 27-Dec. 2) indicate that production continued at about the same rate, but on account of the Thanksgiving Day holiday the total output probably will drop to between 9,300,000 and 9,700,000 tons."

PRODUCTION OF BITUMINOUS COAL IN OCTOBER AND CUMULATIVE OUTPUT FOR FIRST 10 MONTHS OF LAST 10 YEARS

Year	October Production (Net Tons)	Calendar Year to Date (Net Tons)
1913	46,184,000	394,000,000
1914	37,683,000	353,000,000
1915	44,140,000	373,000,000
1916	44,997,000	441,000,000
1917	48,317,000	439,000,000
1918	52,160,000	443,000,000
1919	47,200,000	419,000,000
1920	53,278,000	443,000,000
1921	44,600,000	349,000,000
1922	45,473,000(a)	416,000,000(a)

(a) Subject to revision.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Nov. 6 1922	Nov. 20 1922	Nov. 27 1922	Dec. 4 1922†
Smokeless lump	Columbus	$6.75	$6.75	$6.75	$6.00@$7.00
Smokeless mine run	Columbus	6.00	6.10	6.15	6.00@6.35
Smokeless screenings	Columbus	5.50	5.75	5.75	5.50@6.00
Smokeless lump	Chicago	6.00	6.25	6.25	6.00@6.50
Smokeless mine run	Chicago	5.60	5.60	5.60	5.50@5.75
Smokeless lump	Cincinnati	7.00	6.00	6.30	**5.15@8.00**
Smokeless mine run	Cincinnati	6.10	6.10	6.00	4.85@6.00
Smokeless screenings	Cincinnati	6.25	6.25	5.85	4.00@6.00
*Smokeless mine run	Boston	6.85	8.00	8.00	7.50@7.75
Clearfield mine run	Boston	3.50	3.85	3.60	3.50@3.75
Cambria mine run	Boston	4.10	4.35	4.25	3.75@4.75
Somerset mine run	Boston	3.60	4.10	3.85	3.50@4.25
Pool 1 (Navy Standard)	New York	4.85	5.00	5.10	**5.00@5.50**
Pool 1 (Navy Standard)	Philadelphia		4.75	4.75	**5.00@5.35**
Pool 1 (Navy Standard)	Baltimore	4.50	4.60	4.85	4.50@5.25
Pool 9 (Super. Low Vol.)	New York	4.10	4.25	4.50	**4.50@4.75**
Pool 9 (Super. Low Vol.)	Philadelphia	4.30	4.45	4.50	**4.50@4.85**
Pool 9 (Super. Low Vol.)	Baltimore	4.00	3.85	4.60	4.00@4.85
Pool 10 (H.Gr.Low Vol.)	New York	3.50	3.60	3.85	**3.75@4.15**
Pool 10 (H.Gr.Low Vol.)	Philadelphia	3.50	3.60	3.75	**3.80@4.15**
Pool 10 (H.Gr.Low Vol.)	Baltimore	3.60	3.35	3.35	3.25@3.40
Pool 11 (Low Vol.)	New York	3.00	3.05	3.25	3.00@3.25
Pool 11 (Low Vol.)	Philadelphia	3.15	3.15	3.15	**3.25@3.50**
Pool 11 (Low Vol.)	Baltimore	3.15	3.05	3.10	3.00@3.25
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	3.35	3.50	3.50	3.50@3.80
Pool 54-64 (Gas and St.)	Philadelphia	3.50	3.50	3.50	**3.35@3.80**
Pool 54-64 (Gas and St.)	Baltimore	3.35	3.30	3.30	3.00@3.60
Pittsburgh sq'd	Pittsburgh	4.50	4.50	4.50	**4.75@5.00**
Pittsburgh mine run (St.)	Pittsburgh	3.35	3.35	2.60	2.50@2.75
Pittsburgh slack (Gas)	Pittsburgh	3.60	3.60	3.10	**3.00@3.50**
Kanawha lump	Columbus	6.25	5.75	5.75	5.50@6.00
Kanawha mine run	Columbus	4.50	3.60	3.35	3.25@3.50
Kanawha screenings	Columbus	4.10	3.35	3.25	3.00@3.50
W. Va. lump	Cincinnati	6.00	6.00	6.25	6.00@6.50
W. Va. Gas mine run	Cincinnati	4.35	4.00	3.60	3.50@3.75
W. Va. Steam mine run	Cincinnati	4.00	3.60	3.40	3.25@3.50
W. Va. screenings	Cincinnati	4.00	3.35	3.25	3.00@3.50
Hocking lump	Columbus	5.50	5.05	5.05	4.50@5.61
Hocking mine run	Columbus	3.60	3.50	3.25	3.25@3.50
Hocking screenings	Columbus	3.05	3.00	3.00	3.00@3.00
Pitts. No. 8 lump	Cleveland	3.81	4.15	4.10	**4.25@4.75**
Pitts. No. 8 mine run	Cleveland	$3.56	$3.60	$3.70	3.50@3.75
Pitts. No. 8 screenings	Cleveland	3.31	3.31	3.20	3.00@3.00
Midwest					
Franklin, Ill lump	Chicago	5.35	5.25	5.00	4.50@5.10
Franklin, Ill mine run	Chicago	4.10	4.10	4.10	4.00@4.25
Franklin, Ill screenings	Chicago	2.60	2.60	2.50	2.00@2.60
Central, Ill lump	Chicago	4.75	4.50	4.25	4.00@4.50
Central, Ill mine run	Chicago	3.10	3.10	3.10	3.00@3.25
Central, Ill screenings	Chicago	2.85	2.80	2.85	2.00@2.85
Ind. 4th Vein lump	Chicago	3.10	3.00	3.00	3.00@3.25
Ind. 4th Vein mine run	Chicago	3.85	3.85	3.85	3.00@3.85
Ind. 4th Vein screenings	Chicago	2.35	2.85	2.85	**2.35@2.40**
Ind. 5th Vein lump	Chicago	4.75	4.75	4.75	4.00@4.75
Ind. 5th Vein mine run	Chicago	3.60	3.60	3.60	3.00@3.60
Ind. 5th Vein screenings	Chicago	2.50	2.50	2.50	**2.50@2.50**
Standard lump	St. Louis	4.00	3.75	4.00	**4.00@4.50**
Standard mine run	St. Louis	2.60	2.50	2.60	2.50@2.75
Standard screenings	St. Louis	1.60	1.85	1.85	1.50@1.60
West Ky. lump	Louisville	4.85	4.85	4.75	4.00@4.50
West Ky. mine run	Louisville	2.50	2.50	2.25	2.00@2.50
West Ky. screenings	Louisville	1.85	1.50	1.50	1.25@1.50
West Ky. lump	Chicago	4.10	4.10	4.10	4.00@4.00
West Ky. mine run	Chicago	3.10	2.90	2.80	2.50@2.75
South and Southwest					
Big Seam lump	Birmingham	3.85	3.85	3.85	3.50@4.00
Big Seam mine run	Birmingham	2.35	2.35	2.35	2.00@2.50
Big Seam (washed)	Birmingham	2.60	2.60	2.60	2.50@2.75
S. E. Ky. lump	Chicago	5.00	5.00	5.00	5.00@5.00
S. E. Ky. mine run	Chicago	4.25	4.25	4.25	4.00@4.25
S. E. Ky. lump	Louisville	6.25	6.50	6.50	6.00@6.50
S. E. Ky. mine run	Louisville	4.25	4.00	4.00	4.00@4.00
S. E. Ky. screenings	Louisville	4.25	4.00	4.00	4.00@4.00
S. E. Ky. lump	Cincinnati	6.25	6.50	6.25	**6.00@7.00**
S. E. Ky. mine run	Cincinnati	4.00	3.75	3.75	3.50@3.75
S. E. Ky. screenings	Cincinnati	4.00	3.75	3.75	3.50@3.75
Kansas lump	Kansas City	3.75	3.75	3.75	3.50@3.50
Kansas mine run	Kansas City	3.75	3.75	3.75	3.50@3.50
Kansas screenings	Kansas City	3.00	3.00	3.00	3.00@3.00

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in heavy type; declines in italics.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

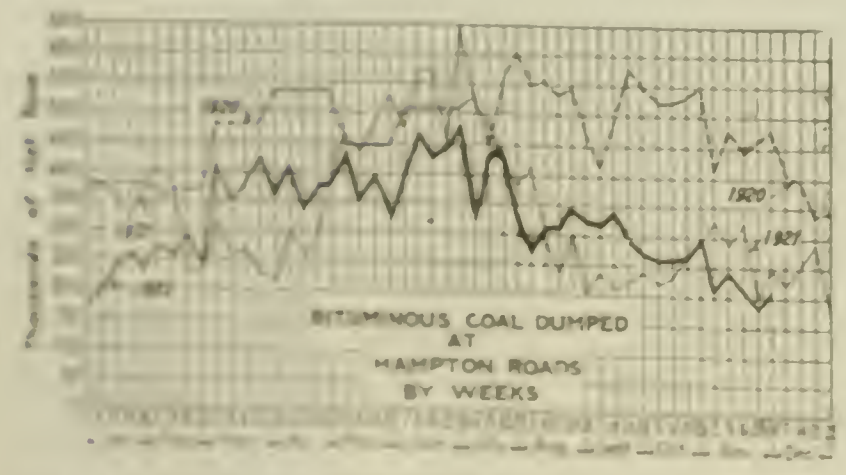
	Market Quoted	Freight Rates	Independent	Company	Nov. 27, 1922 Independent	Nov. 27, 1922 Company	Dec. 4, 1922 Independent	Dec. 4, 1922 Company
Broken	New York	$2.34		$7.60@$7.75	$8.00	$7.75@$8.15	$7.00	$7.50@$8.00
Broken	Philadelphia	2.19	$7.00@$7.10	7.75@7.85				
Egg	New York	2.34	7.00@7.75	7.60@7.75	7.25@10.75	7.75@8.15	6.50@8.00	7.50@8.00
Egg	Philadelphia	2.19	7.25@7.75	7.75	8.25@11.00	8.00@8.35	7.00@8.00	7.50@8.00
Egg	Chicago*	5.09	7.50	6.90@7.40	12.50@13.00	8.25@8.75	12.00@13.00	8.25@8.75
Stove	New York	2.34	7.00@8.20	7.90@8.10	8.25@10.75	8.00@8.35	8.00@8.50	8.00@8.50
Stove	Philadelphia	2.19	7.00@8.10	8.00@8.25	8.25@11.00	8.00@8.35	8.00@8.50	8.00@8.50
Stove	Chicago*	5.09	7.75	7.20@7.60	12.50@13.00	8.25@8.75	12.00@13.00	8.25@8.75
Chestnut	New York	2.34	7.00@8.20	7.90@8.10	8.25@10.75	8.00@8.35	8.00@8.50	8.00@8.50
Chestnut	Philadelphia	2.19	7.00@8.10	8.00@8.25	8.25@11.00	8.00@8.35	8.00@8.50	8.00@8.50
Chestnut	Chicago*	5.09	7.75	7.20@7.60	12.50@13.00	8.25@8.75	12.00@13.00	8.25@8.75
Range	New York	2.34				8.15		
Pea	New York	2.22	5.00@5.15	5.75@6.45	7.00@10.00	6.00@6.50	6.00@8.00	6.00@6.50
Pea	Philadelphia	2.14	5.00@5.00	6.10@6.35	6.00@8.00	6.00@6.50	6.00@8.00	6.00@6.50
Pea	Chicago*	4.79	5.00	6.00@6.10				
Buckwheat No. 1	New York	2.22	3.00@3.10	3.50	3.50@4.00	3.50@4.00	3.50@4.00	3.50@4.00
Buckwheat No. 1	Philadelphia	2.14	3.00@3.25	3.50	3.50@4.00	3.50@4.00	3.50@4.00	3.50@4.00
Rice	New York	2.22	2.00@2.10	2.50	2.50@2.75	2.50@2.75	2.50@2.75	2.50@2.75
Rice	Philadelphia	2.14	2.00@2.10	2.50	2.50@2.75	2.50@2.75	2.50@2.75	2.50@2.75
Barley	New York	2.22	1.85@1.85	1.50	1.50@1.75	1.50@1.75	1.50@1.75	1.50@1.75
Barley	Philadelphia	2.14	1.75@1.75	1.50	1.50@1.75	1.50@1.75	1.50@1.75	1.50@1.75
Birdseye	New York	2.22		2.00@2.50	2.50	2.50	2.50	2.50

* Net tons, f.o.b. mines. † Advances over previous week shown in heavy type; declines in italics.



Coal Age Index 224 Week of Dec. 4 1922 Average spot price for same period, $4.50. This diagram shows the relative, not the actual prices of bituminous coals representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportional sizes of stock, prepared and run-of-mine normally shipped and second with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1913, as 100, and the ensuing results appear in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

All-rail movement to New England declined during the week ended Nov. 25. Cars forwarded totaled 3,024 as compared with 4,286 in the preceding week. The improvement in that market predicted a short time ago has not materialized and from present indications not much buying is expected for the balance of the year. Prices on quality



coals from central Pennsylvania are firm, mainly because of the car shortage.

The Hampton Roads market is rather soft. Prices have failed to hold their recent advance despite the fact that

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 Inclusive	Sept. 5 to Nov. 18, 1922 Inclusive	Week Ended Nov. 18 1922
U. S. Total	45.6	55.7	...	...
Alabama	63.1	64.6	84.3	(a)
Somerset County	33.2	74.9	36.9	35.4
Pocahontas W. Va.	55.7	51.3	57.1	58.6
Westernrelated	54.9	58.8	69.2	75.8
Virginia	54.8	59.9	59.0	58.0
Harlan	53.3	54.8	20.2	19.1
Hazard	51.7	58.4	15.8	17.9
Pocahontas	49.8	60.0	36.4	30.3
Tug River	49.1	63.7	32.5	35.7
Logan	47.6	61.1	25.5	27.0
Cumberland-Piedmont	46.6	50.6	33.5	34.5
Winding Gulf	41.7	64.3	30.3	31.3
Kenova-Thacker	48.2	54.3	42.3	46.5
N. E. Kentucky	32.9	47.7	28.6	33.4
New River	24.3	37.9	31.3	30.4
Oklahoma	63.9	59.6	64.6	68.5
Iowa	57.4	78.4	74.3	58.5
Ohio, Eastern	52.6	46.6	43.1	44.0
Missouri	50.7	66.8	71.0	74.1
Illinois	44.8	54.5	49.6	51.4
Kansas	42.0	54.9	55.1	49.3
Indiana	41.4	53.8	37.7	(a)
Pittsburgh†	41.2	39.8	41.6	47.8
Central Pennsylvania	39.1	50.2	57.3	44.3
Fairmont	35.3	44.0	40.8	(a)
Western Kentucky	32.5	37.7	33.5	42.9
Pittsburgh*	30.4	31.9	55.7	78.1
Kanawha	26.0	13.0	14.9	14.4
Ohio, southern	22.9	24.3	38.5	41.4

* Rail and river mines combined
† Rail mines.
(a) No report

Car Loadings, Surplusages and Shortages

	Cars Loaded All Cars	Cars Loaded Coal Cars
Week ended Nov. 18, 1922	99,094	205,024
Previous week	953,909	188,312
Same week in 1921	790,363	168,438

	Surplus Cars All Cars	Surplus Cars Coal Cars	Car Shortage	
Nov. 15, 1922	4,945	...	158,236	42,827
Nov. 8, 1922	4,406	2,046	174,498	45,529
Same date in 1921	140,000	60,000	...	...

accumulations are not as heavy as they were two weeks ago. Dumpings during the week ended Nov. 30 amounted to 236,727 net tons as compared with 211,415 tons in the previous week. The Western and line trade is more attractive, but the slow return of cars does not permit a heavy movement in that direction and enough coal is therefore reaching Tidewater to amply fill all orders.

Lake business is nearly over. Dumpings during the week ended Dec. 4 were 541,175 net tons—521,456 tons cargo and 19,719 tons vessel fuel. This week's tonnage shows a large decline. The movement for the season to date is 18,978,132 tons as compared with 23,171,449 tons in the corresponding period of last year. There is plenty of soft coal at the Head-of-the-Lakes to supply adjacent markets and the all-rail shippers can be relied on to furnish the requirements of the lower end of the territory.

ANTHRACITE

Production of anthracite was 2,174,000 net tons during the week ended Nov. 25 as compared with 2,191,000 tons in the preceding week. Thanksgiving Day idleness is expected to reduce the output for the week ended Dec. 2 to approximately 1,800,000 tons.

Domestic users face a certain shortage, and buying of substitute fuels is increasing. Certain producers stopped shipping to the Lakes on Nov. 25 and the supply for Eastern centers is expected to increase soon. The Lake dumpings at Buffalo dropped to 98,230 net tons last week as compared with 151,450 tons in the preceding week. Steam coals are in better shape with the colder weather, although the output is still topheavy.

COKE

Production of beehive coke was 285,000 net tons during the week ended Nov. 25 as compared with 264,000 tons in the previous week. The Connellsville output was heavier than for any week since the first week in 1921. Prices are firm but there is no great market activity shown.

Foreign Market And Export News

British Output Recedes Slightly

Continental demand has fallen off in Wales, owing to the depreciation of European currency, especially the French franc. Prices are fairly well maintained, however, although slight variations occur owing to growing congestion at the ports. There is excess of the smaller and lower grade coals.

Production during the week ended Nov. 18 was 5,376,000 gross tons, according to a cable to *Coal Age*, as compared with the preceding week's output of 5,441,000 tons, the record for the year. Foreign buyers hope a price cut will follow the heavy production.

Despite the recession in Continental demand, South American markets are very active. This is due mostly to the absence of American competition. The weakness of small coals is attributed to slackness of the patent fuel industry, though bunkers are selling fairly well.

The North England market is affected to the same degree as in Wales. Orders, however, are still being booked for the United States, and the Argentine and the East are also in evidence. Collieries are in no need of fresh business as long as contractors call for full quantities.

French Collieries Still Active

Nord and Pas-de-Calais collieries remain active. Sized coals for domestic uses are still extremely scarce. Demand for industrial coals exceeds the present output.

Imports of British coal by France are increasing — 999,000 tons in October as against 886,000 tons in September—but, owing to the present high rate of sterling and to the liveliness of the demand, French collieries are not yet feeling the pinch of this competition.

The situation of the Loire and Center fields is much improved, as is also the case in the southwest, whence a good export trade to Spain and Italy is being carried on. Owing to the fall of the mark, shipments from the Sarre to south Germany are now decreasing; but those for German railways remain important. Substantial supplies of Sarre coals also go to Switzerland and Austria. Production of the Sarre in September was 985,000 tons, as compared with 1,019,000 tons in August. Pit headstocks on Sept. 30 were 467,000 tons, 75,000 tons less than on Aug. 31.

Germany delivered to France, during the first ten months of 1922, 3,680,000 tons of coke on reparation account, against an amount due of 3,923,000 tons. She under-delivered 66,000 tons of coke in August, 9,000 tons in September and 25,000 tons in October. France needs about 650,000 tons of coke per month, against which she can only reckon in the near future on a supply of 550,000 tons. In order to offset the monthly shortage of 100,000 tons, French ironmasters have purchased this month 20,000 tons of British coke and are trying to obtain, but rather unsuccessfully, an increased supply of Belgian coke.

FRENCH OUTPUT IN SEPTEMBER
(IN METRIC TONS)

Districts:	Sept., 1922
Nord and Pas-de-Calais	
(Non-devastated mines)	616,066
(Devastated mines)	694,234
St. Etienne (Loire)	310,048
Lyons (Blanzy mine, etc.)	234,621
Center fields (Clermont-Ferrand)	109,281
Southern fields	
(Alais district)	155,287
(Toulouse district)	151,198
(Marseilles—lignite)	61,[illegible]
Western minor fields (Nantes)	4,695
Southwestern minor fields (Bordeaux)	5,493
Nancy (Rouchamp mine)	8,274
Lorraine field	369,[illegible]
Total	2,719,72[illegible]

Coal Paragraphs from Foreign Lands

GERMANY—Another increase in the price of coal, this time amounting to 30 per cent, is announced. Unwashed fat coals are now 19,748 M. per ton.

SPAIN—The Central Hullera Asturiana having been dissolved, each mine owner is offering coal at the best prices he can obtain. This has made competition which is attracting buyers.

INDIA—The market is steady. Supplies are adequate. Quotations are: Bengal first, Rs.28; Bengal good second, Rs.26@Rs.27; English, Rs.28, and African, Rs.27½.

United States October Exports

Exports of coal and coke from the United States during October amounted to 404,999 tons of hard coal, (306,082 tons last year); 1,729,425 tons of bituminous coal, (1,330,304 in 1921), and 38,613 tons of coke as compared with 22,256 tons last year. For the ten months ended Oct. 31, 1922, there were 1,543,221 tons of anthracite exported, as compared with 3,540,564 tons last year; 7,996,158 tons of bituminous coal, (18,803,929 in 1921), and 294,594 tons of coke, (220,507 tons last year).

Trade Dull at Hampton Roads

Continued car shortage, with resultant lack of supplies at the piers, featured the week's business here. Only 25 to 30 per cent of normal supply of cars was reported, and the trade was reflecting this situation in its dullness.

Demand and supply maintained the ratio of the week before, the continued lack of coal in large quantities having caused a lethargy among buyers. Coastwise and export business were weak although bunkers moved with considerable briskness. Prices remained approximately the same. Two ships cleared for export last week.

Hampton Roads Pier Situation

	—Week Ended— Nov. 25	Nov. 18
N. & W. Piers, Lambert Pt.		
Cars on hand	444	444
Tons on hand	31,611	32,271
Tons dumped	79,[illegible]	54,[illegible]
Tonnage waiting	8,[illegible]	4,[illegible]
Virginian Ry. Piers, Sewalls Pt.		
Cars on hand	434	1,[illegible]
Tons on hand	14,[illegible]	18,[illegible]
Tons dumped	78,[illegible]	112,[illegible]
Tonnage waiting	17,[illegible]	18,[illegible]
C. & O. Piers, Newport News		
Cars on hand	382	418
Tons on hand	19,[illegible]	22,[illegible]
Tons dumped	18,[illegible]	18,[illegible]
Tonnage waiting	[illegible]	4,[illegible]

Pier and Bunker Prices, Gross Tons

PIERS

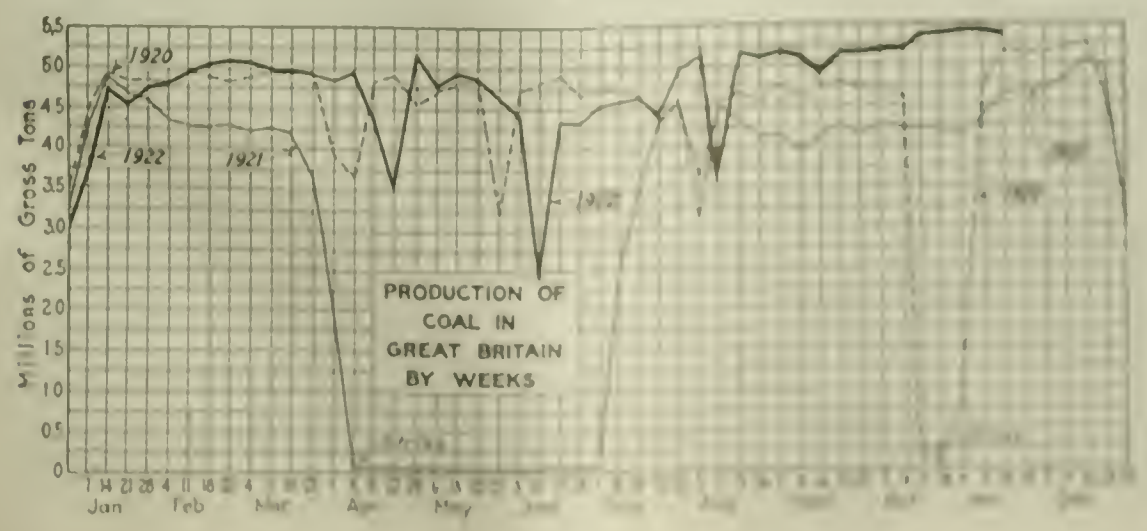
	Nov. 25		Nov. 18	
Pool 9, New York	17	[illegible]	17	[illegible]
Pool 10, New York	[illegible]	[illegible]	7	10
Pool 11, New York	[illegible]	[illegible]	6	25
Pool 9, Philadelphia	7	[illegible]	7	15
Pool 10, Philadelphia	7	[illegible]	7	20
Pool 11, Philadelphia	[illegible]	[illegible]	[illegible]	[illegible]
Pool 1, Hampton Roads	[illegible]	[illegible]	[illegible]	[illegible]
Pools 5-6-7 Hampton Roads	7	[illegible]	7	10
Pool 2, Hampton Roads	[illegible]	[illegible]	[illegible]	[illegible]

BUNKERS

Pool 9, New York	17	[illegible]	17	[illegible]
Pool 10, New York	[illegible]	[illegible]	7	10
Pool 11, New York	[illegible]	[illegible]	6	15
Pool 9, Philadelphia	[illegible]	[illegible]	7	20
Pool 10, Philadelphia	[illegible]	[illegible]	7	15
Pool 11, Philadelphia	[illegible]	[illegible]	[illegible]	[illegible]
Pool 1, Hampton Roads	[illegible]	[illegible]	[illegible]	[illegible]
Pool 2, Hampton Roads	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, Gibraltar	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, Rio de Janeiro	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, Lisbon	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, La Plata	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, Genoa	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, Algiers	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, Pernambuco	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, Bahia	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, Madeira	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, Teneriffe	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, Malta	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, Las Palmas	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, Naples	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, Bunkers	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, Singapore	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, Constantinople	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, St. Michaels	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, Port Said	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, Oran	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, Bari	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, Malta	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, St. Vincent	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, Montevideo	[illegible]	[illegible]	[illegible]	[illegible]
Welsh, Alexandria	[illegible]	[illegible]	[illegible]	[illegible]

Current Quotations, British Coal f.o.b. Port, Gross Tons

Cardiff	Nov. 11	Nov. 25
Admiralty, large	[illegible]	[illegible]
Steam, small	[illegible]	[illegible]
Newport		
Best steams	[illegible]	[illegible]
Third class	[illegible]	[illegible]
Best Gas	[illegible]	[illegible]



North Atlantic

Signs of Growing Scarcity Cause Upward Price Tendency

Difficulty in Obtaining Good Coals Increases—Even Lower Grades Advance—Consumers Buy Closely—Market on Hair-Trigger Basis—Anthracite Shortage Moves Domestic Sizes.

Good coals are increasingly difficult to procure. This distinct evidence of the growing scarcity raised prices during the week and even the lower grades registered advances. Transportation conditions make delivery difficult and requests for tracers indicate how closely the consumer has been buying. Although purchasers profess to believe that the flurry is only temporary and will be relieved now that the Lake season has closed, the market is on a hair-trigger basis, as evidenced by the rising prices with the slightest increased demand.

The shortage of anthracite is moving more domestic sizes. Producers are finding this outlet very attractive and additional mines are now running to prepared coals. High-volatiles seem to have the edge on this business because of the brighter and cleaner appearance of the coal.

NEW YORK

Indications point to a more active market and better prices. Inquiries are more frequent. The low quotations prevailing here for domestic coals do not prevent foreign coals from being shipped here. Reports show that at least one cargo of about 6,000 tons was reported as arriving in the local harbor last week.

The instructions of the Fuel Administration that substitutes for anthracite be used wherever possible ought to add to the demand for bituminous coal, but on the other hand this may be offset by the warning of the Health Commissioner against the smoke nuisance.

Transportation difficulty continues to be the one sore spot in the situation. To this may be added crippled motive power as well as the neglect of mine owners to stock up while it is possible to get coal before the roads are hampered by snow storms. Many mines are receiving few cars and some of the smaller operators are not getting any.

Good coals are hard to pick up and now the cheaper grades are beginning to feel the effects of the shortage. There were nearly 1,000 cars at the local piers the latter part of the week and 40 piers were reported working. Most of this accumulation was of grades 10 and 11.

Demand for coke was heavy during the week ending [illegible]. Gas coal [illegible] Nov. lump was quoted $4.50@$5; run of mine, $4.25@$4.75, and high-volatile steam [illegible].

PHILADELPHIA

There is distinct evidence of a growing scarcity of soft coal, especially those fuels classified under Pools 1, 71, 9 and 10. In fact, Pool 1 is really not obtainable at all. This refers particularly to the coals coming from central Pennsylvania where the car supply is reported as particularly poor. The scarcity of the good coal is such that many houses have for the time ceased soliciting new business, being in some straits to make good on commitments already in hand.

There are many inquiries for domestic, and sales of single cars to retailers grow. The retailer is feeling his way and still shows a preference for the sized gas coals, although some ground is being made in the low-volatiles of a coarse and lumpy nature. There is also fair movement in the sized semi-bituminous grades.

Prices have moved upward. Greater activity in buying on the part of the consumer will immediately show much higher quotations. However, users declare that the present firmness is but a mere flurry, and argue that when Lake navigation is off the boards there will be plenty of coal and much lower prices.

CENTRAL PENNSYLVANIA

Two things have demoralized the coal business in this district. The car shortage, which practically closed down many mines, and now comes a shortage of water which is causing operations to close down.

Car shortage is reported worse along Pennsylvania. Miners are leaving for other sections and the situation is decidedly discouraging. Operations, generally, were closed on Thanksgiving. Prices have undergone but little change, the range being as follows: Unclassified, $2.75@$3; Pools 11 and 18, $3.50; Pool 10, $3.75@$4; Pool 9, $4@4.25; Pools 1 and 71, $4.50@$5.

BALTIMORE

Prices continue about on the same level as the run of several weeks past, with the possible exception that pools 71 and 9 are shaded off a bit from the prices demanded ten days or two weeks ago when there was an especially sharp call for the better-grade fuels and the prices took a distinct advance over the usual gap above pool 10 quotations.

At this writing there is still very little of real pool 71 offering and this rating is worth $4.50@$5. Pool 9 is now offering in a number of cases around $4, although $4.25 might be a nearer quotation. Pool 10 is quoted variously $3.25@$3.40 and pool 18 is $3.50@$3.75. Pool 24 is demanding $3.

The gas-coal market is not of much interest at present although there are some quotations. Pool 64 is offered at $3.05 and pool 65, $3.25@$3.4[illegible]. While the car supply continues far below normal, and the demand at the same time is fairly brisk from local consumers and from those who purchase from Baltimore agents or concerns having headquarters in this city, the market cannot be said to be a tight one by any means.

FAIRMONT

Prices were not materially affected by the cessation of Lake shipments during the closing days of November. Mines not shipping railroad fuel are not getting much of a car supply except on Monday of each week and there is much idleness among the mines in the northern part of the state. Much difficulty is being experienced in getting coal through to Western markets owing to the shortage of equipment.

UPPER POTOMAC

At the end of November production was on a larger scale than at any time in several years, there being a weekly output of over 100,000 tons in the territory embraced within the membership of the Upper Potomac Operators' Association. Production is especially large in the Upper Potomac region. In some parts of the Georges Creek region the output is limited but operators are managing to increase production notwithstanding the fact that so many miners have refused to return to work.

West

DENVER

Coal trade here remains at a low ebb because of the continued warm weather. Domestic demand is nearly stagnant but industrial call is a little better and slightly improved car supply is helping the producers to meet every phase of this demand. Production improvement is swifter in all of the surrounding Rocky Mountain States but this may be accounted for by the fact that Colorado was less affected by the strike than were the others.

KANSAS CITY

The price reduction of $1 a ton on some grades of Kansas coal announced in Kansas City, Nov. 22, has failed to cause any noticeable increase in the demand. The weather continues mild. City folks are able to keep their homes comfortable with gas grates and ovens, and in spite of the assurance of dealers to the contrary, are holding off buying in the hope that there may be a further drop in price. Farmers in this section are stripping their farms of dead wood and lumber scraps.

The demand for industrial coal remains normal, with only occasional shortage in supply due to lack of cars. Operators estimate the mines of this district are producing 40 to 50 per cent of normal.

SALT LAKE CITY

The car situation has improved considerably and, as a result of resumed mild weather, losses will soon be entirely due to market conditions. Production is now around 50 per cent. The demand for small sizes is still decreasing. Dealers are buying for current use only, except in a few cases, in the belief that operators will soon reduce prices. Operators declare they contemplate no changes in this direction.

Anthracite

More Smaller Sizes Moving; Substitutes Sell Better

Upholding of Pennsylvania Tax Causes Two Companies to Raise Prices—Lake Dumpings Dwindle—Producers Promise Increase in Eastern Shipments—Cold Weather Halts Decline in Small Steam Sizes.

Cold weather has brought the consumer to an abrupt realization of the urgent need of substitute fuels. Purchases are being made unwillingly and sparingly, but more and more of the smaller sizes of hard coal are being moved and the sale of coke, briquets and domestic bituminous coal is improving. At this writing the high court decision upholding the Pennsylvania tax has resulted in two companies increasing prices of broken and egg coal, 15c.@20c., and the other domestic sizes 10c. Independent coals are moving at the higher figures recently authorized by the Pennsylvania fuel authorities.

Lake dumpings are declining—98,230 tons last week, as compared with 151,450 in the previous week—and producers now promise an early increase in Eastern shipments. Buckwheat is stronger and the cold weather also has checked the decline in the smaller steam sizes.

PHILADELPHIA

Increasing prices, both company and independent, have engaged the attention of the trade recently. First was the announcement of the State Fuel Commission, which had investigated claims of the independent producers for increased prices. As a result of this investigation prices for prepared sizes up to as high as $12 were approved. Some independents selling at $9.50 were allowed an increase of $1 on prepared sizes, while some of them advanced pea to $8. Following the decision upholding the Pennsylvania tax act, one of the companies advanced broken, stove, nut and pea 10c., and egg 20c., making the circular quotations as follows: broken, $8; egg, stove and nut, $8.30, and pea, $6.30.

However, it is the almost utter lack of coal that is causing the retailer extreme anxiety. The independents still continue to be the heaviest shippers locally and as a result of new prices, retail advances to $16@$17 are to be expected.

The steam market is in fair condition, but all sizes are still to be had without difficulty. Buckwheat appears at times to strengthen, due to the colder weather, and also to the fact that the retail trade is taking a slightly larger share of this size. Inasmuch as the retail men often take this size to get the larger coals they are also in turn insisting on their trade taking a proportion of it. Rice is the weakest of the trio, and barley still inclines to betterment. All steam sizes are still readily obtainable at last week's quotation on the market.

BALTIMORE

Hugh C. Hill, president of the Baltimore Coal Exchange, has tendered his resignation to Governor Ritchie, as a member of the Maryland Fuel Distribution Committee. In coal circles this is regarded as the first move to end the attempted control of the state committee, which after all has been able to accomplish little that would not have come about by the regular routine of trading.

The situation continues tense, although there is a slight betterment for the time being due to the fact that the weather has been mild for a week past. The great rush of householders demanding coal at once has let up to a slight extent. Dealers point to the fact that after nearly 1,500 cars were received in October, the November receipts dropped to almost 1,000 cars. So far, while promises have been made for a better movement for December, there is no indication that the month's receipts will run above those for November. The disinclination to use soft coal continues.

BOSTON

The local retail situation shows little change. Dealers are having a most uncomfortable time with certain of the fuel authorities who seem here to attempt more drastic regulation of deliveries than is suggested elsewhere.

The colder weather has caused considerable anxiety through this territory, but among the trade there is a distinct feeling that if we can tide over the next three or four weeks we shall then be rather better supplied than is possible at present. Certain of the producing companies stopped shipping to Buffalo for Lake shipment on Nov. 25 and already it is apparent that New England shipments will measurably increase during December.

BUFFALO

The Fuel Administration reports that it is about three weeks behind its emergency orders, and yet there is no great amount of uneasiness felt by those who understand the situation fully. They know that the reports of "not a pound of any sort of fuel" is the fault of the complainant. One of the largest local anthracite distributors states that he is burning coke entirely and finds it so satisfactory that he means to go on with it, even after anthracite in domestic sizes becomes plentiful again.

The sale of independent anthracite is brisk. Demand is so great that jobbers are in the region bidding against one another for it, even when the lowest mine price is $12.

The Lake trade continues light and is about at an end. Loadings for last week were only 98,230 net tons, of which 50,800 cleared for Duluth and Superior, 27,900 for Chicago, 8,000 for Milwaukee, 6,500 for Sheboygan, 2,500 for Racine, 2,000 for the Soo and 530 tons for Port Huron. Freight rates are strong at $1.50 to Racine and Port Huron, $1 to Soo, 75c. to Sheboygan, 60c. to Chicago, 50c. to Milwaukee.

NEW YORK

Consumers are realizing now more than ever that in order to keep their fires going they must use substitutes in conjunction with the domestic coals. This ultimatum was forcibly impressed by a few days of cold weather. Demand increased considerably and retail dealers found themselves swamped with orders. When it became apparent that substitutes would have to be taken or no deliveries would be made, dealers were enabled to move much of their buckwheat stocks, as well as bituminous coal, coke and briquets.

The affirming of the Pennsylvania tax law by the higher courts came in for considerable comment but no one in the absence of an official statement, professed to know if it would be passed on to the consumer by the producer. It was rumored that some of the larger independent producers who have been selling their domestic coals between $9 and $10 were considering the advisability of increasing slightly their prices for those sizes.

Buckwheat was stronger and there was more or less increased activity in rice and barley. Demand for these coals increased because of the colder weather. Considerable of the cheaper coals are yet available and quotations in some instances were lower than those given in the current price tabulation, which are for the better grades.

South

BIRMINGHAM

Several days of continued cold weather has further stimulated the domestic demand and will probably also create better inquiry for steam fuel if it holds on long enough. As it is, however, the steam trade is reported as being rather quiet, with spot business only being offered and that in small lots. Domestic demand has been good all along and the mines have not been able to supply trade requirements, due to car shortage and the dullness in the steam market, which has held down production in that direction. Indications are that householders will be compelled to use a considerable quantity of mine run during the winter.

The car supply for the past week has been very bad, reports indicating less than 50 per cent obtained of requirements stipulated by the mines. With few exceptions operations were maintained through the holiday, although output slumped at most of the mines.

VIRGINIA

Production has been increased, though hardly as large a tonnage is being shipped, the additional tonnage being utilized in the production of coke, the all-rail mines serving this territory, however, car supply is somewhat shorter. With production averaging more systematized than in other fields, there is nevertheless a demand sufficiently heavy to absorb the entire output

Chicago and Midwest

Cold Breezes Stimulate But Few Signs of Life

Market Generally Remains Slow, Though Small Pick-Up Absorbs Part of Big Volume of Coal Available—Prices Do Not Vary Much.

The wave of windy, raw weather which swept this region from the Lakes into the South during the past week had only mild effect upon the coal market. It did stimulate buying a little but domestic consumers bought sparingly, still counting on a further drop in prices, and steam buyers were extremely cautious. It was to be noted in more than one market, though, that screenings were in steadily stronger demand, evidently because large consumers are not so sure they can get screenings in any volume they may need at any time they may call.

All company list prices on domestic lump and egg sizes from the best quality fields are said to have been maintained, Franklin County and 6th Vein Indiana lump still bringing $3.50 in most cases, but in other fields quotations have been ragged. There is not sufficient demand for domestic sizes to absorb the lower grades even at their lower prices, which run down to $3. In Kentucky the old battle between East and West goes merrily on, with the western fields winning business by selling domestic sizes at half the price of the other.

CHICAGO

There was mild interest in the market as the week closed. Production had been light during the week, due to Thanksgiving shutdowns and the weekend let-up. This sufficiently lessened the volume of coal available so that there was a little more buying than to supply the want at the end of a week, but nobody was scrambling for coal. Even screenings, the demand for which has been fair for three weeks, strengthened only slightly. Pearl vein Indiana screenings were in some demand at $2.15@$2.40 and sold a little more readily, though in smaller volume, than did southern Illinois screenings of comparable quality quoted at $2.25@$2.50 but with a higher freight rate. A few steady small buyers continue to pay an occasional $3 for best southern Illinois 2x1-in. screenings.

Domestic trade channels continue full to the brim with coal that moves comparatively slowly. Indiana and western Illinois carefully prepared lump still brings $3.50@$3.75 in most transactions, but there is real difficulty moving domestic sizes from other fields near here and prices often take astonishing drops in order that car service costs may be avoided. There are a good many "no bills" of various sorts lined up throughout many fields. Stout efforts of producers to stimulate stocking get only moderate results. With car supply improving in several fields, notably eastern Kentucky, buyers still believe they will not be pinched for coal when cold weather sets in.

ST. LOUIS

There seems to be no desire on the part of the public to buy coal. People are still watching for a reduction in prices. The Laclede Coal Co. on the 19th announced a cut of 50c. per ton on everything for the first half of December. Their coals are not of standard grade and this has no effect on the other dealers.

The mild weather has played its part in choking off demand for coal in the city. Steam buyers too are slow and buy only from day to day. Somewhat similar conditions prevail throughout the country districts. Everyone expects lower prices. Colder weather is the only hope. Very little anthracite, coke and smokeless is moving in.

INDIANAPOLIS

Cooler weather has stimulated the retail business slightly, but there is not the activity there should be or that the retailers really expected this time of the year. The domestic consumer continues to buy his supplies in one- and two-ton lots and there are few basements in Indiana that are filled. Prices show a little increase both to industrial and domestic consumers. The domestic increase is approximately 25c. a ton on most of the prepared sizes. Foreign-mined coal continues to retail around $12.50 and $13.

Operators say there is a slightly more active demand for steam coal. Screenings have advanced about 50c. a ton but the strength on the larger sizes does not seem to be as much. A prominent retailer of Indianapolis is authority for the statement that there is a greater percentage of Indiana prepared coal being sold now than at any time for years.

LOUISVILLE

While it had been expected that eastern Kentucky would be forced to drop prices on prepared sizes, the weather man sent snow and cold weather during the week, with the result that any tendency toward lower prices was checked for the time being. It is admitted, however, that $6 to $7 a ton for eastern Kentucky prepared sizes, when mine-run is selling at $3.10@$3.75 a ton, and screenings at $3@$3.50 a ton, represents an abnormally high market, with a spread between domestic and utility coal that is unreasonable.

During the past few days the retailers have been kept quite busy handling orders of one to three tons, and with very small yard stocks on hand have been ordering coal about as fast as they have loaded it out of their yards. Western Kentucky coal has been moving into this market some St. Louis and Southern business. As a whole the field is doing fairly well considering lack of general demand. Lump coal is quoted at $3.50@$4, the average being about $3.75; mine-run, $2@$2.50; screenings, $1.25@$1.75.

WESTERN KENTUCKY

As a result of cold weather and snow as far west and south as the western Kentucky coal fields, retailers' demands for prepared coal as well as steam-plant fuel have picked up, and this has aided in checking the downward tendency of the market. Domestic sizes have been much better, due to the fact that they are being quoted at about half the price of eastern Kentucky sizes, and lower than domestic-size quotations in many other competing fields. Operators feel that they will get a fair demand for prepared during the next several months, and feel that the tendency of industrial buyers to buy lightly and often will result in a fair volume of steam business.

A better volume of business is reported from Indiana, with fair movement in Kentucky and Tennessee. Some retailers who heretofore have handled West Virginia, east Tennessee and southeastern Kentucky coals almost exclusively are now handling a considerable tonnage of western Kentucky coal because its price is $3 lower and it has a freight rate advantage of 50 or 60c. to Louisville. Western Kentucky domestic sizes are selling at $3.50@$4 at mine, while eastern Kentucky is $6@$7. Retailers are asking a gross margin of around $2.50 a ton on all domestic fuel. Western Kentucky is asking $2@$2.50 at the mine for mine-run, and $1.25@$1.50 for screenings.

SOUTHERN ILLINOIS

Mild weather, public indifference and a few of the independents cutting the prices have kept things barely going. There is no demand for domestic sizes in the Carterville field. Nut is extremely slow. The only change has been a little pick up in the demand for screenings, but this has not altered the prices much. A few of the independents are still selling nut at about $4, egg and lump at $4.50 and up, while the association operators in the Carterville field are holding it to $5.50 on domestic sizes.

Mines are working only two or three days a week, some because of no orders, some because of no cars. Everybody is looking for colder weather. Railroad tonnage is light. Like conditions prevail in the Jackson County and Duquoin field except that the demand there is slower for everything and the car supply is not good on the Illinois Central. In the Mt. Olive field everything is hard to move but a little domestic is going north and west. Steam is slow, although the last few days in the week there was an improvement. No change in prices is recorded.

In the Standard field there are "no bills" on hand at nearly all mines, all the time, on practically all sizes. Car supply totals about three days a week but the mines do not seem able to work over that even if cars were plentiful. Prices vary from $1.25 on screenings to $1.50. Railroad tonnage in both Mt. Olive and Standard fields is light, except on the Mobile & Ohio.

Eastern Inland

Market Feels Depression With Release of Lake Coal

All but Domestic Prices Slump—Cars Still Short and Deliveries Slow—Cool Weather Quickens Domestic Demand —Removal of Prices Restrictions Enlivens Movement in Ohio.

The release of 1,000,000 tons of Lake Coal per week has had a depressing effect on the Eastern Inland market. Prices have slumped on all coals with the exception of domestic. Receipts are not greatly increased, however, and there is now just a tendency of prices to hold firm. Cars are still short and deliveries slow.

Domestic coal is in active demand with the colder weather. The removal of the Ohio price restrictions is causing a better movement of tonnage within the state. There is no shortage, but retailers are busily replenishing their stocks at prices which remain firm.

CLEVELAND

The market for most grades, save domestic lump, continues to show signs of weakness. Demand eased off in rather pronounced degree last week due to the Thanksgiving holiday and the unseasonably warm weather. Buying in the spot market is dull, and consumers seem to be content to confine purchases to immediate needs.

The virtual closing of the Lakes has made it necessary for shippers to divert tonnages formerly absorbed by the Northwest into local markets. That fact has increased the available supply and is one strong reason of the present lull. Many consumers have been waiting for just this development. With prices showing no indication of stiffness, industrial users have had no incentive to make forward commitments.

Both screenings and No. 8 slack are down about 25c. Screenings are quoted at $2.80@$3.15. Slack is selling $3@$3.40. Stocks are not heavy and many industrial consumers have not more than two weeks' supply.

The total Lake movement for the season will exceed 18,000,000 tons. This is about 3,000,000 tons greater than was expected to be moved in September.

COLUMBUS

With the closing of the Lake trade cars were more plentiful for a time, permitting increased production, but this situation is now changing and there is a growing scarcity of cars.

Prepared sizes are still holding up. Dealers are buying more with lower temperatures prevailing. Retail stocks are only fair and some are rather low. Retail prices continue firm at former levels. The disbandment of the Ohio Fuel Administration Dec. 1 is not expected to change retail prices materially, at least for the time being.

Steam business is more quiet. Steam plants have sufficient reserves for the present and are buying mostly for current needs.

Ohio domestic users have to depend largely upon Ohio grades as well as those from the closer fields of West Virginia and Kentucky for their supplies as practically no Pocahontas or other smokeless is coming into the market. Anthracite is also scarce and little is to be had at present.

BUFFALO

The trade keeps up only fairly well. Either the shippers have sized the consumption and demand up badly or the conditions are still quite abnormal. It was confidently claimed for some time after the strike ended that the consumers were not buying as much as they were using and that they would soon run short. Then it was held that the car shortage was increasing so fast that it would soon be impossible to move coal enough.

Both of these claims are now to a certain extent given up, for the large consumers say that more coal is offered them than they need and the car supply in other lines, especially grain and flour, is better than it was. At the same time some of the shippers, including a few railroad officials, are still saying that the winter will show bad car shortages. It is noted that the railroads are not buying much more coal than they need.

Prices have a downward tendency, but quotations remain at $5@$5.25 for Youghiogheny gas lump; $3.75@$4.25 for Pittsburgh and No. 8 steam lump; $3.25@$3.50 for all mine run and $3@$3.25 for slack, with Altoona smithing at $6.75.

EASTERN OHIO

Because of inadequate transportation, production during the week ended Nov. 25 receded somewhat as compared with the preceding week. Output was 338,000 tons, a decrease of 9,000 tons under the previous week and about 54 per cent of potential capacity. It would not be accurate to charge the loss in production of some 200,000 tons solely to transportation disability as Lake shipping programs are now concluded, and a larger quantity of coal is seeking disposition in local markets.

Even with restricted operations the demand is not commensurate with the output. Consumers are not uneasy over the possibilities of a shortage; in fact, some of the more conservative buyers who have laid in some stocks at higher prices than those now prevailing wish to use up a portion of the higher-priced fuel before laying in further supplies.

Fuel control was suspended in Ohio effective Dec. 1, and no adverse results are evident so far as the coal consumer is concerned, except in some sections retail dealers have advanced their delivered prices 50c. because the allowance to them under state control was not sufficient to cover cost of handling. Steam prices have fallen during the week and prices on lump sizes f.o.b. mines have remained at the same level.

Cleveland industries and retail yards during the week ended Nov. 25 received 2,343 cars of bituminous coal; 1,717 of which were for industries and 626 cars for retailers. This was the third largest week during the past two years.

Based on the quantity of coal now on hand at the lower docks and in transit, it is quite likely that at the present rate of Lake transportation, some 300,000 tons will be left over.

DETROIT

Bituminous coal is a little more plentiful than in recent weeks. The larger proportion of the supply reaching Detroit is still coming from mines in Ohio. Smokeless is deficient in supply and not always readily obtainable.

There is apparently little active interest in the market on the part of local buyers of steam coal. Retail dealers also, are displaying scant interest in supply. The market conveys the impression of waiting by the buyers in the expectation that some development will occur which will make it possible for them to stock up at lower prices.

Three-quarter lump from the Pittsburgh No. 8 district is quoted $4.50; mine run, $3.50; slack $3. Hocking lump is $5.50; egg, $5; mine run, $3.50; nut, pea and slack, $2.75. Fairmont 3-in. lump is $4.50; mine run, $3.50; slack, $2.75@$3. Four-inch lump from West Virginia or Kentucky is $6, as also is egg, with mine run, $3.75 and slack, $3.50. Smokeless lump and egg holds around $8 with run of mine $6 and slack not quoted.

PITTSBURGH

The local market has become quieter still. Consumers appear to be very well supplied by regular contracts and only occasionally enter the spot market. Apparently the ending of the Lake shipping season has relieved consumers, exclusive of the domestic trade, from all concern as to supplies.

The market has developed wide price differences according to description and quality of coal. Regular Pittsburgh steam coal is quotable moderately steady at $2.75, while Connellsville steam is $2.25@$2.50. Both byproduct and gas, of the grades commonly passing in odd lots in the open market, are quotable $3@$3.25, but choice grades for particular buyers bring up to $3.50@$3.75, all for mine run. Screenings are at a premium on account of the scarcity. In sharp contrast with the steam coal market, domestic lump is in very heavy demand with unsatisfied inquiry practically every day, the current market being $4.75@$5.

Coal production in the Pittsburgh district is in the neighborhood of 40 per cent of rated capacity, depending still entirely on car supply, which is reported to increase somewhat.

NORTHERN PANHANDLE

With the closing of the Lakes it is easier to make shipments to inland West markets, the W. & L. E. and other roads having removed certain embargoes. The bulk of the product, however, is going for railroad fuel.

Northwest

Scramble for Hard Coal Continues Hopelessly On

Thus Far Much Less Than Promised Amount Has Arrived — Rail Shipments Only May Boost Cost—Soft Coal Plentiful at Level Prices.

There seems no relief for the Northwest's hard-coal shortage to be expected from Lake shipping. Promises of all sorts have been made but the coal has not been forthcoming. Prices have been for two or three weeks on the point of flight but business decency and various influences of restraint have operated to prevent it. However, there is no telling where quotations will go when the navigation season closes Dec. 15 and all-rail hard coal begins coming in.

The Northwest is full of bituminous coal. Nobody is worrying for a minute about that. Industrial demand is fair and domestic trade has been sufficiently stiffened by the wind and comparative cold of the past week to keep yards reasonably busy. Docks with a good deal of various bituminous coals on hand have begun cutting prices to meet rail competition. This has not started any orgy of buying for even the reduced dock prices do not undersell the Illinois and Indiana coal reaching the lower part of this region. It has been many a year since the markets of the Northwest were so badly off balance as they are now.

DULUTH

Contrary to expectations shipments to the Head-of-the-Lakes showed an increase this week, but even a pick up will do little to alleviate the anthracite shortage. In all, 47 cargoes arrived at Duluth-Superior harbor, six of which were hard coal. Sixteen ships made port in one day. There are reported 23 cargoes en route, five being hard coal.

The call for bituminous has not made any appreciable difference in the market of $4.50 for lump, $4.75 for run of pile and $4 for screenings which has prevailed for some time. It is a known fact that as soon as navigation closes the docks which have dropped the price will come back to 1st. The dock trade in southern Minnesota has been cut off by the fuel administrator and the demand from the Mesabi Iron Range is lighter than was anticipated.

Comparative figures show the condition of the markets here. Last year the docks were clear when navigation opened. In all 10,000,000 tons of bituminous were brought up. This year there remained 2,500,000 tons on the docks when navigation opened and about 4,000,000 tons will be brought here before navigation closes.

In anthracite the situation is different. It is estimated that only about 500,000 tons will arrive here this year, which must be added to the 400,000 tons on docks when navigation opened. Last year 1,841,000 tons were brought here. The average for the last five years is 1,700,000 tons of anthracite. This means a considerable shortage. These are government figures.

MILWAUKEE

The coal market is unusually quiet, due to fine weather. However, dealers report a steady demand locally and dock companies are shipping out coal a little more satisfactorily. There seems to be an entire absence of concern both in the city and country as to the adequateness of the winter supply. Prices continue on the old basis, with the exception that one company is receiving 50c. per ton more for anthracite than the trade generally. A modification of the present schedule of hard and soft coal prices will probably be made on Jan. 1.

In November, 15 cargoes of hard coal, aggregating 128,139 tons, reached port, making the season's receipts of hard coal to date 270,253 tons, as against 958,677 tons during the same period last year. Soft coal receipts for November number 40 cargoes, aggregating 321,765 tons, making the season's receipts of soft coal 2,267,665 tons. Last year the soft coal receipts to date aggregated 2,557,383 tons.

MINNEAPOLIS

The soft coal market is supplied sufficiently from all sides so as to keep it pretty well upset. The dock prices have had to be cut to meet rail competition. Rail shippers claim to have held their prices for the better grades. The best southern Illinois coal is held at $5.50 with reductions from that figure, at the mine, for some of the different grades. The freight to the "twin cities" is $3.55 making the price on track, $9.05—a figure which is considerably below the dock list prices.

There is no indication of much support to the market from any direction, aside from what may follow cold weather. Industrial requirements are confined to small tonnages. Buyers are fighting hard for lower prices, and will not lay in stock beyond current needs.

It has been impossible to get anywhere near the anthracite allotment of 750,000 tons, being 60 per cent of 1,250,000 tons which is assumed as a normal store. Up to the end of November, somewhere around 300,000 tons of hard coal had been received at the upper docks.

New England

Expected Improvement Fails to Materialize

Actual Buying Falls Far Below Tonnage Looked For—No Heavy Buying Likely Till Well Into New Year—Movement to Tide Ample for Spot and Contract Needs.

Improvement in the market predicted a fortnight ago has not materialized. The amount of buying then in prospect sloped off considerably, and it took much less tonnage to meet requirements than was then expected. From present indications there will be hardly any comprehensive buying until 1923 is in full swing.

Pocahontas and New River coals are again reaching Hampton Roads in volume. While accumulations are not what they were sixty days ago there is ample coal on wheels for bottoms arriving. The Western and line trade have been more attractive as to price, especially in the case of prepared sizes West, but cars are not being returned by the Western roads in sufficient number to permit heavy tonnages in that direction. Enough coal therefore is being forced to Tidewater to take care of any possible spot demand in addition to the usual contract movement.

Current quotations both at the Virginia terminals and at re-handling points here reflect lighter inquiry, sales having been made at 50c.@75c. less than during the latter part of November. Today $7.25 is an average quotation for cargo coal at Hampton Roads, while $8.50@$8.75 is the range on cars Boston to Providence for Inland delivery.

Other than scattered purchases by the industries practically the only buying is on the part of certain of the railroads. There is still a small tonnage being received from England for locomotive purposes, and there is also a fair tonnage of high-volatile being purchased for the same requirements all-rail from Pennsylvania. Prices on both are at a minimum, and we have heard no sale at more than $3.50 per net ton f.o.b. mines or in the case of English coal at more than $8 c.i.f.

Quality grades in central Pennsylvania are being held at steady prices. Output is not large, but most operators are able in spite of car shortage to make prompt shipment and also keep themselves two to three weeks ahead on orders.

At the New York and Philadelphia piers there is no improvement. Coal there is still a drug on the market, and few operators are hardy enough to take the chance of absorbing heavy demurrage charges.

Cincinnati Gateway

Smokeless and Domestic Feature Inland Trading

Market on Domestic Sizes Holds Firm—Price Cuts Continue on Fine Coals—Smokeless Trade Still on High Plane—Open Weather Prevails.

Smokeless and domestic business occupy the center of the stage so far as Inland trading is concerned. So far the market on domestic sizes has held firm in the face of the various drops that have been recorded since the closing of the Lakes, but with its ever-increasing volume of slack in its wake there has to be a giving away point somewhere and the cuts in price continue on the residue.

Smokeless business continues on the high plane it has occupied for months. More and more shipments, however, are falling into the hands of brokers, with the result that there is a full swing of business on the low-volatile lump and egg sizes around $7.50@$8 even while straight-out selling agencies are taking the same business at $5.13 a ton providing that the purchaser will wait his turn. The weather still remains open—a fatal condition for this time of year from the coal man's viewpoint.

CINCINNATI

The absence of any active buying from the steel mills and the byproduct plants has been the last of one of the agents upon which this market has rested. For weeks these industries have been a strong prop to the trade and without them gas and byproduct coals have fallen to a level where they are worth little more than the steam grades. The drop in price on nut and slack too has been given deep consideration and it would suprise no one to see an attempt to boost the domestic offerings in order to make up the mining costs. Trading from Michigan points has been slackened because of the clean-up of the coals that were standing as a surplus at the Lake ports.

Down the river came a consignment of 42,000 tons for the local harbors and Louisville. This, however, made no appreciable impression on the local prices, which are below those set by the former state fuel administration. December opened with the following retail quotations: Pocahontas lump, $10.50@11; mine run, $9.75; splint lump, $10; nut and slack, $7.50.

LOW-VOLATILE FIELDS

New River and the Gulf

New River mines are still limited to about one day's operation per week. Several times recently the price at Tidewater has softened considerably simply because of the fact that operators have been called upon to ship more coal to Tide than was necessary, the C. & O. not being in a position to handle the Western movement. There have been slight "no market" losses because of this.

Conditions in the Gulf region are not unlike those in the New River district. The fact that there is a better Western demand than there is in the East is not helping producers. Despite the fact that the market is quiet, the output hardly suffices to fill standing orders.

Pocahontas and Tug River

A considerable tonnage which has been going to the Lakes from the Pocahontas region is now available. The Western movement, however, is still somewhat short of the demand owing to limited rail facilities. There are more cars available for Eastern shipments than to the West and it is that condition which still prevents producers from doing the maximum amount of business in Western markets.

The Tug River mines are affected to the same extent as Pocahontas operations by difficulty in securing anything like an adequate supply of open-tops. Of course, some of the fuel is flowing to Tidewater but the demand is nearer par in the West and prices are better there.

HIGH-VOLATILE FIELDS

Kanawha

Inland West markets have softened under the diverted Lake tonnage. The field is not finding it possible to ship much coal to the West on a spot basis, for the mines as a rule are not working more than one full day per week. Not more than one-fifth of the capacity tonnage of the field was being produced late in November except on the line of the Kanawha & Michigan. In the East prices are on a lower level and consequently no effort is being made to find a market in that section.

Logan and Thacker

Although Logan mines are obtaining a somewhat better car supply, nevertheless the supply dropped once again after the C. & O. had made an effort to furnish more cars. Production is limited to about 33 per cent of capacity. Even with the Lake markets shut off, there is a sufficient demand to absorb more fuel than is now being produced in the region. Only a small tonnage is being sold on a spot basis, at prices ranging $3.25@$4 for mine run.

Although the closing of the Lake season has eliminated one of the outlets for tonnage originating in the Kenova-Thacker field, nevertheless with production curtailed no trouble has been experienced in finding a market elsewhere, though prices are hardly on as high a level. Much of the coal is still being moved under contract, so that there is little surplus for spot shipments.

Northeastern Kentucky

Though the field has felt the effect of the closing of the Lakes, nevertheless owing to limited production, prices have not been depressed as much as in other fields where there is a better car supply. Production hardly suffices to more than fill orders for regular customers. Much coal is still moving to Ohio points. There has been little or no recession as to lump prices, with mine run ranging $3.75@$4, gas mine run bringing even a higher price.

Coke

CONNELLSVILLE

Coke production continues to increase and is now at considerably above the immediate pre-strike level. The increases seem to be due chiefly to improving car supply.

There appears still to be practically an even balance between production and consumption of coke, whereby market prices show little tendency to change. The great bulk of the merchant production of furnace coke is going out on contract, partly contracts at set prices and partly contracts involving weekly or monthly price adjustments. Spot and prompt coke continues at $7.25@$7.50 but are perhaps not entirely as firm at this range as a week ago. For regular shipment over December the lowest asking price on standard quality seems to be $6, and this price has been quoted for first quarter on particularly good coke. Spot or prompt foundry coke continues quotable at $7.50@$8.

The *Courier* reports production during the week ended Nov. 25 at 178,350 tons by the furnace ovens and 74,750 tons by the merchant ovens, a total of 201,000 tons, an increase of 18,720 tons. Production was the heaviest since the beginning of 1921, and one-third greater than production at any time for thirteen months before the strike.

UNIONTOWN

Further stiffening of the coal market with the coke market holding its own marked the trend for last week. The price of steam coal in bunkering personally rose to $2 and while that price has not figured in any actual sales several for small tonnages have been closed at $2.10, mines. The market, however, for steam coal generally is quoted at $2.25@$2.50.

There has been little improvement in the car situation. Efforts of the Fayette-Greene Coal Producers Association to improve the car situation on the B. & O. have brought temporary relief at best, the supply last week being greater than for many weeks.

Practically all coke being sold now is for prompt delivery but prices continue to withstand a limited demand. So far as it is known there have been no contracts closed for first half delivery. There were no contracts in force for the last half of this year because of the strike situation.

BUFFALO

Demand is good locally on account of the failure of many coke plants to produce as much as is needed. Followers of the general market report prices slack and lower at $7.50 for foundry, $6.25 for furnace, $6 for stock and $8@$10 for chestnut, as domestic trade.

News Items From Field and Trade

ALABAMA

A coal coke and storage yard with a capacity of 1,000 tons is being constructed at Lock 17, Birmingham, under the supervision of government engineers from the office in Vicksburg. The yard is being provided for the purpose of keeping a good stock of fuel on hand and preventing a possible shortage at any time.

Lieutenant E. P. Eldridge who has been the representative of Fuel Inspector Evans in the prosecutions started, for several weeks closed his office Dec. 1. **J. B. Ford**, representative of the Interstate Commerce Commission in the investigation of car shortage, also discontinued this work Dec. 1.

COLORADO

A "closed shop" campaign in Colorado is planned by the United Mine Workers of America, according to a report received at the office of the state industrial commission from various mining camps. Many locals have gone on record favoring a law which will probably result in the expulsion of all non-union workers from Colorado coal mines. The proposed law may provide for a rigid examination of all miners applicants by boards composed of mine and miners. As in Illinois the plan would be to have mine fire inspectors on these examining boards. Several years ago a similar bill failed to pass the Colorado general assembly.

Nine members of the state ranger force have resigned, according to Col. Patrick J. Hennessy, adjutant general and superintendent of the rangers. It is reported that former state Representative Anderson Arnold, a former coal miner who interested in coal properties, a captain company during the war, is slated to succeed Col. Hennessy.

Every miner employed by the Juanita Coal & Coke Co. at Berwind was given an order, according to an official notification received by the state industrial commission from the company's office at Pueblo, for refusal for the strike was indorsed in the congress, but it is reported that the men have said to have complied of the union. An investigation has been started by members of the commission. The men, it is said, have violated the state industrial act by failing to give notice of the contemplated walkout. The strikers are liable to criminal prosecution.

ILLINOIS

A party of coal operators and engineers from the Pennsylvania fields is touring southern Illinois inspecting the various mining methods and appliances used by the miners and may try to introduce similar methods of mining for coal and gas in Pennsylvania. The party is headed by Gen. Wm. P. Duvall, representative of the Interstate Commerce Commission in the investigation of car shortage, also discontinued this work Dec. 1.

H. H. Hasselman, chief engineer of the Pennsylvania Coal & Coke Co., of Creighton, Pa.; **S. W. Blakeslee**, general superintendent of Cleveland, O.; **J. George Nicholson**, general superintendent of the Pittsburg Coal Co., Pittsburg, Pa., and **William Pattinson**, mining engineer at Uniontown. The party inspected the mine rescue stations at Carterville, Duquoin and Benton and visited mines at West Frankfort, Marion, Murphysboro and other large mining centers.

The operators of the **Central Illinois Coal Trade Association** have announced that the annual meeting of the association will be held in the Old Colony Hotel, Chicago, on a date to be fixed by the officers of the association. The Illinois Coal Co., **W. A. Bridley**, former manager has gone to Illinois mining land in Egypt on the Paducah & Illinois railroad which are owned by **George Brandon**. The mines were soon due to resume.

D. L. Carr, formerly general freight agent of the Chicago & Alton has been appointed sales manager of the Sangamon County Mining Co.

The office of the Illinois Coal Operators' Association was moved last week from Springfield where it has been for ten years to the Peoples Gas Building, Chicago, in order that it may be closer to the headquarters of the executive committee of the association. Secretary C. E. McGaughey is moving to Chicago and will continue to serve the association.

M. E. Peltier, vice president in charge of operations for the Peabody Coal Co., Chicago, was pleasantly reminded on Nov. 11 that the day was the forty-eighth anniversary of his birth. His staff decorated his office before his arrival that morning and a cake bearing 48 candles was cut amid much pomp and circumstance.

Percy Kuhlman, who recently became superintendent in charge of sales for the Keystone Coal & Mining Co., Chicago, was married on Nov. 18, to Miss Margaret Ingles at the bride's home in LaGrange. Mr. Kuhlman was connected with the Sterling Midland Coal Co. at Chicago until two months ago.

The Lumber and Coal Credit Association, 53 North Clark St., Chicago, has been incorporated with capital of $10,000 for general collection and reporting business by F. J. Whiteside, M. B. Whiteside and C. D. Peck.

INDIANA

The Atomized Products Co., Evansville, producer of pulverized coal, paint products and solvents, has filed a voluntary petition in bankruptcy, listing liabilities of $96,000 and assets of $26,000. The company was formed two years ago. It erected a pulverizing plant at Evansville, but has been short of capital to develop its plans.

The Superior Fourth Vein Coal Co. has incorporated for $50,000 and has commenced developing a new mine located near Linton on the C. M. & St. P. This mine is owned by C. A. Murphy and others.

A petition asking that a **receiver be appointed for the Cathleen Coal Co.** of Greene County, to operate the mine on the property of the company and for $200 damages has been filed in superior court at Terre Haute, by Arthur D. Torr. The petition states the company is in debt to the extent of $10,000. It is alleged the property is in good condition and will pay dividends if handled properly. For this reason it was asked that a receiver be named who could proceed with the operation of the mine and in this manner settle all indebtedness.

Deeds have been filed in Terre Haute, transferring approximately 1,205 acres of land in Vigo County to the **Indiana Electric Corporation** for the purpose of operating a coal mine on and under the land purchased. The total consideration is given as $62,109. **The corporation plans to operate coal mines** to supply fuel for the electric plant to be erected on the Wabash River.

Beginning December 1, consumers of coal in Terre Haute, Ind., and other cities in the Wabash valley coal fields are favored by **a 10-per cent reduction in Indiana short-haul coal rates** for distances of 20 miles and less. If the rates had not been controlled the carload rate on coal from the surrounding mines into Terre Haute and other cities would have been 50c. a ton instead of the new maximum of 50c. a ton. Approximately 1,000,000 tons of coal are consumed by domestic users and industrials in Terre Haute annually. The new rate effects a saving of more than $300,000 a year.

William P. Boatman has been named receiver for the Cathleen Coal Co. in Greene County. The petition for a receiver was filed by **Arthur D. Torr** on the mine could continue operation. It is stated that the company has sufficient equipment to operate successfully and that with careful management all of the indebtedness could be cleared.

IOWA

B. J. Nelson, state weights and measures inspector, recently found a coal dealer in Sioux City whose **scales had been giving an extra 200 lbs. for every 1,000 lb. sold.**

KANSAS

Twelve miners were reported injured, two seriously, by a powder explosion Nov. 23, in Operation Mine No. 4 near Cherokee. About 100 men normally are employed in the mine.

Plans for a kansas state mine rescue meet at Girard Dec. 16, were completed the other day by James Sherwood, state mine inspector, Mayor J. J. Story, of Girard, and members of the Girard Chamber of Commerce. H. N. Taylor, president of the Southwestern Interstate Coal Operators' Association, and John L. Lewis, international president of the U. M. W., or their representatives, will speak.

Ballots were prepared for **a special election of officers for District 14, U. M. W. A.**, scheduled for Dec. 15. The officers will assume their duties Jan. 1, and will serve until March 31, 1923. With the assumption of office by the newly elected men, the autonomy of District 14, lost in the Howat regime, will be restored.

KENTUCKY

The Madisonville Coal Properties Co., Hopkins, has been organized, with capital of $100,000; J. B. Ramsey, B. C. Mitchell and R. H. Gatton, all of Madisonville are the incorporators.

Western Kentucky operators who sent a committee to Washington to **confer with Fuel Director Spens**, on Nov. 9, relative to maximum prices, after an appointment had been made, and found on arrival that Spens was in New York, he having wired to break the engagement after the committee had left for Washington, are a bit peeved over the matter, and have stated that if Spens wishes to discuss the problem he can meet them at Dawson Springs, as they are not wasting further railroad fare in unnecessary travel. Right now with the maximum price around $4 in western Kentucky, there is no immediate need of regulation.

It is announced at Whitesburg, that another good-sized coal development is to be launched in the Beaver Creek field, by the **Huntington Coal Mining Co.**, of Huntington, W. Va. J. M. Hall will be at the head. Contracts have been made for much of the building work, including 100 miners' houses, a modern tipple, with conveyor, to cost about $100,000, a clubhouse, Y. M. C. A., church, school and other buildings. The name of the new town will be Harkins.

Michigan capital is reported to be behind a movement for **development of a hydro-electric plant** at Parkersmill, four miles from Somerset, to furnish power for a big flour mill and for coal and timber operations. It is reported that $5,000,000 has been raised to finance the plan.

MISSOURI

Articles of incorporation have been filed with the recorder of Bates County for the **Missouri-Kansas Coal & Fuel Co.** of Worland, located on the west line of the county. The directors are, J. H. Smith of Worland, and A. A. Grammel and Geo. Grammel, formerly of Pleasanton, Kan. The capital is $50,000.

Dan C. Crane, of Springfield, has secured a lease on 280 acres of coal land near Creighton and has **opened a mine.** He has been working on the mine about a year getting it into shape. At present about 150 men are employed. The mine is equipped with electrical machinery and is modern in every way. **Several mining companies are being formed to work in the neighborhood.**

Four coal mines are being opened in the vicinity of Elmo. **C. Tuttle** and **E. E. Carver**, who opened the DeLand mines at Quitman, are developing the Elmo field.

The Big Creek Coal Co., of Kirksville, has announced that it will close and seal Mine No. 3, and it probably will remain closed for a year. About 100 men are affected by the shutdown.

NEW MEXICO

The list of dead caused by the recent explosion in mine No. 4 of the **Albuquerque-Cerrillos Coal Co.** at Madrid, remains at seven but the number of injured was reduced from about 30 to 13. Only twenty men were in the mine at the time of the explosion and all were killed or injured, officials of the company said. Cause of the explosion has not been determined.

NEW YORK

Merle D. Thompson, of Elmira, a wholesale dry goods dealer, has been appointed fuel administrator for the Sixth Judicial District, covering ten counties in the south central part of the State. Mr. Thompson succeeds Samuel J. Koerbel, who resigned Nov. 23. The appointment was made by State Fuel Administrator Woodin.

The Coal and Coke Committee, Trunk Line Territory, announces a public hearing 11 a.m., Dec. 14, at 143 Liberty St., New York City, on adjustment of rates on bituminous coal from central Pennsylvania and adjacent points and on anthracite to Boston & Maine points in Canada, including Derby Line, Vt. The proposal is intended to remove in part fourth section violations and to provide for proper alignment with rates effective to contiguous territory.

The General Electric Co. announces the formation of the **Charles A. Coffin Foundation**, consisting of a fund of $400,000, the income from which will be used to encourage and reward service in the electrical field by giving prizes to employees, recognition to lighting, power and railway companies for improvement in service to the public and fellowships to graduate students and funds for research work at technical schools and colleges. The foundation was created as an appreciation of the great work of Mr. Coffin, not only for the General Electric Co. but also for the entire electrical industry. Mr. Coffin, retired from active leadership of the company May 16 last, in his 78th year, having been identified with the development of the electrical industry since 1882.

Geo. Macnoe, manager of the Boston office of **W. B. Connor, Inc.**, has been recalled to New York to take charge of the contractors sales department, handling heating and pumping equipment.

A. E. Jones, sales engineer in the New York office of the Terry Steam Turbine Co., has accepted a position with **W. B. Connor, Inc.**, New York City, in a similar capacity.

The Merrimac Anthracite Coal Corporation, with mines in Montgomery County, Virginia, has opened an office in Buffalo and begun the sale of buckwheat size in quantity. The president, William Griffiths, of Scranton, Pa., is temporarily at the Buffalo office, but the management of the branch will be given to one of the other officers. The freight rate from the mines to Buffalo is $3.83, as against $3.28 from the Pennsylvania anthracite mines.

OHIO

The Murbach Coal & Supply Co., Elyria, has been chartered with a capital of $75,000 to deal in coal. Incorporators are John Murbach, Ralph Murbach, R. W. Rammone, J. E. Murbach and H. W. Ingersoll.

The Trio Sales Co., Cincinnati, has been chartered with a capital of $10,000 to do a general wholesale business. Incorporators are G. M. Shoemaker, W. B. Davies, W. R. Davis, Arthur J. D. Busedicer and Addison G. Durham.

The Valley Camp Coal Co., of Cleveland, which had a temporary office in Columbus during the Lake season, has closed this office and its manager, T. N. Bradford, has gone to Cleveland.

The New York Coal Co., Columbus, has been awarded the contract for 3,600 tons of Hocking nut, pea and slack for the municipal light plant at $2.75 at the mines, making $4.01 delivered in Columbus. At the same time the **F. M. Spencer Coal Co.**, was awarded the contract for 1,800 tons for the water works department at $2.65 f.o.b mines.

Headway is being made by the **Lorain Coal & Dock Co.** in the opening of its new mine in Belmont County. The mine will be known as the Lincoln No. 5 and is not far from the old Lansing mine of the company, operations at which ceased several months ago and which has since been dismantled. The company is planning for the erection of a modern tipple early in the spring.

The Creemar Coal Co. has been chartered with a capital of $100,000 to mine coal in the Crooksville district. Incorporators are S. H. Garrick, C. W. Howell, E. F. O'Neal H. C. Pugh and Hazel A. Shrake.

Bob Abbihl, who was with the Reliance Coal Co., of Cincinnati for a couple of years and who returned to the coal traffic department of the Chesapeake & Ohio Ry., was in Cincinnati recently.

President James Reilly, a coal man, of the Cincinnati Chamber of Commerce has seen that the fuel interests are largely represented at the meeting of the Rivers and Harbors Congress in Washington on Dec. 7. He appointed Captain Oscar Barrett, Captain John T. Hatfield, R. P. Gilliham and Fred Hertweg.

Benjamin N. Ford, vice-president of the Matthew Addy Co. of Cincinnati, was seriously injured on Nov. 26 in an automobile collision. Mr. Ford had but recently recovered from a serious operation.

Rush Meadows, the Cincinnati financial genius of the Big Mandy Coal Co. and the Mohio Coal Co., both of which are in the hands of the receiver, while being arranged for trial on a charge of violating the Ohio blue sky law, was arrested on a warrant issued in Jackson, Ky., on a charge of being a fugitive from justice. He was taken there for trial.

OKLAHOMA

In an **explosion of undetermined origin** in the mine of the **McAlester-Edwards Coal Co.** near Pittsburg, one shotfirer was killed. The force of 210 miners had just left the shaft. It is believed that the explosion was due to a windy shot.

The Tulsa County Coal Co., of Tulsa, has just been organized and charter filed in the office of the Secretary of State. This company owns considerable land in Tulsa County. The company is capitalized at $50,000 and the incorporators are Benjamin C. Connor, Harry A. Tallman and Eugene E. Hennig, all of Tulsa.

The Oak Ridge Coal Co. has been organized at Red Oak and will develop a vein of coal on land owned by this company near Red Oak. The company is capitalized at $200,000 and the incorporators are: Vince Davis, James Hilling and Ray Morgan, all of Red Oak.

Strikers in six mines of the Crowe Coal Co. at Henryetta, who went back to work Nov. 14, pending arbitration, are still working, although the district joint board failed to agree on the case in a two-day session in Kansas City, Nov. 22 and 23. **The dispute has been referred** to W. L. A. Johnson, commissioner for the Southwestern Interstate Coal Operators' Association, and John White, former international president of the U. M. W. Eight hundred men struck Oct. 23, because of a disagreement over the distance a machine crew should be required to move a coal cutting machine without extra pay.

PENNSYLVANIA

The Bowman Coal Co., of Trenton, N. J., announces the opening of an office in the Real Estate Trust Bldg., Philadelphia. Arch'd W. Garvin will be in charge.

Announcement has been made that **P. D. Browning**, formerly mining engineer of the Berwind-White Coal Mining Co., has been promoted to the office of general superintendent, a new office created by the concern.

Since the opening of the mines in the Monongahela River valley, more than **65,000 tons of coal are being shipped daily** on the Monongahela River by the Carnegie Steel Co., the Vesta Coal Co., Hillman Transportation Co., and the Equitable Towing & Transportation Co.

Merritt Hutton, graduate of the Colorado School of Mines, formerly chief engineer and, until recently, general superintendent for the Rembrandt Peale interests, an-



MERITT HUTTON
Mining Engineer Johnstown

nounces that he has opened an office as consulting mining engineer in Johnstown. He is prepared to make surveys, make coal estimates and give complete engineering service.

The Pine Hill Collieries Co. has applied the State Department, Harrisburg, of an extension to engage in coal mining business, having its [illegible]. W. B. Turner, Philadelphia, vice-president and [illegible].

The Pennsylvania Steam Coal Co. [illegible] has organized with capital of $[illegible] by Thomas F. Mason, Pittsburgh; Prospect C. Frost, Wilkinsburg; Chas. L. Gordon, Indiana, Pa.

The following companies have recently been granted charters at Harrisburg: **South Union Coal Co.**, Greensburg, capital, $[illegible], treasurer, Jay C. Turner, Greensburg. Purpose: Mining coal and manufacturing coke and [illegible]. Incorporators: John M. Jamison, Jay C. Jamison and Robert A. Smith, Greensburg. **L. & W. Coal Co.**, McKeesport, capital $[illegible], treasurer Herman Lewis, McKeesport. Purpose: Mining and producing coal. Incorporators: Thomas Williams, Pittsburgh; Herman Lewis and Louis Lewis, McKeesport. **Moon Run Gas Coal Co.**, Pittsburgh, capital, $[illegible], treasurer Sidney J. Kaufmann, Pittsburgh. Purpose: Mining, producing, buying and selling coal. Incorporators: D. E. Park, Brentwood; Sidney J. Kaufmann and Louis Caplan, Pittsburgh. **Reiss Coal Co.**, Pittsburgh, capital $[illegible], treasurer P. S. Snyder, Swissvale. Purpose: Mining, producing, buying and selling coal and coke. Incorporators: P. S. Snyder, [illegible] and [illegible]. Charter date, [illegible]. H. H. Gross, Crafton and Alex. Robertson, Ingomar.

Opinions in the following cases were rendered by the Pennsylvania Workmen's Compensation Board on Nov. 29: Mrs. George Sass, et al., against the **Carnegie Coal Co.**, Pittsburgh, appeal by the defendant from an award of referee; referee affirmed and the appeal dismissed. Albert Mansley against the **Pittsburgh Terminal Railroad & Coal Co.**, appeal by defendant from award of referee; referee affirmed and appeal dismissed. Ivan Lyons against the **Diamond Coal & Coke Co.**, Pittsburgh, appeal by defendant from award of referee; hearing de novo granted for claimant. Mrs. [illegible] against the **Labelle Coke Co.**, [Labelle]; appeal by defendant from award by referee; referee affirmed and appeal dismissed.

Drought conditions are so serious that tank trains have been put on to haul **water to collieries in the Schuylkill region.** The operators say they will not close down the mines if there is any water within fifty miles. They hope to obtain enough water for steam purposes for [illegible] days by the rains set in.

UTAH

The coal mines which owned a number of cars to lay off for a few days but most accomplished without much loss. By the time the origin of the fire which burned [illegible] until attacked by a force of expert mine fire fighters.

The coal operators of Utah, [illegible] coal mines for preferring, were **released without bond** after their attorneys had waged a bitter and successful fight against bond requirements.

WASHINGTON

The appointment of **Richard Prendergast Jr.**, of Roslyn, as deputy state coal mine inspector in the Bellingham district, has been announced by Edward Clifford, director of the Department of Labor and Industries. Mr. Prendergast has been engaged in mining [illegible] years, and has been a resident of Washington [illegible] years.

WEST VIRGINIA

The purchase of the mine of the [illegible] coal and a railroad [illegible] at Elgee, near Tidewater Junction, Raleigh County, by the **Howard Smokeless Coal Co.** from the Upper Coal Co. is announced. The mine is one of the largest producers of [illegible] in southern West Virginia in recent months.

The banks of Morgantown, having declined to extend [illegible] during the present [illegible] per day. It is estimated that some of the coal companies operating on Scott's Run and tributaries in Monongalia County will [illegible] a total of [illegible] tons per day. The [illegible] operating [illegible] on Scott's Run [illegible] a total [illegible] tons per day. James D. Jamison, executive manager of the **Cleveland Morgantown Coal Co.**, [illegible] that it will be necessary for [illegible] to [illegible] tons per day [illegible] to meet [illegible] [illegible] [illegible]

WISCONSIN

WASHINGTON, D. C.

J. D. Northrup has been authorized to act in charge of the coal classification [illegible] of the U. S. Geological Survey in the absence of **Herman Stabler**. Mr. Northrup will retain his duties as chief of the division of mineral classification. The work of the coal classification board recently has been changed to that of land classification board.

A substantial beginning of the active development of that vast mineral wealth which has heretofore been locked up in the public domain of various western states, but which is now to be liberated under the terms of the general leasing law, has been made, according to Dr. H. Foster Bain, director of the Bureau of Mines, in his annual report just submitted to the Secretary of the Interior. Coal is now being mined under lease in Washington, Montana, North Dakota, South Dakota, Wyoming, Utah, Colorado, New Mexico and Nevada. Coal and other mines on Indian lands are being operated in still other states. On the public lands proper the Bureau of Mines is now charged with supervision of 29 coal leases, 203 coal-prospecting permits and 5 coal licenses. The value of waste coal in mines at Wilkeson, Wash., was demonstrated, with the result that a plant for the recovery of 150,000 tons is now being erected. The difficulty in the way of using metallurgical cyanide in metallurgical work was discovered and remedied, resulting in the breaking of a monopoly in this important chemical material.

Work in connection with the leasing of mineral lands has developed so much more rapidly under the federal leasing Act, than had been expected, that the Bureau of Mines is being embarrassed seriously in its efforts to meet the situation. It has been necessary to take men temporarily away from their other duties to help the leasing and land work adjusted by the land of navigation [illegible] to which the Bureau is entitled. The anthracite situation is serious, with only [illegible] and more than [illegible] navigation [illegible]. Mercantile [illegible] tons of [illegible] coal.

ALASKA

Awards for coal have been announced by the Alaska Coal Railroad Commission for coal produced in Alaska, as follows: **Moose Creek Coal Co.**, 5,000 tons at $6; **Healy River Coal Co.**, 10,000 tons at $2.40; **Evans Jones Coal Co.**, 32,000 tons at $5.80; **Henry Baxter**, 15,000 tons at $6.50.

The Evan Jones mine in the Matanuska field caught fire on the second level on Nov. 18. Bureau of Mines men were dispatched to the mine immediately. Telegraphic advices are to the effect that the fire has been barricaded and the area flooded. Since this mine is an important source of supply of the coal needed by the government railroad, it is of the greatest importance to secure its quick return to production.

CANADA

A significant announcement was made by **Hon. D. D. MacKenzie**, Solicitor-General for Canada, in the course of an address in Toronto a few days ago, to the effect that plans were under way to supply Ontario and Quebec with **coke manufactured from Nova Scotia bituminous coal** in sufficient quantities to make these two provinces absolutely independent of hard coal supplies from the United States.

The Yellowhead Coal Co.'s mine, at Coal Spur, Alberta, caught fire recently from spontaneous combustion, and all efforts up to now to extinguish the fire have been futile. It is feared that the mine may be a total loss.

The Carbondale Coal Co., operating near the British Columbia-Alberta boundary, has commenced production. A carload of coal shipped to Cranbrook, B. C., was retailed at $4 per ton, a remarkably low figure for recent years. The company has sunk a 100-ft. shaft and driven a tunnel on one of the seams. The two main seams have not yet been developed. The coal is described as a semi-anthracite, and makes a satisfactory house coal.

In a statement just issued the Federal Fuel Advisory Committee, at Ottawa, once more warns householders that there is **little anthracite coming into Canada** and that it is important to **lay in a supply of substitutes**. Consumers are facing a situation which may lead to difficulty and possible hardship "unless the attitude of the public toward substitutes greatly alters." It will be the middle of February before the shortage of anthracite can possibly be caught up with, it is said, by which time winter transportation difficulties are generally at their worst.

The Betty mine, near Telkwa, B. C., has commenced to ship coal to Prince Rupert. Last year the mine shipped a considerable quantity of coal to both Prince Rupert and Edmonton. The coal is high grade, being in particular demand for blacksmithing. Unfortunately, the mine is 7½ miles from the railway at Telkwa, and the roads are exceedingly bad. It is possible, however, to ship over the winter snow. The seam is 18 ft. thick, with two shale partings, 10 and 20 in. thick. Owing to the nature of the country, a railway to connect the mine with the Canadian national system, it is said, would be costly.

Obituary

Traffic News

for a period of 10 consecutive days, provided that the cars so assigned shall be counted against the distributive shares allotted to the mines in said district. All regulations with respect to car service are suspended so far as they conflict with the directions hereby made.

A complaint has been filed with the Interstate Commerce Commission by the **Wyoming Coal Co.**, of Tams, W. Va., against the Virginian Ry. The complaint alleges rates on coal from complainant's mines located on the Virginian to certain interstate destinations are unjust, unreasonable, unduly prejudicial and discriminatory in so far as they exceed rates applying from mines of complainant's competitors located on the Chesapeake & Ohio in the New River district. The establishment of joint through rates is asked.

The proposed report in the case of **Edward E. Marshall vs. the Pennsylvania R.R. Co.** by Examiner Warren H. Wagner, of the I. C. C. finds rates on coke in carloads from Elkhorn, W. Va., to Harrisburg, Pa., unreasonable. Reparation is awarded.

The proposed report in the case of the **Nelson Fuel Co. vs. the Chesapeake & Ohio Ry. Co.** by Examiner J. P. Keeler finds rates on coal in carloads from mines on the Greenbrier & Eastern R.R. to interstate destinations unreasonable and unduly prejudicial. A schedule of maximum reasonable [illegible] rates is prescribed.

The Interstate Commerce Commission on [illegible] has been asked to investigate the freight rate charges on coal from the anthracite fields to Newport News and to Norfolk. The rate to Newport News is $1.50 and to Norfolk $1.65. The dealers in the former city assert that this is discriminatory and complaint against these [illegible]. Traffic interests at Norfolk have offered their assistance in lowering the rate to the sister city.

On the recommendation of the Federal Fuel Distributor the I. C. C. on Nov. 29 issued an order, effective Dec. 1, directing the C. & O. Ry. to assign to the mine of the Rhodell Coal Co. at Rhodell, W. Va., open-top cars at the rate of four per day for ten consecutive working days for movement to points in Virginia, in priority to any other use of such cars. It is provided, however, that the cars so assigned shall be counted against the share allotted to the mine and shall not be subject to diversion or reconsignment except with the approval of the commission. All regulations of the C. & O. with respect to car service in so far as they conflict with this order are suspended.

The assignment of cars for railroad fuel loading has reached such proportions as to be **denounced by operators in eastern Ohio** as bordering on intimidation, their argument being that there is no car shortage as far as the mines having railroad fuel contracts are concerned. As a result of the failure to furnish commercial mines in eastern Ohio with an adequate car supply, it is estimated that fully 10,000 miners in Belmont County are idle the greater part of the time. Operators and officials of the union have united in denouncing the assigned car system as vicious and pernicious.

Coming Meetings

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, *Editor*

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Evidence Must Be Unimpeachable

COLLECTION of information along two lines has been definitely inaugurated by the U. S. Coal Commission. Schedules are being sent to the coal companies asking for costs of production and realization from sales by months for the year 1921 and for earnings of men employed in the same year. Thus the two questions with regard to which there is perhaps the most controversy will be covered by comprehensive figures—the earnings of the producers and the earnings of the mine workers.

The schedules that have been adopted are rather formidable. On the cost report form there is provision for a maximum of 146 numbered items calling for 137 separate replies. Producers having less than 120,000 tons annual output are permitted to subtract 40 items from the list, leaving 97 items to answer. The longer schedule calls for a division of labor costs between 15 items, supply costs between 16 items and miscellaneous income spread over 9 items not required on the shorter form.

One may well wonder at the interest of the commission in a division of costs so fine as to set out, for instance, labor cost for "haulage and hoisting" from "dumping and tallying," while neglecting to provide for a subtotal on labor costs that would permit comparison of payroll costs from the cost form with those from the same mine in the same month on the earnings form. Just why a commission inquiring into the vexed coal question displays such interest in the allocation of supplies expense among 16 classifications, including everything from mining through drainage, ventilation and railroad-car loading to engineering is not clear. Perhaps the inspiration was afforded by a diagram prepared and circulated by the operators some time ago showing to the number of several hundred the variety of items that go to make up the cost of producing a ton of coal.

The cost statement has 110 numbered lines, of which but 29 call for figures taken from the books; 15 are totals and subtotals, 15 are blanks, 40 are the details noted above called for on the long but not on the short form, and 11 are "yes or no" questions. For the majority of producers there are but 10 questions in the remaining 35 numbered lines of the schedule that require figures taken from the books. Any producer who keeps books can easily answer the questions on the short form, and the 40 additional details of the long form are of little moment.

The schedule covering earnings of mine labor is cumbersome but complete. It provides for a year's record by pay periods of the earnings and days or hours worked by each employee by name, classified by occupation. There is but one way to ascertain what a man earns in a year and that is to trace his record throughout the year. Since dollars received on a given wage scale is a function largely of time worked—even as regards tonnage men—low earnings connote few days of work, high earnings advantage taken of the better opportunity for labor. The labor schedule makes provision for bringing out, so far as mine records will permit, the relation of the days the individuals work to the days the mines offer opportunity to work. Absolute data in this respect for tonnage workers cannot be had because, as everyone knows, it has never been possible to ascertain how many days or how many hours per day the tonnage man stays on the job. The miner prizes so highly his freedom of action, his liberty to come and go, to absent himself at will, that any attempt to check his time other than by the roughest methods is doomed to failure.

These two studies—the costs and profits of the operators and the earnings of mine labor—are the most important statistical investigation that the commission will have to undertake. They are costly both for the operators, who alone can supply the data, and for the commission, which must compile the returns. The answers from these schedules will give the American people information on those points regarding which there is and has been the greatest controversy. Facts about what the mine workers earn and the companies profit from the production of coal have hitherto been either too fragmentary to carry conviction or have been ex-parte statements, subject to partisan attack and so attacked. The Coal Commission is looked upon as the agency of the American people set up to get all the facts and certify them to the public. This question must be settled.

It is but natural that operators' associations having collected much of these data regarding costs of production and earnings of labor—data in their estimation correct and true—should desire the commission to accept their compiled returns. This, it appears, the commission will not do, for the reason that it must build its results on original sworn returns, holding that to do otherwise would lay its work open to such criticism as would annul its value and weaken its effectiveness.

To this there is no conclusive answer. Having set its face to the task of supporting the Coal Commission in its labors of getting all the facts about that industry, the coal producers must go along with the commission with this policy. Whatever would discredit the results of the commission would discredit the operators. The results must not only be the facts, they must as well be undeniably the facts. Quibbling over methods that are designed to produce unimpeachable evidence is shortsighted. Figures that the most carping critic in Congress or the cleverest publicity man for the United Mine Workers cannot assail will be worth several times what it will cost the operators to fill out all the blanks the commission may design. The coal producers should give no occasion to add to their reputation for refusing to give up the facts about the coal industry.

"Peace! Peace!" And There Was No Peace

"GENTLEMEN, let bygones be bygones," declared John L. Lewis, president of the United Mine Workers, to that famous "peace" conference he called in Cleveland in early October. Then he spoke somewhat of the need for both sides to compose their differences, make mutual concessions and for each to devote itself to the problems confronting the coal industry with due regard for the interests of the other. Forgotten indeed were Mr. Lewis' sentiments. "Now it be only seems what he says," said operators leaving that meeting, "there's hope of getting up relations with the union on a businesslike basis after all." They thought it too good to be true, but a few with hard experience in dealing with Mr. Lewis' organization went home encouraged. The others surely went home

And now that the Chicago sessions of the joint committee on methods for wage making have come to their hopeless conclusion, where is Mr. Lewis' sweet program for peace? The miners refuse to consider for a moment any method of future negotiations that would include less than the four states of the Central Competitive Field. They refuse anything and everything even faintly smacking of arbitration, partisan or non-partisan. They announce truculently that they have already decided what the next scale of wages shall be. Yet they talk of "negotiation."

Ponder the fact that there have been no "negotiations" between the operators and United Mine Workers since the conference of 1916. Mr. Lewis, in power since 1919, has not negotiated a single scale. He has forced demands on the industry by strikes. Lewis has set himself to militancy and he shows no inclination to turn back. The leader of a pack, he must keep in front or be torn apart by his followers. Credited with being at heart a conservative, he has surrounded himself with the tradition of a fighter that pursues him relentlessly.

Ponder further the conditions that will face Mr. Lewis when he determines his policy for next April. Following five months' strike idleness, will have been seven months' work averaging less than half time, with what in prospect after April 1? Large groups of mine workers will work no more than two days per week this winter, due to short car supply. Other groups will make four, five and even six days per week. In total they will get all the work for which there is demand for their product, but inequality in car supply is now making and will continue to make for better opportunity here than there.

Without stopping to argue that an industry that is so overmanned is one to leave, these short-time men will call for shorter time and greater wages. Is it not pretty clear that as against trying to take the men through a year of little work, letting the dissatisfied grouse and get out, Lewis will have the choice of holding them in line through a strike? The morale of his men is more easily maintained on strike than working a day or so a week, no matter what the wage. And then he has the reputation of winning strikes. Does any of this "augur well for the future relations" between operators and miners? Mr. Lewis said the October conference developments did.

On the other side the question now is: Can the operators afford to avoid a strike next April at the expense of continuing a wage scale that will inevitably result in shutting down mines for lack of a market willing to pay the cost of coal? Is a strike any worse than that? It cannot honestly be said that a majority of operators want to precipitate a strike. Turmoil has damaged the industry enough already. It can honestly be said that most thinking operators earnestly desire friendly relations with labor and some radical change in the industry to permit it to operate on business principles. It can further be said that most of them earnestly seek some way to put their industry right with the people. But unless some new element is introduced between now and April 1 there is grave doubt as to the propriety of any course that now seems open. The situation is, indeed, one to give concern to the coal operators of America and the public.

Abusing the Check-Off in Indiana

IF PROOF were ever necessary—or valuable—to show that the United Mine Workers are ever ready to violate the terms of their contract agreements with operators the present check-off case in Indiana is a fair citation. There the union has not hesitated to abuse the sacred check-off, which is already under suspicion by the courts, and to bring to the fore, where all may see, evidence that the check-off is a spigot which can be tapped with more or less ease whenever the organization needs money. If the present intent is to amass a greater strike fund against the developments of next April, why should not the operator of that state fight back vigorously?

The battle is over the question: "What are union dues?" Under the agreement the operator "shall offer no objections to the check-off for the checkweighman and for dues to the U.M.W. of A." Ever since the signing of the contract 50c. a month has been checked off for the national union organization. Now the union is demanding $2 a month for November and December for the national. This, the operators contend, is a special assessment and not regular dues and therefore is not collectable. They hold a letter from John Hessler, president of the Indiana union district, calling it a special assessment—a letter written before the present dispute came to a head.

Whatever the justice of the debate over the meaning of the word "dues," the damning point in the case against the union is that during the past month, when the special assessment of $2 was supposed to have been collected, check-off increases of various amounts made by secretary-treasurers of the locals did not specify $2 for the national at all. Neither were these increases uniform. The explanations given by the locals varied widely. In one instance a secretary-treasurer explained that the union dues had to be increased because he was a new man on the job and had underestimated his expenses. In other cases there were astonishing increases in burial and sick-fund items, and all sorts of surprising boosts in initiation fees appeared. In one local this increase was from $10 to $50, in another to $100. The fact that several operators paid these increased check-offs in November through misunderstanding and through their not being alive to what was going on is no cause for the balance of them paying it now.

It will be recalled that in 1921 the Pittsburgh operators refused to collect a special assessment for the union under the check-off, an assessment the purpose of which was to support the Mingo war. Because the operators had certain knowledge of the use for which this money was designed, the union did not press the claim, and the "dues" were not collected.

Choosing, Lubricating and Attaching Wire Ropes*

Hardness and Tensile Strength Found in the Same Rope but Flexible Rope Is More Subject to Wear—Lang-Lay Rope Stronger Than Regular Lay

By J. F. Howe†
Worcester, Mass.



SELECTING the proper type of wire rope for each kind of coal-mining service is an important duty for the engineer. A study of the various materials used in wire rope is of interest because a knowledge of the physical characteristics of the wire composing the rope will give a fairly good idea of the way in which a rope will behave when it goes into service. Four kinds of wire ordinarily are used in wire-rope manufacture:

Crucible-steel hoisting rope, composed ordinarily of materials of a tensile strength ranging from 160,000 to 200,000 lb. per square inch.

Extra strong crucible-steel rope, composed of materials of a tensile strength ranging from 200,000 to 220,000 lb. per square inch.

Plow-steel rope, composed of materials of a tensile strength ranging from 220,000 to 240,000 lb. per square inch.

Special improved plow-steel rope, for which each manufacturer has his own trade name, composed of materials of a tensile strength ranging from 240,000 to 280,000 lb. per square inch.

Tensile strength is not the only characteristic of the wires; others must be borne in mind. Mention was made in the first part of this paper of the importance of hardness and of the relative value of these steels when they are compared with this physical property in view.

In addition to the test for hardness, wire for rope must stand certain ductility tests. Even the hardest wire must meet a high ductility test, else it is unsuited for that purpose. There are cases where hardness is required in wire to withstand abrasion or rubbing, and in those cases either plow steel or monitor grade usually is required. From the standpoint of tensile strength alone, it may not be necessary to use this material; but in order to get maximum service, it frequently is necessary to use rope of the greater strength in order to get the harder steel and the life that goes with it.

In every rope installation two factors must be considered, the cost of installing the rope, including the time lost in so doing, and its original cost. It frequently happens that the cost of installation is a large percentage of the original cost of the rope; anything that can be done, therefore, to increase the life of a rope would cut down not only the original cost but part of the cost of installation.

It always is advisable to use a rope of standard construction unless the service it renders is unsatisfactory, and then only such special constructions should be considered as offer promise of reasonable improvement in service. If, for instance, a plow-steel 6 x 19 hoisting rope wears out too fast, a monitor or improved plow-steel rope would afford a harder wire and probably the added rope service desired. If not, then an effort should be made to reduce the friction. The ropemaker should not be called upon to produce greater efficiency unless the mining engineer has done his part. In case of a bad overlay on the drum, however, a mining engineer can do little to better conditions unless a larger drum can be provided. In that event it is the ropemaker's problem to propose a special construction or quality that will meet the stresses that the overlaying of the rope introduces. In some such cases a flattened-strand rope, 6 x 25 construction, has given excellent results, and in other cases a Seale patent, 6 x 19, or modified construction such as 6 x 16 has produced the results desired. Lang-lay ropes often are better than regular lay for shaft ropes where overlaying is unavoidable.

Lang-Lay Rope Used for Many Years Abroad

Many opinions have been expressed as to the respective merits of regular-lay and Lang-lay rope. The standard rope used in the United States has always been one of the regular lay. Without delving too deeply into the reasons for this, I might say that this probably is due largely to the fact that the regular-lay rope is more easily produced and in general is more satisfactory to the user than the Lang-lay rope. The latter rope is not, however, a new style of rope construction. It is as old as the art itself, having been brought out almost simultaneously in both England and Germany—in England by Lang and in Germany by Albert.

A Lang-lay rope is one in which the wires in the strand and the strands in the rope are twisted in the same direction. Lang-lay is never used in hemp ropes, because a hemp rope would not hold together if made in this manner. Perhaps this is one of the reasons why the ropemakers have fallen into the habit of making regular lay rope instead of Lang-lay.

In the regular-lay rope the wires in the strand and the

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*Second instalment of an article from a paper entitled "A Discussion of Wire Rope as Applied to Mining Operations" read at the fall meeting of the Rocky Mountain Coal Mining Institute. The first part of the article, "Wire Rope Is Dumb but Improper Installation and Careless Operation Quickly Destroy It," appeared in *Coal Age*, pp. 825-828, of the present volume.

†American Steel & Wire Co.

NOTE—The headpiece shows the conveyor road of the Lion Coal Co., Wattis, Utah, as seen from the tipple. The rope is about 10,000 ft. long.

strands in the rope are twisted in opposing directions. The result of that method of manufacture is a tendency in the rope of regular lay to hold itself together and particularly to resist any force tending to untwist it. The action which would take place in a regular lay rope, when subjected to a force tending to untwist it, would be to cause wires in the strands to twist up tighter, thus creating a powerful reaction against too much untwisting.

In the Lang-lay rope, however, under the same conditions, an untwisting of the rope proper will cause an untwisting of the strands and loosening up of the wires, the only force tending to prevent the rope from completely untwisting being the natural stiffness of each wire taken by itself. Compare this with the tendency of a regular-lay rope which is to react as a whole and powerfully to stop the untwisting.



ROPE HAULING CARS TO TIPPLE

Another view of Lang Coal Co.'s rope haulage road with mules in road.

Installations which have used Lang-lay ropes and reported unfavorably on them have done so in many cases owing to the natural reaction against innovation that takes place when the Lang-lay rope is put in service. It should be noted that whereas in the United States probably 90 per cent of the ropes used are of regular lay, in England, Continental Europe and South Africa by far the greater percentage of the mining ropes are of Lang-lay construction. Had the difficulties in the use of Lang-lay ropes been insurmountable their use would not have been so general in those countries.

In a Lang-lay rope the worn spot on each wire is longer than it is in a rope of regular lay. The Lang-lay rope usually is at least 5 per cent stronger than a regular-lay rope composed of wire of the same size and strength. This is an advantage that has sometimes been overlooked by those who have criticized the former. Another criticism that has been offered is that it is more difficult to splice. This, I think, is a fact that is granted by the manufacturers and users. It is not, however, an insurmountable difficulty, as has been proved by the use in various places of what is known as flattened-strand hoisting and haulage rope. All of this rope is of the Lang-lay type, and not only can be, but has been, spliced successfully, and found to give admirable service.

The particular place where it is advisable to use Lang-lay rope is on gravity inclines and slopes where the rope rubs or drags. It may also be used on vertical shafts, although few such installations are found in the United States. In Canada most of the shaft ropes in use are of Lang-lay construction, due largely probably to the influence of Great Britain in furnishing ropes of this section. Lang-lay ropes on shafts have, so far as observation goes, given good results and little trouble. In general, a Lang-lay rope should not be used with swivel connections, as it tends to untwist.

Ropes composed of round strands differ greatly in their flexibility. Listed in the order of their increase in that quality are the following constructions:

TABLE I—ROPE ARRANGED ACCORDING TO FLEXIBILITY

6 strands, 7 wires, 1 hemp core—round-strand rope	least flexible
6 strands, 8 wires, 1 hemp core—flattened-strand rope	
6 strands, 19 wires, 1 hemp core—round-strand hoisting rope	
6 strands, 25 wires, 1 hemp core—flattened-strand hoisting rope	flexible
18 strands, 7 wires, 1 hemp core—non-spinning hoisting rope	
6 strands, 19 wires, 1 hemp core—extra-flexible hoisting rope	very
6 strands, 37 wires, 1 hemp core—special flexible hoisting rope	flexible

Flexibility is increased by increasing the number of wires in the strand and decreasing the diameter of the individual wires. Whenever, therefore, the flexibility is decreased, the wearing surface also is decreased and the wires will not stand as much abrasion as those where a coarser construction has been adopted. Were it not for this fact, any place requiring a flexible rope could have its requirements fully met regardless of the other conditions.

Rope consisting of 6 strands of 7 wires, of course, is rather stiff and is used only for mine haulage and similar uses. The same is true of flattened-strand rope, 6 strands of 8 wires. The rope of 6 strands, 19 wires, as modified is used for both mine hoists and haulages, as is also the 6 strands, 25 wires, flattened-strand hoisting rope. In the case of haulages, rope something like the Seale patent construction of 19 wires is used, and in the case of shafts the regular 19-wire strand rope is used.

Use Many-Strand Rope If Guides Are Lacking

Rope of 18 strands, 7 wires each, known as non-spinning rope, is used in mining operations almost wholly for shaft sinking, for when it is used a shaft can be sunk without guides, the bucket showing no tendency to rotate when being hoisted. This rope, of course, is specially constructed for the purpose of attaining this freedom from rotation. It is not a rope that is recommended for promiscuous hoisting purposes, but it is exceedingly efficient in shaft sinking and has demonstrated that it is superior to any other type or construction for that purpose. Ropes composed of 6 strands of 37 wires are seldom used for shaft work, because the flexibility is in most cases greater than is required. Rope of 8 strands, 19 wires is seldom used for shaft work, and for the same reason. Shaft ropes, which are overlaid in winding on the drum, are made of modified constructions containing coarser wires.

During the process of making the manufacturer should lubricate the rope internally and externally. It can be done better and more thoroughly then than at any other time. Additional lubricant should be applied as soon as the rope shows external signs that such attention is needed either to reduce friction or to prevent rust. In making the application it is preferable to put on a small quantity frequently than a larger quantity at longer intervals. Be sure the rope is free from water, for if it is present it will prevent the lubricant from adhering.

Most lubricants are free from acid, but if in doubt, a test for acidity should be made. Acid will cause the steel wire to become brittle. Whenever possible, a can of lubricant should be placed so that it will drop from a point on the rope as it runs back and forth. This will be found to lubricate the rope effectively and at a low cost. With the drip method, a thinner lubricant may be used than where the lubrication is more complete but is done only periodically. Many lubricants must be heated before application, and in the winter it is

more difficult, of course, to lubricate a rope than in the summer.

A wire rope wears out gradually in service until the time comes when replacement is deemed necessary. When ropes are used for hoisting men, it is usual to remove ropes earlier than when ore or rock alone is hoisted. The evidences which are allowed to govern in the decision as to the time when a rope should be rejected are as follows:

(1) External wear on the wires.
(2) Breakage of individual wires.
(3) Corrosion due to mine water or electrolysis.
(4) Torsion or breakage of wires near attachments.

External wear alone seldom is sufficient of itself to necessitate the removal of a rope, but broken wires are always looked upon as more or less of a source of danger. Corrosion, if internal, is not as noticeable as the other two, but it is really more dangerous than either, being concealed in many cases. Torsion or breakage of wires near attachments is caused by a crowding ahead of the twist or lay of a rope as the hoists are made, coupled with the vibration of the rope which comes to a stop at or near to the drum. This makes it advisable to cut off a short piece of rope from the cage end at regular intervals of time, thus changing the point where the vibration of the rope localizes.

In this connection reference should be made to Bulletin No. 75 of the U. S. Bureau of Mines, where further particulars are given as to practice in the recapping of the ropes on mine hoists. A similar practice is in use in the mining field of the Transvaal.

What Deterioration in Rope Is Fatal

In passing judgment as to whether a rope should be replaced care should be taken to see that all evidences of weakness are given due consideration. A rope showing only wear will be but little reduced in its ultimate strength, much less than the wear would appear to indicate, for the worn spots on the wire reduce the cross-section of the rope but little, and after all it is the cross-sectional area at any given point which determines the strength.

The location and distribution of the broken wires in a worn rope also should be given consideration. Single wires broken in any strand, if separated by a distance of, say, 3 ft. will reduce the strength by only 1/114 if the hoisting rope is composed of 6 strands of 19 wires each. Several wires broken in one spot, however, will reduce the rope strength materially.

In determining the life of a hoisting rope different methods are used to keep a record of the service obtained. Sometimes this is measured by the time the rope is in service, but if the rope is not worked steadily for the entire period, this can at best be only a partial criterion of rope performance. More often a record is kept of the tons hoisted to the surface, including the rock and ore. If this value is sufficiently high, the rope service is considered satisfactory. A rough check of this can be obtained by taking the number of trips made during the rope life.

For elevator work it is becoming more and more common to measure the service by the number of miles traveled by any set of ropes, and it is practicable to do the same with the hoist of a mine shaft by attaching a counter to the drum shaft with suitable reduction gears by which the mileage can be mechanically determined. Whatever method is used for keeping track of rope performance, allowance will always have to be made for contingencies or variations in service.



WHERE ROAD UNDERMINES THE ROCK FACE

To reduce rubbing of rope on rails and roadbed, the road is made as straight as can be arranged. A rocky point that seems to have turned the valley makes it impossible to keep the road on a straight line.

There is still much of what might be termed "conservatism" when it comes to a discussion of the best means of fastening a cage to the end of a wire rope. Men still tend to cling to the older forms of attachment instead of adopting improved methods. I am convinced that this is because many rope users have perhaps never seen ropes tested and feel that in making a change to some other method than that which has been in use for a period of years involves a responsibility which they do not desire to assume.

Most of the general types of rope fastenings have been in use for many years. They are described in Table II, where their efficiencies are given as compared with that of a steel socket with a properly placed zinc filling, rated as 100 per cent.

TABLE II—ROPE FASTENINGS AND THEIR RELATIVE EFFICIENCIES

	Per Cent
1—Wire-rope clamps and thimble	75–80
2—Wire-rope clips and thimble	80–85
3—Thimble or eye splice	90
4—Open or closed steel sockets	100

For clips, the following table should be used in making attachments to the ends of a rope.

TABLE III—NUMBER AND SIZE OF CLIPS FOR ROPES OF VARIOUS SIZES

Dia. of Rope, In.	No. of Clips Recommended	Size of Clips, In.	Max. No. of Wires to Turn Through Clips	Min. Spacing Between Clips, In.
1	2	1	6	6
7/8	2	1	6	6
3/4	2	1	6	6
5/8	2	1	6	6
1/2	2	1	12	5
1	3	1	12	5
1	3	1	12	5
1	4	1	18	6
1	4	1	18	7
1	5	1	18	7
1	5	1	18	8
1	6	1	18	9
1	6	1	18	9
1	6	1	18	10
1	6	1	18	10
1	6	1	18	10
2	6	1	18	10
2	6	1	24	12
2	6	1	24	12
2	6	1	24	12
3	6	1	18	12

With either clamps or clips it is necessary after the load is placed on a rope to go over all the bolts and tighten the nuts, because tension on a rope compresses the hemp center and releases the stress on the bolts, making them unsafe. One reason for using several clamps or clips is to keep down to a reasonable value the pressure necessary to make them hold.

No fastening except the socket filled with zinc will develop maximum efficiency. This method has been

used since 1908 in all of our tests and with uniformly successful results. Thousands of sockets all over the United States have been so attached without a single failure. This form of fastening has been recommended by the U. S. Bureau of Mines and by the wire-rope manufacturers. It is simple, strong and compact. It can be made quickly and easily with the facilities available at any mine. The strongest fastening is none too good where safety of human beings is at stake.

In attaching rope to a drum it is customary to use a hole through the drum and to carry the rope around a spoke or the central shaft and fasten the end back with wire-rope clips. Several laps of rope should be left on the drum when the rope is out at its point of maximum travel, to prevent undue pull on the drum fastening. While this method of attachment is somewhat crude, its use is almost general and little if any trouble comes from it.

In installing a rope it always is advisable to run the rope out its full length, whether it is to work in a shaft or a slope, and let any tendency to untwist run out before it is attached to car or cage. Then several trips should be made, and the rope again disconnected. If this is done the tendency to kink which is sometimes found in new ropes will be avoided. It is essential to do this on both vertical shafts and slopes as it will insure better operation and prevent the occurrence of trouble later.

The Frugal Man Saves Oil Without Injuring His Machinery

By F. C. Sinback

Utah Grove, Ala.

LACK of proper lubrication doubtless is the cause of most of the trouble experienced in the operation of coal-mine machinery. By this I do not mean that enough oil and grease are not applied. On the contrary, I find in a large number of cases that twice or three times as much oil is being used as would lubricate the machinery properly, yet the machines are constantly suffering from a lack of lubrication.

This, for several reasons. First, the oil or grease does not reach the bearing or part to be lubricated, the oil holes and channels being full of coal dust or dirt; second, the oil or grease is not applied at the proper time; third, the lubricant employed is not of a quality suitable for the particular type of machine or bearing on which it is used.

For the lubrication of tipple and washing machinery common black oil is good enough. The oiler, however, should be instructed in its use if any economy is to be shown. He should be provided with wires of several gages so that he can clean out the oil holes, and before applying any oil he should see that all such holes are clean right down to the shaft bearing. He should then use only enough oil at any one time to lubricate the bearing, as any surplus that runs off lubricates nothing and only makes a mess.

The first oiling in the morning should be done before starting up, and the oil should be applied hot so that it will flow freely into the bearing and furnish lubrication the moment a start is made. I have known of several instances where those in charge did not insist that bearings be oiled before starting but instead preferred to wait an hour or more. A bearing will be harmed more in a few minutes of dry running than in a month of steady operation with proper lubrication. For this reason it is always advisable to oil up any kind of machinery before starting in the morning, as some of the bearings may be dry and it does not pay to take a chance.

If grease is to be used on this class of machinery every bearing should be equipped with an approved grease cup of some kind. Furthermore a grease should be selected that will not harden. If spring cups are used they must be watched closely so as to be sure that they are feeding and the oiler should screw each cup down a little, twice or more each day, the first time being before starting up in the morning. All oil and grease should be stored in covered containers from which coal dust, dirt and grit should be carefully excluded.

I find that the slow-running bearings around washery and tipple are neglected more than any others. As they do not run fast enough to produce sufficient heat to be noticeable, they are allowed to become dry and grind themselves out. Oil, it is true, may be slopped all over them but the oil holes are likely to be plugged tight with coal dust and dirt. The oiler of such equipment should be required to keep all deposits of oil, grease and coal dust removed from the bearings, as these are not only unsightly but tend also to conceal the real condition of the machinery.

If motors are used to drive tipple or washery machinery, their bearings should be drained and washed with kerosene or gasoline at least once a month. Only a high-grade oil should be used, and the oil rings should be examined daily to see that they are operating properly. On cold mornings these motor bearings should be watched closely, as the oil is likely to thicken to such an extent that the rings will not operate. In that case the bearings may be damaged before the oil thaws enough to allow the rings to function properly.

All oil drained from motor bearings should be saved and filtered, as it can be used for lubricating other machinery which requires an oil of a comparatively high grade. I use this oil in the power-house oiling system.

A high-grade medium-soft grease, absolutely free from acid, should be selected as a lubricant for ball bearings on locomotives and mining machines. If any acid be present it will pit the highly polished surfaces of the balls and races, and materially shorten their life. Great care should be exercised in keeping grit and dirt out of the grease used in such bearings, as they are ruined quickly by a small quantity of such abrasive material.

On all high-speed bearings of coal-cutting machines I would suggest using a good grade of red engine oil. On the other bearings I would use black oil, except on some of the worm gears, where grease should be employed. The same precautions as to keeping oil holes open and as to the quantity of lubricant used that have been advised in connection with tipple and washery machinery also should be observed on the mining machine. Also the machine always should be oiled before a start is made in the morning.

Before starting to cut any working place the cutter chain should be thoroughly lubricated with black oil. This best can be done by running the chain slowly and pouring the oil onto it at a point where the oil will be carried under the guides. By paying more attention to lubrication the life of machinery will be appreciably lengthened, costly delays will be lessened and a great saving in oil will be shown. A small quantity of oil properly administered will do far more good than a large quantity wastefully used.

Cutting Thin and Pitching Coal Beds in Belgium By Longwall, Using American Chain Machines

Output per Man at Face Has Been Doubled by Change in Methods—No Regular Packwalls Constructed—Stepping of Working Faces Reduced to Five Yards—Foreign Labor on Increase

By F. C. Cornet*
New York City

NOBODY believes that American coal-cutting machines, in their present state of development, can ever be put into successful use in all the Belgian mines, for in some of them the difficulties to be met are extremely unfavorable. Where the pitch of the coal has not exceeded 35 deg., however, the American chain cutter of the so-called longwall type during the last two years has shown such a creditable performance that it is now safe to predict that it will soon be considered an instrument without which the coal in most of the mines of that country cannot be worked at a profit.

In order to understand clearly how the Belgians had to modify their plans so as to make it practicable for them to use mining machines to advantage in their mines it is necessary to describe briefly the mining methods which usually have been adopted in the past in that country, where, according to duly recorded data, coal has been mined for a longer period than in any other country. One of these mining methods, shown in Figs. 1 and 2, consists in driving to the rise, on the full pitch, a series of short faces, *5*, arranged in groups of four to seven—four in the case illustrated.

Each group generally has an aggregate face development of 250 ft. or thereabouts and is driven some distance in advance of the following group. Each face in a given group also is in advance of the following one, but a few feet only. Fig. 1 shows a plan of workings of this kind arranged between two places, *3* and *4*, both driven level in the seam at different elevations and at a relatively considerable horizontal distance from each other. This distance, *L* in the case represented, is 1,100 ft., whereas *H*, the difference in elevation, is 420 ft., making the grade about 38 or 39 per cent.

Place *3* serves as the main road through which all the coal mined between *3* and *4* is hauled away. Place *4* itself was used at an earlier period as a haulage road through which all the coal mined to the rise of that place up to another place of same character driven in the seam at a higher elevation was hauled away. Place *3* is tributary to tunnel *1*, driven across the measures and serving as both air intake and general haulage road.

In the same way, place *4* is tributary to tunnel *2*, also driven across the measures, serving as general return airway and leading to the fan shaft all the air coming from the level of place *3*, not only through the workings



FIG. 2—ELEVATION CROSS TUNNELS AND COAL SEAM
Seam rises about 120 ft. in 1,000, or 11 per cent. The section is taken along Section line 6 of Fig. 1. The long tunnels through solid rock shown here are one of the causes of the high costs of Belgian coal. The cross-section of the tunnels in the coal seam are marked *3* and *4*.

represented but also through all the other workings in operation between the level of tunnel *3* and that of tunnel *4*. There may be a dozen or more such workings.

All places marked *6* are so many self-acting inclined planes through which mine cars are taken from the haulage road *3* to the different faces (5) and vice versa. All these planes are maintained in the gob. Half way between places *3* and *4*, a level place (*6*) is provided in the gob, crossing all the planes of the same group of faces.

Below place *8* only one plane is thereafter maintained, while all the planes above *8* are kept working until all the coal that is tributary to the group of faces has been worked out. Parts of planes when no longer used are allowed to cave. When a group of faces is worked out, all places connected with it also are allowed to cave, as shown by dash lines and indicated by *7* and *8*. All planes, intermediate places (*8*) and the main road (*4*) are double tracked, the gage varying between 22 and 24 in., according to the preference of the company operating the mine. Some cars have a capacity of only 0.33 ton, but some will hold as much as 0.60 ton. This also varies from company to company.

Mining machines tried on the short faces shown in Fig. 1 gave results that were unsatisfactory commercially, on account not only of the shortness of each individual cut, which made it necessary continually to move the machines from place to place, but also and principally on account of the difficulty encountered in moving the machines through the narrow and slate-encumbered passageways provided for the passage of air from face to face and group to group all the way from the lower level

*Consulting engineer.

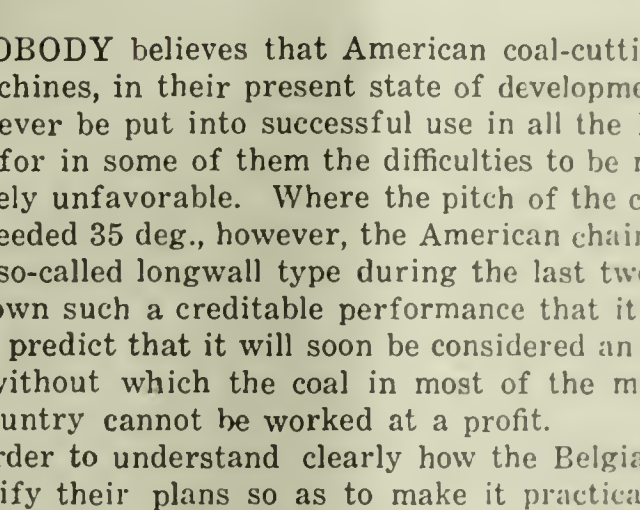


FIG. 1—METHOD OF HAND MINING IN BELGIUM
This plan shows a method that met all requirements more satisfactorily than any other method so long as machines were not used. It is easy to see how the broken face was better suited to hand mining than to machine cutting. The long passageway by which the machines had to be taken from one group of faces to the next was not always as readily negotiable as might be desired and as for moving the machine by way of the self-acting planes that was out of the question.

to the upper one. To move the machines by way of the planes proved well nigh impossible.

Recognizing the impracticability of using cutting machines to any advantage in such workings as shown in Fig. 1, the Belgians turned to the method shown in Figs. 3 and 4. This method, to be sure, was not unknown to them. They had practised it to some extent, and with some degree of success, for many years. But for some reasons, all of which were not fancied, the method never proved nearly as successful as that described above.

These reasons, fancied and real, are of a purely local order. To explain them to readers not accustomed to Belgian mining conditions and customs would be too arduous and long to be undertaken here. Be that as it

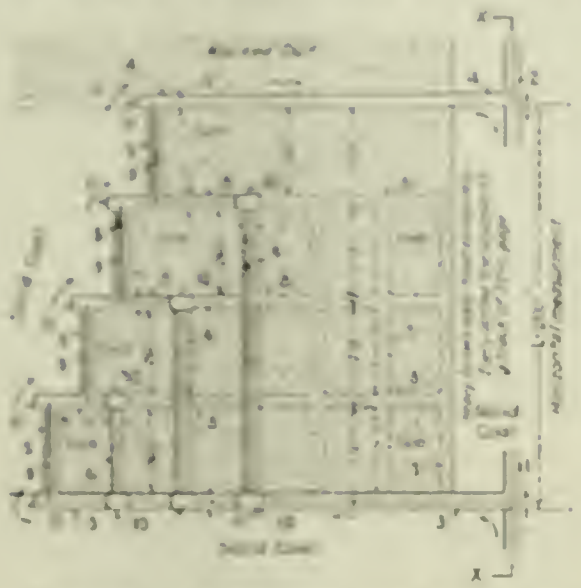


FIG. 3—PLAN AS MODIFIED TO FIT MACHINES

After they adopted machines for cutting the coal Belgian engineers laid out workings of a type that they had formerly rejected. The coal slides down the chute *A* and reaches the gangway *B*, which can be transferred to a self-acting incline at the point marked (*B*). Note that, regardless of their condition, the cars are changed in the manner when it gets back across the face. This same view

may, as soon as the until-then less-favored method was found to be the more adaptable to mining machines, all the drawbacks that had been charged against it were overlooked in an effort to get results with the cutters.

Referring to Figs. 3 and 4, the workings shown are in a seam of the same pitch and general character as are the workings shown in Figs. 1 and 2. The main haulageways, air returns and rock tunnels also are similar. There are here only four faces, all marked 5, each 260 ft. long in horizontal measurement. They lie directly up the pitch and are advanced in the direction of the strike of the seam. Each face is kept ahead of the one immediately above it. Access to the foot of the lowermost face is directly through the haulage road (*3*). Access to the foot of each of the other faces is through a self-acting inclined plane and a corresponding level plane (*6* and *7* respectively), both maintained in the gob and both double-tracked.

Regular point-and-frog switches are not used in this track work. Steel floors (*10*) are laid at all turns, upon which the cars are turned by hand and made to take the track desired. These floors soon become so polished and slick that it takes but little effort to maneuver the cars rapidly as wanted. All these floors require is scraping every morning to remove the material that has hardened upon them during the night.

After scraping they are sprayed with a little black oil, which adds to their slipperiness and gloss. They shine even under the light of the safety lamps, and for that reason are called "polls," which in French means a polished, shining area.

As mining progresses, that is, as the faces advance, the plane serving the uppermost face is in time discontinued and allowed to cave. The next plane is extended upward through the gob to level *8*, serving the uppermost face. In the same way and simultaneously the service of the face second from the top is insured by extending upward through the gob the plane that was serving the face second from the bottom.

The service of the latter is itself insured through a new plane rising from the haulage road (*3*). Belgian miners think no more of driving a place through the gob than our miners of driving a crosscut between rooms. Caved planes and level places, shown in dash lines, are indicated by *7* and *8*, respectively.

As sufficient headroom can never be provided even for mine cars by merely removing the coal the necessary height is obtained by digging into the floor. This is called in French "couper la voie," which means "to cut the roadway." Thus, the cars can be brought to the foot of the different faces at such a level relatively to the floor of the coal seam that the coal, sliding in chutes from along the face, is discharged either directly into the cars, or into small, gate-controlled bins, which in turn are emptied into the cars. When the pitch of the seam is not sufficient to make the chutes operate by gravity, mechanical chutes are used. A system of such chutes was described in *Coal Age* of Sept. 28, 1922. Belgian coal men do not consider that mechanical chutes are necessary so long as the pitch of the seam is 22 deg. or over.

I desire now to call attention to the practice of driving the small recesses (*11*) a few feet (8 to 12) ahead of the faces. The reason for these recesses will appear below. It might be said that place *4* is not properly driving, as it is an old place. But it must be reopened anyway, it having caved since it was first dug and left with nothing but a packwall to maintain it on the upper side.

It will be understood without explanations that the method illustrated in Fig 3 lends itself well to the use of American cutting machines. At one of the Amercoeur mines near Charleroi, where the faces are longer than those shown in Fig. 3, being 88 m., or nearly 290 ft., horizontal measurement, a cut 54 in. deep is completed in 3 hours and 30 minutes, including what time is necessary to change all the bits when the half way point is reached. The Amercoeur pitch is 22 deg.

At the Maurage collieries, where the pitch varies from seam to seam, and even in the same seam, from 10 to

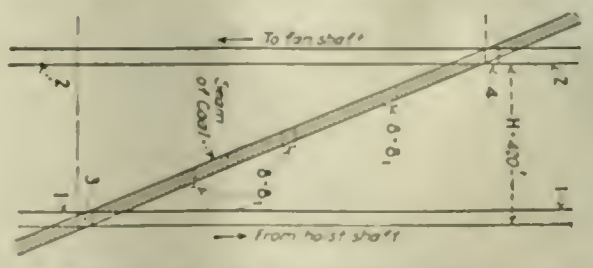


FIG. 4—ELEVATION OF TUNNELS AND COAL SEAM

The cross-section is taken through *X-X* of Fig. 3. It will be noted that the roadways 8-8, do not come out to the line *X-X*, a pillar being left to protect the tunnels from movement of the measures.

25 deg., the coal is cut at the same rate of speed as at Amercoeur, each 250 ft. face being cut 54 in. deep in exactly 3 hours, including the time consumed by a complete change of bits. In the case of the workings shown in Fig. 3 the time necessary for passing the machine from one face to the next varies with the distance separating the faces. It varies also with the condition of

the passageway, which before the arrival of the chain cutter was considered sufficiently large when it answered the purpose of ventilation and a man could pass through it without too much trouble.

Be that as it may, it took less time to pass the machine through this narrow roadway than it does in American room-and-pillar practice to move a cutter from one room to the next one. It must be said also that the adoption of the chain machines has had for immediate results not only to induce the Belgians to keep the passageways freer from obstructions but also to cause them to shorten the distance between faces. From the hundred feet that this distance sometimes was it has been reduced in some cases to 5 yd. The time lost in passing the machine from face to face is now less than 15 minutes.

The probability is that the tendency will be further to reduce the distance between the faces and to make the faces fewer in number. How many these will be will depend only on the maximum number of cars that can be handled at one loading station.

As to the recesses (*11*) mentioned above, they provide convenient places to start or finish a cut. They also are most handy for keeping the machine out of the way when not in use. In an article appearing in *Coal Age*, page 759, Nov. 9, 1922, I have referred to such recesses, calling them "flanking places."

Wherever chain cutters have been adopted in a Belgian colliery, the output per man has been increased at least 90 per cent. In some instances, as at Amercoeur, during January of the present year, which was the record month, the increase in individual output was an even 100 per cent. What is meant by individual output is the figure obtained by dividing the number of tons of machine-mined coal by the total number of men, from assistant mine boss to bit carrier, employed in mining the coal and delivering it on the haulage road, coupled in trips ready to be hauled away.

Coal mined by machines yields also 22 per cent more lump than hand-mined coal, lump being defined as material not passing through a hole 3 in. in diameter. This increase in individual output means much in Belgium, where men tended to become scarce even before the war and have become scarcer since. Polish and Italian miners are now hired in ever-increasing numbers by Belgian operators.

I recently met in Belgium a number of foreign men, women and grown children who had not had time yet to learn how to make themselves understood in French, but with whom I was able to converse pleasantly for the reason that they all spoke pretty good American, having been at some time in the near past employed in American mines, mostly in West Virginia and eastern Kentucky.

In these days when American opinion seems to vary so widely concerning prohibition and the effect it has on the foreign working man, it may be interesting to relate that all these Polish and Italian men and women, especially the women, look forward to the day when they will be lucky enough to land in this country again. When I jokingly mentioned prohibition they shrugged their shoulders and said "What do I care."

Relation of the Various Mine Power Costs Discussed at Illinois Institute

ONE of the leading articles at the Illinois Mining Institute was that of A. J. Hoskin, research assistant professor of mining engineering at the University of Illinois. Its subject was "The Distribution of Power Consumptions and Costs in Illinois Coal Mining."

In prefacing his paper, Mr. Hoskin said it was obvious that electricity is supplanting all other power underground but that on top "steam has better withstood the competition, although it is certainly yielding. Under some managements, if the airshaft is comparatively near the boiler house, an electric motor has little chance against even a second-hand steam engine for driving a fan. The same idea applies to small power units about the tipples. Though some managements may be strong for electrical units elsewhere, they insist upon the use of live steam for hoisting and ventilation and for driving screens and shop machinery."

In making the investigation into power consumption and costs in Illinois mines Mr. Hoskin assigned all consumption to six items: mining, haulage, hoisting, pumping, ventilation and miscellaneous. He said that as it is unusual for mining companies to subdivide into so many heads, he had much trouble in getting the necessary data. In fact, he said, he was told by many well-informed men that his effort would be fruitless. He made it nevertheless and asked fuller co-operation that his work may bear real fruit.

In his study of distribution he picked fifty shipping shaft mines of various sizes which he thought were typical of the 373 such mines in the state. Their combined daily production is 141,380 tons, varying from 650 to 5,200 tons each. Their depths vary from 101 ft. to 650 ft., the average being 321 ft. The thickness of coal ranges from 3 ft. 6 in. to 10 ft. with an average of 7 ft. 2 in. In 1921 they worked from 181 to 306 days and averaged 207 days.

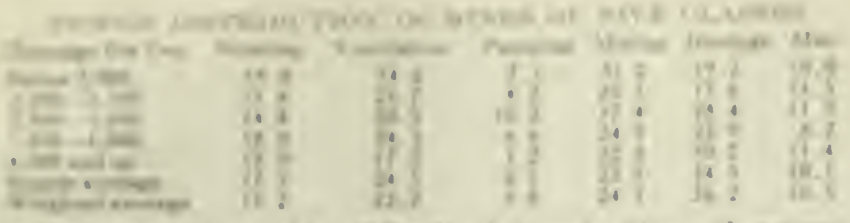
Mining is manual in 9 mines, by compressed air in 1, and by electricity in the remaining 40 mines or in 80 per cent of the whole. Direct current is used in 38 and alternating current in 2. Haulage varies from "all-mule" to all electric. Hoisting is by steam in 95 per cent of the mines. Pumping is exclusively electric in 25 per cent of them, is performed by steam in 24 per cent and in the rest both electricity and steam are used. Pumping consumes 52 per cent of the total power used in one mine and less than 1 per cent in others, making the pumping average 5 per cent.

Many Fans Are Still Driven by Steam

Steam drives the fans at 38 of the 50 mines. The "miscellaneous" division of power consumption which made up about one-tenth of the total included boiler-surface or boiler-feed pumping, carpenter and machine-shops that serve other mines and the crushing and screening of coal before shipment to washeries.

A table of statistics on power consumption at the 50 mines failed to give basis for any definite general conclusions or any consistent relationship between the six classifications. Hoisting, for instance, ranged from 1.4 per cent to 50.8 per cent, ventilation from 2.2 to 61.3 and haulage from 4.6 to 67.1, thus making plain the fact that "every mine is a problem of itself." Mining, haulage and ventilation showed a consumption of two-thirds of the total.

Dividing Mr. Hoskin's percentage figures on power consumed under the six headings and grouping the 50 mines into 5 groups of 10 mines each, this table results:



In attempting the difficult determination of power costs Mr. Hoskin said he encountered all sorts of obstacles, chief of which was the incompleteness of the records of Illinois mining companies. In most cases, he said, such costs are not distributed to the final consumers of power. A common practice, he said, is to combine haulage and mining as one item.

At mines which purchase power the exact total, of course, is known but hardly any attempt is made to allot it. As to locally generated power, about all the operator knows is the total as recorded on the switchboard. Mr. Hoskin said little is known even of the cost of operating boilers. Data are as difficult to get from steam mines as from any other.

Because of the difference in the value of coal and because of various other items, Mr. Hoskin said it seems almost impossible to arrive at any common and comparable system for figuring power costs at different mines. Some superintendents say they burn non-salable coal that has no market value and therefore cannot be charged against power.

Others, in attempts to fix their charges fairly, figure them on the mine-run cost of coal for the preceding month, a few burn whatever grade of coal gives best efficiency and charge it at the prevailing market price, and some strike an average for a whole year from the 12-month average, thus putting themselves on the same "annual contract" basis as most big consumers.

Then there always is the question, "Should we charge at market rates or at the production-cost level?" Whatever the system followed, Mr. Hoskin believes 75 per cent of the power cost is boiler-room expense. He asked his hearers for assistance in determining some fair basis for figuring these costs, so vital to the coal-mining industry.

In a written discussion of the paper, Carl W. Lee, engineer of the Peabody Coal Co., proposed that power for all uses be reduced to kilowatt-hour per ton basis and suggested some subdivisions of uses that would make cost determination easier. He thought coal should be figured at a final average cost per month. F. F. Jorgensen, general superintendent and chief engineer for the Superior Coal Co., at Gillespie, Ill., said the average market value for the year is a good basis for all except industrial mines, where this average must be assumed, as the coal is not marketed.

Another speaker called attention to the facts that power consumption is directly affected by which of the various hoisting methods was adopted, by the condition of the track and haulage equipment, by the age and condition of the fans, by errors in pumping, such as permitting pumps to "run on wind," and by power losses in transmission, all of these adding elements that would have to be considered in figuring power costs.

J. C. Quade, chief engineer for Big Creek Coals, Inc., said his company's six mines, operating under widely varied conditions, find the kilowatt-hour or the horsepower-hour the best basis. E. G. Lewis, of Sandoval, and J. H. Hoskins, of Danville, both agreed that the actual production cost, not market price, should be the basis. D. D. Wilcox, general superintendent of the Superior Coal Co., pointed out that on account of the variation in value of coal between mines, price is not a fair basis, but some basis of fuel value is.

F. W. DeWolf, chief of the State Geological Survey, followed this by suggesting that the British thermal unit basis be adopted. Mr. Hoskin ended the discussion by asking again that the coal men of the state help him to find the answer to the vexed question and said that if they gave him the efficiencies at points of consumption and helped him arrive at a fair basis for fixing the value of coal, they would be performing a real service to the industry.

Mr. Quade described by word and picture the new No. 4 mine of his company—Big Creek Coals, Inc.—west of Harrisburg. It is calculated to become a 5,000 tonner, though now it is hoisting only through the airshaft. The main entry is driven through from shaft to shaft and development work is going steadily ahead. The concrete work in shafts and bottoms struck the institute as being particularly striking and handsome. Some of the underground pictures shown with slides made the mine look more like a monastery than a coal pit.

Harold E. Culver, who is working under the co-operative agreement of university, state and government, spoke interestingly on the work he is doing toward identifying more accurately the various seams of coal of Illinois, suggesting that it is entirely possible that the seams the mining men know so well might possibly be correlated as between fields. The usual earmarks such as distances of a seam from the surface, thickness and nature of roof, solidity of floor, appearance of "blue bands" and the like may not be infallible. The fossil shells and plants in the caprock on No. 6 seam are found in varying thicknesses of rock and in rock that does not overlay any coal at all. Thus they may not be true indexes of specific coal beds.

He said he had been trying to find the answer in the sequence in which various strata were laid down. The biggest difficulty in the way of this determination, he said, is the fact that limestone, shale and sandstone were laid down in different places at the same time. One or the other may lie directly on top of a given seam of coal in different parts of even a single county. It is necessary to know the conditions under which each was laid, whether under sea, at the water's edge or inland by streams. This is a complicated question. Mr. Culver said he hoped the operating men of the state would give him all the data available when he asks for it, which will be on occasions both soon and frequent.

THE U. S. BUREAU OF MINES and the Public Health Service, cognizant of the importance of dust in the causation of pulmonary disease, have conducted numerous studies on the quantity and nature of dust in mine and factory air. A new instrument for sampling aerial dust devised by Leonard Greenburg, assistant sanitary engineer, retired, U. S. Public Health Service, and George W. Smith, junior physical chemist, Bureau of Mines, makes use of the principle of impingement of the dust-laden air at high velocity on a wetted glass surface together with that of bubbling the air through a liquid medium. This apparatus consists essentially of three parts: a hand pump or electrically driven blower, a flow meter, or other suitable means of measuring the air passed through the instrument, and the dust-collecting device. A description of this new dust sampling instrument is given in Serial 2,392, which may be obtained from the Bureau of Mines, Washington, D. C.

Insulating Oils Are Decomposed by Passage of Current: How to Keep and Restore Their Dielectric Strength

Heat Raises an Oil Vapor but Disruptive Discharge Releases Hydrogen—Sludge Is Formed by Oxidation of Overheated Oil —One Part of Water in 50,000 Will Render Oil Unfit for Use

By E. J. Gealey
Kingston, Pa.

TRANSFORMER oil, using the word in its larger sense, covers the oil used not only in transformers but in oil switches, lightning arresters and feeder regulators. It is used for many purposes, insulation being among the more important. This it may effect directly or by its action in excluding moisture. It is circulated through windings for the purpose of carrying away the heat generated therein. It serves also as a preservative and as a means of extinguishing arcs.

Tranformer oil is a product of mineral oil and is a member of that hydrocarbon group which begins with methane or marsh gas (CH_4) and includes a long series of compounds of increasing molecular weight, the members of the group containing gases, liquids and solids. Kerosene and gasoline are representative of the lighter oils while lubricants and transformer oils are exemplars of those that are heavier. The solid members of the group are paraffin and its analogues.

As the molecular structure is changed, the specific gravity, the specific heat, the viscosity, the volatility, the dielectric strength and other properties are changed, as also the relative flash and fire points, the insulating and cooling qualities.

As hydrocarbons are inflammable under certain conditions of temperature, pressure, air admixture and ignition, their use must be safeguarded. Fortunately these conditions are so rarely obtained in combination that in most instances the hazards involved in the use of the heavier oils are quite negligible.

Distillation vs. Dissociation Products

When the gases formed as a result of this disintegration are analyzed it is found that hydrogen preponderates and that there is a relatively small quantity of hydrocarbons. In view of the violence with which oxygen and hydrogen unite even when the former is only in such concentrations as are found under ordinary atmospheric conditions, it is easy to understand how great a destructive force can readily be obtained from the ignition of an atmosphere of air and decomposed oil.

On the passage of a disruptive discharge hydrocarbons form gases, at or below the oil surface, that differ radically from the oil vapor that is formed as the result of a gradual increase in the temperature of the oil. The accumulation of oil vapor that forms the basis of the flash-point test is still essentially one of oil and consequently the vapors will condense when the temperature is decreased, resuming their original character. On the other hand, the gases resulting from the disintegration of the oil molecules consequent on disruptive discharge are permanent over ordinary temperature ranges. These facts are not generally appreciated.

Though the explosion of a mixture of air and disintegrated oil is more destructive than a mixture of air and oil vapor, it has proved to be of rare occurrence, and when it happens it is usually traceable to some neglect.

A good transformer oil for general purposes should have the following characteristics, viz: a high dielectric strength, a high flash point, a high burning point, a low freezing point, low viscosity (when measured in the time in seconds required for a given quantity of oil to pass through a standard orifice at a definite temperature), a minimum tendency to form a sludge and a freedom from acid, alkali, sulphur, wax, animal or vegetable oils or fats, or other soluble matter.

The great enemy to transformer oil is water. The deleterious effect of small quantities of moisture on the dielectric strength of oil is now recognized by nearly all who use it, but it appears to be even more serious than is generally supposed. Fig. 1 shows clearly the effect of moisture on the dielectric strength of oil.

For high-tension work the classification in Table I is sometimes used in comparing oil.

TABLE I—DIELECTRIC STRENGTHS OF TRANSFORMER OILS

0 kv. to 15 kv.	Unsatisfactory
15.0 kv. to 17.5 kv.	Doubtful
17.5 kv. to 20.0 kv.	Satisfactory
20.0 kv. to 22.5 kv.	Good
22.5 kv. to 25.0 kv.	Excellent

Owing to the confusion which has arisen from the use of different standards it may be necessary to add that Table I is for use with the so-called new-style test gap. The old-style gap was made of electrodes having a ½-in. face and set 0.2 in. apart, the new-style

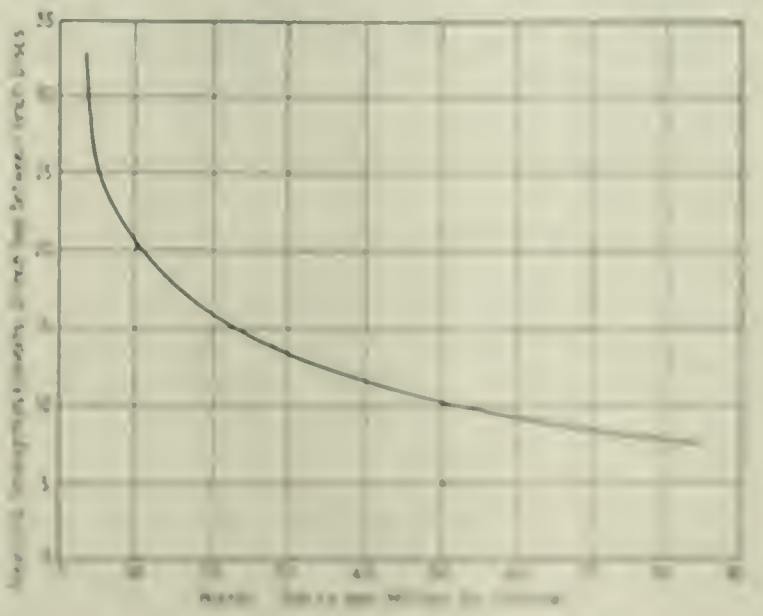


FIG. 1—CHART SHOWING HOW RAPIDLY DIELECTRIC STRENGTH INCREASES WITH REMOVAL FROM WATER

Insulating oils are unaffected and their strength is not impaired by the presence of water, but moisture lowers the dielectric strength, and sometimes to the point of danger. Even when in the oil only in solution, water condensed out by the cooling of the oil in a transformer reduces the dielectric strength to a dangerous degree.

It is, therefore, important that oil be kept in its original condition, as it is quite possible to get a transformer oil of the best grade and yet have trouble if the oil is not given the proper care.

All oil in unsealed drums and even all oil in drums that are sealed but which have been stored where they were exposed to the weather should be tested before using by taking a sample from each drum. Drums stored out of doors always should be placed on their sides, never turned up on end. The chimes should never be allowed to lie in pools of water, nor should water be allowed on the heads when the drums are in a vertical position. Outdoors storage of oil always is hazardous and to be avoided if possible. When drums are stored out of doors they should be protected against direct precipitation of rain or snow.

Extreme precautions are required to insure that containers used for transferring oil be clean and dry. A drum of cold oil when taken into a warm room will "sweat" and the moisture thus formed may mix with the oil when drawing it from the drum.

To filter out some of the scale formed inside a drum of oil the oil should be first slightly heated and filtered through about two or three layers of ordinary finely woven cotton cambric that has been thoroughly washed and dried. It is highly desirable that all the remaining scale be taken from the oil by a suitable filtering machine.

Periodic inspection and tests should be made to determine the quality of transformer oil. These tests will determine the necessity for dehydrating and purifying the oil if it has absorbed moisture or acquired sediment.

Large users of transformer oil are becoming more and more converted to the necessity of taking these precautions. Where this practice has been followed in a systematic manner it has been found that failure of apparatus from burnouts, and "unknown causes," with subsequent interruption of service, has been reduced to a minimum and a resulting economy in the use of oil has been effected.

In Testing Choose Worst Oil in Transformer

The oil used for inspection and test should be taken from the lowest point in a transformer tank so that any sediment or moisture in the oil will show up in the sample. The sample should preferably be taken after one or two bucketfuls of oil have been drawn off the tank.

In the commercial testing of oil, small flat disks with sharp edges usually are employed as electrodes, so as to combine uniformity of field with edge effect.

Fig. 2 shows an oil-testing cup. The gap is locked in position after being set against a feeler gage. The cup is made of a composition, usually of hard rubber. The interior of the spark gap is perfectly smooth and symmetrical so that there is no tendency for dirt to collect. When the spark gap is used on the testing transformer it is supported and insulated by the high-voltage terminals.

The testing transformer usually has a ratio of 110 to 25,000 volts. The control consists of an air-cooled auto-transformer with regulating taps, connected to a selector switch. Dial contacts are arranged to give 15, 17.5, 20, 22.5 and 25 kv. on the high-tension winding of the transformer.

When making a test of an oil the cup is first thoroughly cleaned, usually with benzine, and then washed out with a small quantity of the oil that is to be tested.

The gap having been accurately set, a sample of the oil is put in the cup and allowed a short time to settle; the voltage is then applied to the electrodes of the test gap and gradually raised until the gap breaks down or the oil takes the full 25-kv. test.

After each discharge it is essential that the test cup and electrodes be washed free of any carbon or other foreign material. The disruptive breakdown of oil under dielectric stress is not due entirely to the voltage exceeding the dielectric strength of the oil, as is the case with air, but is due to some extent to something being carried into the dielectric field or being produced in that field which weakens the dielectric strength so as to cause a premature breakdown.

This material may be particles of moisture, dissociation products of the oil, olefines, fats, fatty acids, dust fibers or combinations of them, in solution or colloidal solution or suspension in the oil. For this reason it is always best not to disturb too greatly the sample under test before applying the voltage test.

A small bright spark may pass across the gap without causing the testing circuit to open. When this occurs this discharge should not be regarded in recording the results of the test because it usually is due to minute air bubbles which have not had time to escape from the sample after being poured into the test cup.

The dehydration and purification of transformer oil may be accomplished by either the filtration or the centrifugal method. In the first the oil is pumped under pressure through a filter press consisting of several layers of dry blotting paper. The solid matter in the oil is caught by the paper, and the water is retained by capillary action. The capillary attraction between the paper and water is greater than that between the paper and the oil. The effectiveness of the method is dependent mainly upon this fact.

The other method consists of pumping the oil into a machine where after heating and delivery to the top of the purifier it flows into a revolving bowl. Here it is dehydrated and purified. Both methods may be used when the transformer is in operation. The best results will be obtained by following the instructions of the manufacturer of the machine.

The successful operation of transformers, oil switches, lightning arresters and feeder regulators, therefore, depends to a large degree upon the condition of the oil, which should be systematically inspected at least twice a year. Low-tension equipment does not necessarily require an oil with high dielectric strength, but as a very small quantity of moisture will seriously lower the dielectric strength of the oil, the best method to pursue is to keep the oil up to standard test, namely, 22 kv. new-style gap.

It is also to be remembered that the oil level always should be maintained so as to prevent flashes above the oil surface and the consequent disasters which may occur, and special care should be taken to have no condition which will decompose the oil and form highly explosive mixtures above its surface. It is undoubtedly this latter condition which has caused lightning arresters and switches to blow up, thus initiating severe fires.

The following are the approximate characteristics which oils for specific purposes should possess. They may be used as a guide in the selection of transformer oils.

For use in aluminum-cell lightning arresters, starting compensators and oil circuit breakers not subjected to

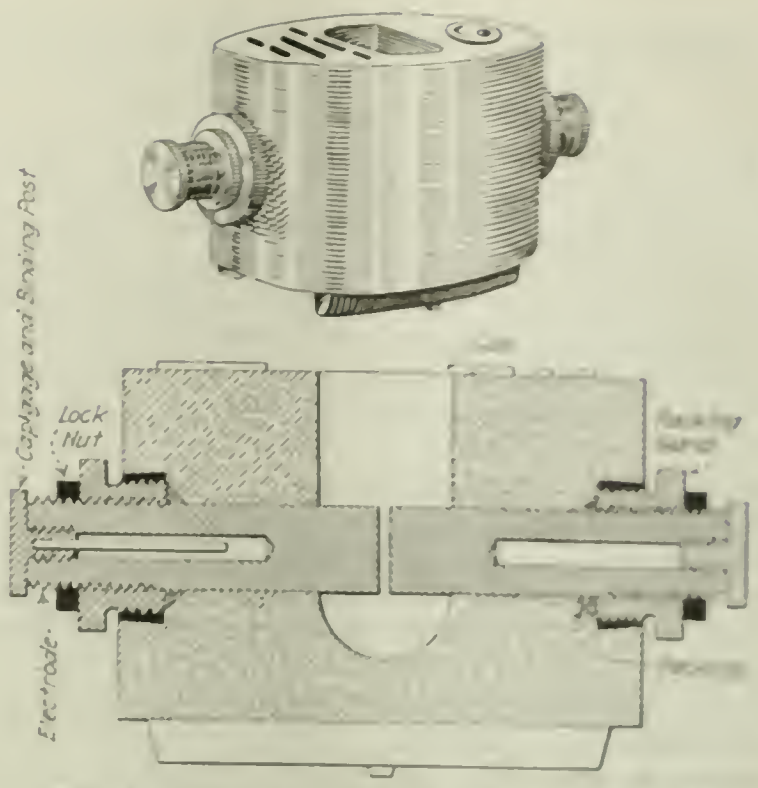


FIG. 2—TESTING CUP FOR INSULATING OIL

This cup is held by the terminals of a transformer which is under the cup and forms an integral part of the equipment.

temperatures below 0 deg. C.: Flash point, 185 deg. C.; burning point, 210 deg. C.; freezing point, —10 deg. C.; viscosity at 40 deg. C., 105 sec.

For oil-cooled, water-cooled and combination oil- and water-cooled transformers, also for feeder voltage regulators, except for outdoor installation in cold climates: Flash point, 140 deg. C.; burning point, 155 deg. C.; freezing point, —5 deg. C.; viscosity at 40 deg. C., 52 sec.

For outdoor oil circuit breakers when subjected to temperatures below 0 deg. C., also for the dashpots of time-limit attachments: Flash point, 155 deg. C.; burning point, 180 deg. C.; freezing point, —30 deg. C.; viscosity at 40 deg. C., 100 sec.

THE UNITED STATES contains 12,000 square miles of unused peat land, an area more than 10 times that of Rhode Island, capable of yielding fourteen billion tons of fuel at a cost of $1.50 to $5 a ton, according to a comprehensive bulletin on the subject just issued by the U. S. Geological Survey. The deposits are on the surface and lie in the New England, Atlantic Coast and Great Lakes states, most of them in regions remote from coal mines. This bulletin, which is the most exhaustive American work on peat and required two years for its preparation, points out the location of thousands of deposits, owned by thousands of farmers and other landowners. Fifty million tons of peat is used annually as fuel in Europe. Peat is suitable also for use as a fertilizer and in promoting the intensive growth of truck crops, both in greenhouses and in open fields. Those interested in peat may obtain free copies of the bulletin by addressing the U. S. Geological Survey, Washington, D. C. It was prepared by C. C. Dobbs and is published as the Geological Survey's Bulletin 728, entitled "The Occurrence and Uses of Peat in the United States."

LIKE THE EASTERN INTERIOR STATES as a whole, of which it forms a part, the western Kentucky field produces railroad fuels chiefly, states the Bureau of Mines, in a recently issued paper on Kentucky coals. 80 to 85 per cent of the entire output of the district being used by railroads, a proportion somewhat above that for all bituminous coal mines in the United States. Little coal from western Kentucky is sold for the manufacture of gas, although about 12 per cent of it is taken by electric light and power companies. The district produces also a lump coal that finds a wide market for domestic use, and about one-fourth of the output is shipped to retail dealers. A little coking coal is produced

Something Like This May Be Happening In Your Mine, Right Now!

O. K. BROWN, the clear-cut, efficient general manager of the Harmless Fuel Co., with mines at Normal, North Mississippi, after having read with a good deal of interest, the printed matter sent out by a well-known manufacturer of mining machinery, exploiting an improved mine-car loader, decided that mechanical loading was the proper thing for his otherwise up-to-date mine, and ordered one of the machines for trial.

Prior to the advent of the loader, Mr. Brown visited his mine, and after talking over matters in general with Mike, the pit boss, as soon as he dared do so, sprung the news on that skeptical individual that he had purchased a mine-car loader. This statement immediately met with a storm of protests from Mike—he didn't want it, it was no good; they had used one over at Hardcut and chucked it on the gob.

However, Mr. Brown insisted that they must be up to date and use mechanical contrivances wherever possible, and insisted that Mike take the loader into the mine and give it a fair trial. After which Mr. Brown went upon his way and forgot the matter for the time being.

Enters then, the mine-car loader, which Mike promptly has unloaded from the car and stored outside the mine, where it can be cleaned by every rainstorm and where the wind can blow the dust off of it. There it rests for two weeks, after which time Mike condescends to place it in the mine for a "fair trial," being induced to do so by the receipt of several letters from the general office inquiring as to what progress has been made with the machine, also due to the fact that they had run into a fault over in 10th left, where there was about 3 ft. of rock and 2 ft. of coal, and this entry was getting away behind. Here, they decided, would be a good place to try the thing out.

The manufacturing company sent down a demonstrator and after several vexatious delays Mike gave him an electric drill with which to drill the rock, and some powder and a couple of men—one a Mexican who could not speak a word of English and the other a Hungarian by the name of Grabeski—and told them to go to it. Grabeski took to the loader like a duck to water, and thought it was great; said that if he had had that loader before it would have saved ten years of his life, as it was so much easier to load on to the end of the conveyor than to lift the material into a car—especially the slate. The Mexican, being unable to express himself, naturally said nothing, but did about as much work as one would expect from one of his race.

And so, under these conditions, the demonstrator tackled the job of making a hit with the loader and incidentally with his own company. Drilling the rock was hard and slow work, the shooting was a serious handicap, as they were away ahead of the air and had to wait a long time for the powder smoke to clear away. The cars (especially those loaded with stone) were too heavy to push the 300 ft., which unfortunately was on a steep grade against the load, and as Mike could not spare a mule the demonstrator went to the nearest town and bought 600 ft. of Manila rope and a snatch block, and by means of the capstans on the loading machine he managed to handle his cars against the grade. But in spite of this, had the car supply kept up, a favorable showing could have been made, but there were heart-breaking intervals between cars, when the machine would remain absolutely idle for long periods of time. A day or two later Mike wrote the home office about as follows:

> The mine-car loader was put to work in 10th left last Monday, but it ain't doing much good. It has been given a fair show as it gets its turn of cars every time with the rest of the men, and I gave it some advantage because I gave the machine crew a power drill, while the crew that is loading by hand on a parallel entry is drilling by hand, but then again the crew on the loading machine has to push their cars about 300 ft. to the motor, and the other crew does not have to push the cars so far.

At this stage of the game the demonstrator had a little heart-to-heart talk with Mike, telling him that he must have more cars, because he was idle most of the time and didn't have anything to load his coal in. Mike insisted that he was getting "as many cars as he was entitled to" and that the "machine was installed with the understanding that it would be successful in their system of mining, and with their system everybody had to take his cars as they came—they couldn't favor anybody."

The loading machine kept on working under this alleged "system" for two or three weeks, when the demonstrator finally managed to get hold of extra cars occasionally, so that it was not long before he caught up with the 11th left.

In the interim Mike bombarded the general office with reports giving the number of tons of coal handled by the pit car loader per week, and how many tons the crew on the other entry had loaded (in clean coal—not mentioned in the report). The coal company's general office, studying these paper statistics, figured the cost of both entries according to the scale, and reported back to the makers of the loader that the coal cost much more when loaded by the machine than when loaded by hand.

Thereupon the manufacturers wrote their demonstrator and asked him "How come?" He explained the matter, and the general office went after Michael once more, but that equitable gentleman could not see but that he was giving the loading machine a "fair trial" and grew somewhat peeved at the demonstrator for insinuating that he was not getting a fair show; whereupon the demonstrator arose and spake about as follows:

"Look'y here, Mike; suppose, for instance, that you had never had mechanical haulage in this mine, and they sent down an electric locomotive for you to try out, and you handed the locomotive the same deal as you give me, and, for instance, give the locomotive a car of coal to haul, and give a mule a car of coal to haul, and the



WHAT KIND OF A CAR ALLOTMENT WOULD HAVE BEEN HAD IT BEEN PACED BY A MULE AND GIVEN ONLY A MULE'S CAR ALLOTMENT?

mule gets away first. Of course, as the mule is in front of the locomotive, the locomotive cannot make any better speed than the mule, and as it cannot jump over the mule, it arrives at the bottom after the mule does. Of course, when they return with the empties, the locomotive is in the lead, but after they get loaded up, the same state of affairs exists again, and as a result, the locomotive appears to be just about as efficient as one mule. Do you think you would be giving the locomotive a "fair trial" under such circumstances?" But Mike scratched his head and said, "It's different with a loading machine."

In desperation the demonstrator said "Look'y here Mike; you know that the locomotive can go faster than a mule, and admit that at the same time it can haul a whole trip of loaded cars?" "Yes," says Mike. 'You admit that the loading machine can load much faster than can be done by hand?", and Mike admitted that. "If the machine can load cars much faster, it can load a greater number per day, can't it?" and there being no way of getting around this logic, Mike finally admitted that maybe it would be a fair trial if he got some more cars, and then he said that he admitted the conditions were not good for getting a big output of coal.

At the end of the trial period they had not as yet gone through the rock, and Mike rather hated to give up the machine before he got through, as he had trouble in hiring anybody to work under the conditions, and he had to pay such as he did get good day's wages. So he took the matter up with Mr. Brown, and Brown wrote the manufacturers asking for a month's extension of the trial period, stating that while the coal cost more when loaded by the machine than when loaded by hand, they had advanced the entry faster than they did before, and were not ready to condemn the machine, but would like to give it a further trial. The trial period was extended another month.

In the meantime the demonstrator plugged away, driving entry. The rock grew thinner, and more and more cars were needed, but Mike, while he realized now that in order to give the loader a "fair trial" it would be necessary to keep up the supply of cars, was unable to do so, as they had only one locomotive in the mine and this was tied up in handling cars to other parts of the mine; so there were no means of providing cars for the loading machine.

At the end of the further trial period Mike had driven his entry as far as he desired, and consequently the manufacturers received a letter from Mr. Brown reading about as follows:

The machine is not suited to our conditions for these reasons:
(1) It loads coal so fast that it requires a locomotive to keep the cars away from it, and we cannot afford to tie up a locomotive.
(2) The coal costs more when loaded by the machine than when loaded by hand.
(3) I do not want to finally condemn the machine, because we can drive entries with it about four times as fast as by hand, but that is of no advantage to us, as we need no more entry at the present time.

And the loading machine came home in unmerited disgrace.

Examining Coal in Incident Light

By Alfred Gradenwitz
Berlin-Friedenau, Germany

EXAMINATION of coal samples raises a multitude of problems of the highest importance to the scientist anxious to ascertain its nature and origin, as well as to the engineer intent upon investigating the industrial qualities of coal. Though the necessity of resorting to the microscope has in this connection long been realized, the method so far employed, namely, examining thin translucid sections, has involved many serious difficulties. Dr. H. Winter, director of a research laboratory at the Bochum (Germany) Mining College, therefore tried to apply to work such as this a method in current use in metallography, namely, microscopical investigation in incident light. His tests strikingly show the suitability of this method for the examination of opaque minerals such as coal, it not even being necessary in all cases to etch the ground and polished surfaces. Where this is done, however, it is best to use a solution of potassium chlorate and nitric acid.

An electric arc lamp was used in most cases, the light of which was allowed to strike through a lens system, water cooler, light filter and iris stop at right angles to the optical axis of the microscope, the "vertical illuminator," so-called, being arranged between the objective and eyepiece, the beams of light being reflected completely by the prism and illuminating the sample placed on the microscope table. It is also possible by means of a mirror to deflect part of the beams of light from their vertical direction to the microscope axis, directing them at a variable angle against the sample to be examined and making its structure visible.

According to Dr. Winter's results every solid fuel, recent as well as ancient, possesses throughout its mass



FIG. 1—PITCH COAL.
This sample of pitch coal from Bochum has remarkable density and mechanical strength. Magnification 115-fold



FIG. 2—CANNEL COAL.
This coal has magnified four diameters less than in Fig. 1 to all appearances otherwise. Its magnification is only 65-fold.



FIG. 3—[illegible]
This [illegible] which looks much like a piece of [illegible] coke, has been magnified 115 times.

a characteristic structure, the photographic reproduction of which often takes prolonged exposure.

In peat, lignite and true coal, whether recent or ancient, Dr. Winter in incident light noted remarkable cuticle tissues of vessel arrangements, affording a valuable clue to the genesis of coal.

Fig. 1 shows a sample of pitch-coal (jet) possessing remarkable density, mechanical strength and uniform structure. The wood texture prevailing throughout the mass is apparent at first sight. Fig. 2 is a sample of cannel coal of uniform structure, though devoid of any stratification or slaty texture, the whole field of vision being filled up with rounded egg-shaped micro-cells. Fig. 3 represents in 115-fold magnification the appear-



FIG. 4—STRIATED COAL.
In this cross-section can be seen glance and dull coal in sequent bands. The magnification here is only 10-fold.

ance of a pseudo-cannel coal etched in a direction parallel to stratification. This allows polygons to be discerned distinctly, which most likely are cell walls of specific vegetable tissues, the whole interior being filled up with rounded egg-shaped micro-sells. Fig. 4 is a striated coal consisting of a combination of glance-coal and dull coal.

Taking into account the conversion of plants into peat as well as the chemistry of plants, especially that of the process, Dr. Winter comes to the conclusion that all kinds of coal, glance-coal as well as dull coal, should be considered as solid colloidal matter. In the case of some samples of glance-coal, microscopic examination in incident light affords convincing evidence of their being wood products, the longitudinal fibers and tissue bundles coming out most clearly after etching.

A Zeiss metallographic microscope, which, after an unimportant alteration, also allows of investigation in transparent light, was used in this investigation. The new process will doubtless contribute to elucidating a number of contested problems, especially if used conjointly with chemical analyses and occasional microscopic investigation of thin sections.

Bain Issues Timely Warning to Coal Men

HOPING to reduce the present deplorable frequency of mine explosions, H. Foster Bain, Director of the U. S. Bureau of Mines, has issued a statement from which the following paragraphs have been taken:

"Coal has been mined for three months since the resumption of mining following the five months' strike and in that time six explosions, killing about 185 men and injuring more than 100 others, have occurred in the bituminous mines. The number and violence of these explosions is increasing, the record of the past month being the worst of all. The coal industry has not in years suffered as many big disasters and the entire country is properly aroused.

"Coal producers have been properly striving to produce a maximum output to meet the expected heavy demands of the winter trade and to overcome the inroads which had been made in the coal reserves during the recent strike, and intensified activity in any industry increases the risk of accident. The seasonal hazards, which are greater in the coal industry during the winter months, probably have influenced the result. There has been a lessening of morale throughout the coal industry as a result of the strike, which tends toward a less careful attitude of mind. Another probable factor is the change in personnel at the mines following the strike and the shifting of miners to camps where they are not familiar with the dangers, and in places there is a lack of that discipline which is essential to the prevention of disasters whether in fighting a battle or in combating the hazards of nature.

"The letdown of morale on the part of the individual miner is indicated by a startling increase in the number of accidents caused by falls of roofs or of coal falling at the working face. The prevention of such accidents is almost wholly a matter in the hands of the individual worker. In the matter of explosions, however, there is a collective responsibility which begins with the individual whose act or carelessness is the cause of the accident and continues to the operator who permits mining conditions that allow the extension of a local explosion into one spreading through the mine.

"Two effective methods of preventing the extension of explosions by coal dust have been demonstrated in the experimental mine of the Bureau. The first is to wet the dust thoroughly so that no dry dust remains in the mine. The coal dust is made into a mud which cannot be thrown up into suspension in the air by concussion. It is this throwing it up in a cloud along the entry that permits the flame to pass from one volatile particle to another which, when rapid enough, becomes an explosion. It is also possible to dilute the coal dust with shale dust or limestone dust or any non-inflammable dust so that the explosion will not pass from point to point even though a dust cloud be raised by the concussion of blasting or by the wreckage of a trip of cars.

"Either method is effective. The objection to the wetting down is that it must be done every day and must be thoroughly done to be effective. The second greatest coal-mine explosion disaster in this country followed the omission of watering over two days. The shale-dusting method is required by law in Great Britain, where there is dangerous dust, and it is officially approved in France.

"Only eighty-one hundredths of an ounce of coal dust per cubic foot of air space in mine passageways, or 5 oz. per lineal foot of an entry way of ordinary size, which is barely enough to make a thin film when spread on the surface, will propagate an explosion. Treatment methods of some sort are, therefore, necessary.

"Miners and operators, as well as the official inspectors, must take hold of the situation promptly and vigorously or there will be still more serious explosions and more men killed. Knowledge not applied is of no value, however practical it may be in its bearings."



Problems of Operating Men

Edited by James T. Beard



Relative Merits of Retarding Conveyors and Gravity Planes

Unfair Comparison of Retarding Conveyors and Gravity Planes—Delays in Operation of Gravity Planes of Shorter Duration Than with Conveyors

UPON reading the article of Charles M. Schloss in which he describes Utah's only coal-retarding conveyor, *Coal Age*, Nov. 2, p. 717, I feel that the author has been a little unfair in recounting only the good points of the conveyor and the weak points of gravity planes.

As stated in the article, Utah can boast of but one retarding conveyor, in operation at its mines. In justice to the many gravity planes in operation in the state, I feel compelled to give some of the good points possessed by these self-acting inclines and, at the same time, mention a few of the weak points in a conveyor installation.

Record Tonnage and Slight Delays on Operating Inclines

In the first place, it is a matter of record that, by far, the largest tonnages ever produced in Utah have been hauled over gravity planes. These planes are so built that, nine times out of ten, a runaway trip will be caught by a derailing switch and thrown into the clear, thus preventing further damage than the wrecking of the trip, and, possibly, spreading a few rails.

When this occurs, as it will at times, the rails are quickly spiked to gage and operations resumed in a very short time. While runaway cars or trips are always liable to occur, in the operation of a plane, care and good management will render these accidents less frequent.

In his article, Mr. Schloss quotes a prominent engineer as saying, "I have never known a retarding conveyor that has been built right to cause any serious delay; but every so often you hear of a trip getting away on an incline plane."

Numerous Delays Cited in Operation of Conveyor

To my personal knowledge, in the operation of the conveyor he has described, there have occurred two full days' delay, on one occasion, when the tipple shakers were stopped and the conveyor continued to run, piling up the coal at the bottom, until the 6-in. main drive shaft of the shakers was broken.

Several other delays of a day each were caused by the burning out of the armature of the motor driving the conveyor. These accidents were due to the conveyor being left in operation while the tipple was at a standstill. At another time, a delay of three days was caused by the jerking loose of the bull gear, at the end of the conveyor, tearing it from its foundation.

Necessity for Relining Conveyor Causes Delay

This same conveyor is now being relined throughout its entire length of 436 ft., with ⅜-in. steel plate. This expense, together with numerous smaller items, will easily offset the cost of maintenance of a gravity plane and the alleged extra wear and tear on the mine cars passing down and up the plane.

In his advocacy of the conveyor, for handling coal, the writer of the article failed to mention an important fact favoring the installation of a plane for that purpose. For instance, when a conveyor is installed, it is necessary to build an incline or plane for hoisting men and material from the tipple to the mouth of the mine. It is needless to say this extra expense is obviated when a gravity plane is installed to handle the coal.

Greater Number of Cars Required Operating Gravity Plane Offset by Advantages

It is true, as the article states, that more cars are required in the operation of a gravity plane than in that of the conveyor. However, the terminals on a gravity plane can always be so arranged that three loaded trips are on hand ready for the tipple, while a conveyor system permits the handling of a single trip only at one time.

This feature goes far to offset the loss of time when trips do not arrive regularly at the mine entrance, and dumping operations at the tipple must cease till more cars arrive. In my opinion, this feature will account for the larger tonnages handled over gravity planes, as compared with a conveyor system.

One other point remains to be mentioned. It is stated in the article that in the operation of a gravity plane, it is necessary to have a crew at each terminal, and the claim is advanced that the use of a conveyor eliminates one of these crews, whereby a considerable saving in the cost of operation is effected.

This is not a fact in actual practice, however. At nearly all Utah mines operating gravity planes the terminal at the mine entrance at the head of the plane is handled by the motorman or the rope-rider, as the case may be. In each instance, these men take the place of a crew, at the head of the plane, when bringing a trip of loaded cars out of the mine.

George A. Schultz.

Latuda, Utah.

Suggestions for the Government's Fact-Finding Commission

Unwarranted waste in the mining of coal—Low grade coal discarded—Strife between operators and miners calls for government action

ALL right-minded men will mark with pleasure the announcement that the government's Fact Finding Commission, charged with making the necessary investigations to ascertain reliable facts in respect to industrial conditions, is already taking form, as stated in *Coal Age*, Nov. 9, p. 763.

The present condition of the coal industry presents a wide field for the work of this commission. As I reflect on the numerous things that will stand investigating at the hands of this commission, there are two points that appeal to me as calling for their consideration, if the peace and prosperity of our country are to be maintained and the benefits realized.

When I think of the unwarranted waste of coal, both in the mining and the preparation of the product for market, there is nothing with which it will bear comparison [illegible] than the slaughter of the buffalo for its hide, years ago, before the government took steps in its prevention.

Government Stopped Slaughter of Buffalo; Why Not Halt Wasteful Coal?

Many will remember that a few decades ago, the herds of buffalo roaming the prairies were being ruthlessly slaughtered for their hides, while the meat was left to rot on the plains. This continued until the herds of these valuable animals would soon have become extinct, when it was prevented by the government taking measures to stop the slaughter.

The fact is plain that if an organization becomes a controlling factor in the affairs of a nation, the time will be short when that nation will cease to exist. This is not to question the right of men to organize for mutual benefit and protection; but that right must not conflict with the public good and welfare, which the government is pledged to protect.

Let me say, in conclusion, that we can hope for no industrial peace or prosperity without our government maintaining a controlling power. Success to the Fact-Finding Commission in their endeavors to establish a wise and equitable control in the government.

C. W. ATKINS.

Parnassus, Pa.

Mine-Safety Conference

Recent conferences on mine-safety problems—Need of certification of mine officials—Reasonable laws respecting gas in mines.

IT was with the deepest interest that I read the letter of Robert A. Marshall, *Coal Age*, Nov. 16, p. 799, drawing attention to the recent conferences on mine-safety problems and the results as outlined in the recommendation offered by the Federal Bureau of Mines, and set forth in a circular letter issued by the Colorado Fuel & Iron Co., to their employees.

Chief among these recommendations appears the emphasizing of the need of certifying all mine officials, including mine superintendents. The recommendations relate to those officials having direct charge of underground operations. The matter is particularly significant, coming as it does from one of the largest coal corporations in the West.

Heretofore, some opposition has been manifest on the part of mine operators toward certificate laws. This developed principally in Pennsylvania and resulted in the certificate law, in that state, being changed in a manner authorizing operators to employ uncertified men who were, in their judgment, equally competent with men holding certificates.

ASSUMED REASON FOR REVISING CERTIFICATE LAW

To my mind, some operators wanted a wider range of choice; they wanted to go outside of the certified list in selecting men to take charge of their mines. Frankly, I would say that the fact of an operator not being able to find the right person on the certified list is evidence that something is wrong. If certified men have not the knowledge and ability to manage mines placed in their charge, much less can we look to uncertified men for such capability.

Evidently, there is need for more study. As has been suggested by different writers in *Coal Age*, many of our certified men cease to study after they have once obtained their papers. If that condition is permitted to continue, our coal-mining problems will become more deplorable and difficult, as time goes on. This is saying much, as it is hard to understand how the situation can be more deplorable than it is at the present time.

Allow me to suggest here that there is one thing lacking among all coal operators and others holding positions that would enable them to combat the present low standard of our coal-mining laws. There seems to be a deficiency of moral courage to agitate what would improve the situation. Selfishness and greed are largely responsible for the failure to act on the principles of the Golden Rule, so often referred to in these columns.

NEED OF EQUABLE LAWS

Attention has been drawn to the need of making our laws more reasonable and such as would not work a burden on some mines while favoring others in the same state or district. In this connection, particular reference was made to the classification of mines as gaseous or non-gaseous; and it was explained how this classification was unjust, in many instances.

In our own State of Indiana, we have a shotfirer's law, which applies with reason to mines generating gas, but is unjust to mines having no gas. In these latter mines, the law is largely ignored as being unnecessary in their case. This fact makes the law inefficient and instances are not wanting where the law is disobeyed in mines to which it should apply.

Speaking of shotfirers, I understand that their wages vary from $7.50 to $25 a day. If this is so, it is a case for the Fact-Finding Commission, recently appointed by our government, to investigate. Certainly, the conditions in a mine where shotfirers are paid this high wage must entail an enormous hazard to life and property and should not be permitted to exist.

W. H. LUXTON.

Linton, Ind.

No Need for Discouragement

Application for work refused—Applicant discouraged—Honest effort will eventually receive its reward.

WHILE I am not much of a hand in writing, it is always a pleasure to me to read the different letters giving men's experience regarding their work. Some time ago I recall reading an article that interested me deeply. It was a letter written by a man who had applied for a position that he thought himself capable of filling. For some reason, I do not remember just the circumstances in the case, his application was refused.

Instead of accepting the situation and realizing that the company did not need any one at the time, the man became discouraged. It appeared that he laid his misfortune to a general run of bad luck, which made it all the harder for him to keep up his search and find what he wanted.

Because a man's application for a certain position fails to get him a place, is no reason why the fellow should be-

come discouraged. Such a frame of mind unfits a man for service of any kind. Let him take heart and it will not be long before he will find a place waiting for him where the company are looking for honest and reliable men.

After an experience of 32 years in coal mining, much of the time being occupied in bossing or superintending, I feel that men need encouragement and help, and we should seek every opportunity to assure them of our good will. CHARLES TROYE.

West Terre Haute, Ind.

American vs. Foreign Miners

Teaching rudiments of mining in the common schools—Mining experience wanting—Accident list due to employment of foreigners—Co-operation needed to make mining more attractive.

IN HIS article "Teach Rudiments of Mining in the Common Schools," which appeared in the issue of *Coal Age*, Sept. 7, p. 363, Thomas Allen calls attention to the rapid decrease of American miners employed in our mines, today; and thinks this decrease could be arrested if more attention were given to teaching the rudiments of mining, especially in our common schools.

In my opinion, teaching the true rudiments of practical mining in the common schools of the country, would be difficult, expensive and in a large measure unprofitable. As a general thing, the teachers in our public schools know little or nothing about even the simplest rudiments of mining.

Some of the teachers might have a smattering of mining knowledge, just enough to make a huge failure if they undertook to teach the subject. In order to successfully teach mining, the teacher must have both technical training and practical experience in the mining of coal. The best place to study the rudiments of mining is at the face inside the mine, with an experienced and capable miner as instructor.

ACCIDENT LIST INCREASED BY LARGE EMPLOYMENT OF FOREIGNERS

Mr. Allen seems to think that the employment of so many irresponsible and illiterate foreign miners is the cause of the high accident list in our mines. In this respect, I think his view is correct. The employment of so great a proportion of foreign miners, is responsible, in a large measure, for the American boy leaving the mine. As the one comes in, the other will go out.

Digging coal should be considered as honorable a calling as that of a carpenter or machinist. But coal mining has been degraded more than either of these professions by the overwhelming influx of illiterate and undesirable foreign labor. In many mines, today, this irresponsible element of labor has the controlling power. It is nothing strange that such an ingrafting of foreigners into the mines and the results that naturally follow have caused young Americans to drift into other occupations. Our lads with their high American ideals of patriotism and respectability of association, as a standard of life, no longer find mining a congenial means of earning a livelihood and turn from it to seek employment in the shop or factory, though at less wages.

As coal mining has been conducted during the last few years, it has fallen into such disrepute as a profession that few fathers, if any, want their sons to become miners in following after them. Old miners can often be heard to say, I want to get my boy out of the mines and into something else. In the mine, he hears nothing but profanity and murmurings of discontent, from morning to night.

The truth of the matter is that there is no peace to be had, long at a time, under any circumstances in the mines. It is one strike or confusion after another. Miners have grown more unreasonable than formerly, regardless of wages received. High wages no longer make them the contented and loyal citizens that they once were.

In conclusion let me suggest that if labor organizations would change, in many instances, from a policy of "Rule or ruin," to one of business and common sense; and if operators would regard their employees as American citizens, entitled to the rights and privileges of all free men; and place a higher value on moral character and the welfare of the community; violence and strikes will pass into history. If the better element of our miners and operators will co-operate and establish a more friendly system or relationship toward each other, it will make mining more attractive as an occupation, and more of our young men will seek positions in the mines.

Dayton, Tenn. JOHN REED.

Inquiries Of General Interest

Estimating Available Tonnage Per Acre

Observed Difference in Estimated and Tabulated Tonnages—Tables Make No Allowance for Loss in Extraction

REFERRING to the question asked by a Colorado engineer, in *Coal Age*, Nov. 2, p. 721, in regard to the method of estimating the tonnage of coal underlying an acre of land, for a given thickness of seam, I observe that there is quite a difference between the results obtained by applying the rule given in the reply to that inquiry and the tonnage tables published on a "Lefax" sheet, issued some time ago.

The table to which I refer gives the estimated tonnage of coal, per acre, for each foot of thickness of the seam, and for any specific gravity varying from 1.2 to 1.65. For example, for a coal having a specific gravity of 1.2 and weighing 1.2 × 62.5 = 75 lb. per cu.ft., the table gives 1,613.5 short tons (2,000 lb.), for each foot of thickness of the seam. The data given in the table shows the tonnage varies with the specific gravity of the coal and the thickness of the seam.

On the other hand, the reply to the inquiry mentioned gives a rule based on an estimated weight of 1,200 tons of coal, per foot-acre. This rule is assumed to apply to coal of average specific gravity, for either anthracite or bituminous coal, the former being measured in long tons (2,240 lb.) and the latter in short tons (2,000 lb.).

Now, assuming an average specific gravity for bituminous coal of 1.31, the table gives the weight of this coal as 85,125 lb. per cu.ft.; and 1,810.46 short tons, per foot-acre. Or, taking the average specific gravity of anthracite coal as 1.5, the table gives the weight of this coal, per foot-acre as 2,041.87 short tons; or 2,041.87 ÷ 1.12 = 1.825 long tons. These calculations show that the average estimated tonnage, as computed in the table, is based on, practically, 1,800 tons, per foot-acre, measuring the anthracite in long tons and bituminous coal in short tons.

Since this estimate is quite different from the 1,200 tons, per foot-acre, given in the reply to this inquiry, I have been wondering wherein the difference lies. Is this difference due to the table being computed on the weight of coal in the solid and making no allowance for the voids in the broken coal, as prepared for market? INQUIRER.

Philadelphia, Pa.

It should be observed that the reply to the inquiry referred to by this correspondent gives the approximate rule commonly used for computing the available tonnage of coal underlying an acre when the seam is practically level. As he has stated, the rule gives 1,200 tons, per foot-acre, for anthracite and bituminous coal, respectively. The former being measured in long tons and the latter in short tons.

As then stated, this rule assumes an extraction of about 40 per cent of the original seam. It also makes a further allowance of about 10 per cent for

percentage. One applying to lump coal as prepared for the market.

For example, taking the tabulated value as, say, 1,500 tons of average bituminous coal per foot-acre, an 80 per cent extraction would yield 0.80 × 1,500 = say, 1,440 tons of gross run coal. Then, allowing one-sixth, or 16⅔ per cent for screenings, leaves five-sixths of this amount as available lump coal, or, $\frac{5}{6}$[1,440] = 1,200 tons.

The rule is only approximate and must be modified in accordance with the percentage of extraction in the seam and the manner of preparing the coal for market. It is a fairly safe rule for estimate, having in mind this explanation.

Examination Questions Answered

West Virginia Mine Foremen's and Firebosses' Examination. Charleston, 1922

(First-Class, Selected Questions)

QUESTION—*Assuming you have several sets of cross-timbers to take out, and on top of these timbers were several tons of loose rock and slate, explain what would be your method of taking out said timbers and what precautions you would take to insure safety to employees and prevent damage to property.*

ANSWER—The work should be started at the entry end, after a close examination and study of the conditions. The method of proceeding will depend on this examination. As far as practicable, the new timbers set should be put in position before attempting to remove the old ones. If the old timbers stand so close that new sets cannot be placed between them, it will be necessary to carefully take out a single set of the old timbers, replacing it at once with a new set. It will not always be possible to retimber such a place without removing a portion or all of the loose material.

QUESTION—*If powder smoke requires 2 min. 17 sec. to travel 149¾ yd., in an airway 6 × 12 ft. in section, what volume of air is passing?*

ANSWER—Two minutes and seventeen seconds is 137 sec. and a distance of 149¾ yd. is 448 ft. Then, since the sectional area of this airway is 6 × 12 = 72 sq.ft., the volume of air passing = 72 × 897[448 ÷ 137] = 14,152+ cu.ft. per min.

QUESTION—(a) *No gas being generated, would you consider the conditions dangerous if it is dry and dusty at the working face? (b) What precautions would you take in the blasting at and where you find a condition of this kind?*

ANSWER—(a) A dry and dusty condition at the working face in a mine is always dangerous, whether or not gas is generated. This is particularly true where blasting operations are performed.

(b) When the coal is blasted under the conditions named, only permissible powder should be employed and every shot should be examined by a competent person before it is fired. Safer practice is to employ shotfirers to examine, charge, and fire all shots in the mine, after the men have gone home. It is particularly important to remove all coal cuttings and dust regularly from the working faces. Every working place should be thoroughly sprinkled and in a moist condition before a shot is fired therein.

QUESTION—*How would you render first-aid to (a) a victim of asphyxiation from afterdamp; and (b) one suffering from powder burns on neck and back?*

ANSWER—(a) Remove the person as quickly as possible to better air and perform artificial respiration, using the prone method and laying the victim outstretched on his stomach, with his face turned slightly to one side, so as not to obstruct breathing. Also, see that the tongue is drawn forward in the mouth, for the same purpose. Kneeling astraddle of the man, place the two hands or outstretched palms over the small of the victim's back, so as to cover the lower ribs. Then, alternately, compress the body and lungs to expel the gas therefrom, and again relieve the pressure so as to give opportunity for the lungs to expand and draw in fresh air. This action should alternate at about the rate of breathing, say sixteen times a minute, and should be kept up continuously until the victim revives, which may require an hour or more. Never cease until the man revives or is pronounced dead by a doctor. In every case, no time should be lost in sending for a physician.

(b) If the burns are severe, send for a doctor at once. In the meantime, having loosened the clothing or cut it so as to lay it back from the burned portion of the neck and back, exclude the air by applying a thin paste of bicarbonate of soda (baking soda) and water. Starch or flour can be used if the baking soda is not at hand. Vaseline, olive or castor oil, fresh lard or cream, are all good for this purpose. They should be smeared gently over the burned portion and on a thin fine cloth, which should then be laid over the burn so as to exclude the air as much as possible.

QUESTION—(a) *How would you approach the burning section of a mine if you found the condition necessitated the sealing off of the burning section? (b) What steps would you take to insure safety of the workers and the success of their work?*

ANSWER—(a) Much will depend on the conditions existing in the place, the location of the fire with respect to the openings in that section, and the headway the fire has gained. In most cases, greater safety is assured by starting to build the first stoppings at the return end of the section and proceeding in order from that point to the intake end, closing that stopping last. There are two advantages claimed for this method of proceeding. 1. By closing the return opening first, there is at once started an accumulation of burnt air and extinctive gases produced by the fire. This has the effect of retarding the combustion. 2. The intake opening remaining unsealed while closing the return end, more or less air will drift into the space through this opening and help to dilute the explosive mixtures that would otherwise be formed. Where the fire has gained much headway, however, it may often be better to close the intake opening first, so as to cut off the air from the fire. At other times, the stoppings are built up near to the roof and both the intake and return ends closed simultaneously.

(b) To insure safety, none but the most experienced men should be employed and they should be equipped with approved types of safety lamps. Frequent tests of the air at the openings must be made and every precaution taken to avoid the worker being overcome by the gases.

QUESTION—*In case of an accident, in which a workman receives a wound severing an artery, what would you do to prevent hemorrhage and take care of him until the arrival of a physician?*

ANSWER—Send for a physician at once. In the meantime check the bleeding, by strong pressure of the thumb or fingers over the artery, near to the wound and between it and the heart. Still holding the severed artery in this manner, arrange the injured person in a reclining position with his head low to encourage the flow of blood to the brain and prevent collapse. Make no violent movement but keep the man quiet, as any unnecessary movement will tend to increase the flow of blood from the wound. As quickly as possible arrange a bandage with a hard pad beneath it to press on the severed artery. Now apply a tourniquet and twist the bandage sufficiently to bring a strong pressure on the wound. The bandage must not be removed for, say two hours, or before the arrival of a physician. Give no stimulant, except when absolutely necessary to prevent collapse and possible death. Keep the patient warm with blankets and hot-water bottles if these are obtainable.

Wage Plan Fails, So Joint Conference in Chicago Jan. 3 Has No Program for Avoiding Strike

The long effort at Chicago to devise a method for future wage negotiations in the coal industry failed signally. The miners of the "two-by-two committee" rejected the operators' plan calling for negotiations by districts either singly or in such groups as chose to form, for arbitration and for sliding wage scales conforming to coal market prices. So nothing much remained to be done. The committee, composed of two operators and two miners from each of 15 districts, then voted that the main wage conference should be held in Chicago instead of Cleveland, Jan. 3, and that the committee should meet an hour before the main session in a last-minute effort to make some sort of helpful report to the big assemblage. Nobody expects anything to develop at this last-gasp meeting. Thus the main conference is expected to remain at deadlock unless some new element shall be injected into the situation before Jan. 3.

The "two-by-two committee" was appointed at the October joint conference in Cleveland, when that main session failed to agree upon a wage-making method. It was directed to convene in Chicago Nov. 14 and try to do around a table what the big joint meeting had failed to do in a smoke-filled ballroom. It tried for four days, beginning Nov. 14, and failed. It tried again last week, the operators' half of the committee striving for two days and finally framing a proposal they could agree upon. When the miners in the joint session of the committee Dec. 6 would have none of it, the committee quit in despair. The Jan. 3 main conference is supposed to begin actual wage negotiations, but it is freely prophesied that the struggle is going to be a troublous one and that any kind of agreement by April 1 to prevent a strike will be difficult.

Committee's Final Session of Short Duration

The final session of the "two-by-two committee" Dec. 6 was a short one. When the operators read their proposal to the miners at 11 in the morning there was an immediate howl of disapproval from union men. Both President Lewis and Secretary Green, of the union organization, declared peace ought to be established in the industry, but they followed this by making it plain that the miners would stand for nothing less than the setting up again of the old four-state plan of negotiations with a flat scale for the whole country and with nothing even faintly resembling arbitration. The operators quickly agreed to eliminate the sliding wage-scale provision but stuck solidly to the clauses for negotiations by districts either singly or in groups (without specifying what the groups should be) and for arbitration of wage questions by either a non-partisan or combination jury.

In the afternoon session there was a great deal of more or less nimless oratory but no definite accomplishment until about 5 o'clock, when the operators' proposal was put to a vote and lost, each side voting as a unit. Then the miners' proposal that the old four-state plan be continued lost with equal ease. The committee had failed. John Brophy, of the miners, was the man who suggested that the committee reconvene just before the joint conference Jan. 3. The motion was adopted, but without any display of enthusiasm.

The committee took into its own hands the question of changing the Jan. 3 conference from Cleveland to Chicago. On this question every man present voted as an individual and Chicago was selected by a narrow margin of three votes.

The proposal for wage negotiations which the operators agreed upon and which the miners rejected, but which no doubt will be brought up in the Jan. 3 conference as written by an operators' resolutions committee, follows:

"(1) The uniform and inflexible policy pursued by the United Mine Workers of America in the past of fixing a basic wage scale in one district grouping of a limited number of states producing a minority portion of the bituminous tonnage of the country, and by the centralization of power enforcing said wage scale upon all other districts of the country without regard to the competitive conditions affecting the other said districts, is rapidly destroying the business of the operators in many unorganized fields and is the chief contributing cause of overdevelopment of the industry.

"There are indictments for conspiracy now pending in the federal court of the district of Indiana against representatives of the mine workers and representatives of the operators who have formerly participated in the negotiation of wage agreements for the Central Competitive Field (Ohio, Illinois, Indiana and western Pennsylvania) which make it imperative that a new method of negotiating wage agreements be formulated. Therefore, we recommend:

"(a) That each of the United Mine Workers districts jointly represented in this conference be constituted a wage-scale-making body with full right of autonomy to negotiate wage-scale agreements based upon competitive conditions found existing and affecting each such district and, further, each such district shall be vested with the right to join with any other district or districts as may be mutually satisfactory to the mine workers and the operators of the district or districts affected, for the purpose of negotiating wage agreements for such sections.

Provides for Joint Conference of Districts

"For the purpose of negotiating wage-scale agreements to be effective upon the expiration of the present wage agreement namely, April 1, 1923, the following named districts: District No. 2, central Pennsylvania; District No. 5, western Pennsylvania; District No. 6, Ohio; District No. 10, Washington; District No. 11, Indiana; District No. 12, Illinois; District No. 13, Iowa; District No. 14, Kansas; District No. 17, West Virginia; District No. 21, Oklahoma, Arkansas and Texas; District No. 22, Wyoming; District No. 23, western Kentucky; District No. 24, Michigan; District No. 25, Missouri, and District No. 27, Montana, shall exercise their inherent right under this resolution and by mutual agreement between the mine workers and operators of each of the districts or sections hereinbefore mentioned shall meet in joint conference at such place as the operators and miners of each district or section may agree, such meetings shall convene in all districts on Jan. 8, 1923, for the purpose of negotiating wage-scale agreements. The action of any wage-scale-making district or section shall be binding only on that district or section and shall not be binding or have any effect whatsoever upon the making of a wage-scale agreement in any other district or section.

"(b) Further, in the interests of public policy and in order that there shall be guaranteed continuous fuel supply and entire prevention of strikes, there shall be no suspension of work during the period either of negotiation or such arbitration either in the district or section, we recommend that in the event of failure of joint wage-scale committee of any district or section to reach a satisfactory wage-scale agreement, the points in dispute shall be submitted to a neutral board of arbitration composed of three members of recognized ability and high public standing, to be appointed by the President of the United States, and neither of whom shall have any connection either direct or indirect with the coal industry, or a board of arbitration consisting of one representative of the mine workers and one representative of the operators and a third member, neither a miner, an operator nor interested in the coal industry directly or indirectly, to be appointed by the federal judge of the district where such arbitration is to be held. The decision of such board of arbitration on any point of dispute to them referred shall be final and binding upon both sides.

"(c) Further, we recommend that each district or section agreement negotiated shall carry a clause providing for a flexible wage scale which shall permit, when competitive circumstances shall demand, an adjustment of wage scale that will allow of free competition between all districts."

All Set for Herrin Trial to Start Dec. 13

The tedious job of choosing twelve good men and true to try the small host of men charged with murdering and conspiring to murder twenty-one non-union coal miners and guards at the Lester strip mine near Herrin, Ill., last June is completed. The twelve are more than half miners. Members of the United Mine Workers of America, which is defending the prisoners, have been paying part of their earnings into a special union assessment checked off supposedly for the defense fund. These jurors, however, have all sworn they are uninterested and without prejudice and can vote a death penalty if that seems just. The state used liberally of its peremptory challenges to keep union veniremen off the jury, but it could not be continued forever. Most men drawn for each venire were union miners because the county is so solidly unionized.

Judge D. T. Harwell has issued a warning against any sort of demonstrations in the court room during the impending trial, which was scheduled to start Wednesday, Dec. 13, with the opening statements of the attorneys. "No testimony will be laughed at," says his statement. "No expressions of approval or disapproval will be allowed. If anyone in the audience makes such expressions before the jury I will send that person to jail." Thus the stage is set for the trial.

Keeney Murder Trial to Begin in January Before Judge Woods in Morgan County

Trial of C. Frank Keeney, president of district 17, United Mine Workers of America, on the charge of being a murder accessory, such a charge growing out of the armed march of last year, will begin soon after Jan. 1. Keeney's trial is to be in Morgan County under a second change of venue granted by Judge J. M. Woods. Morgan County is in Judge Woods' circuit, so that Keeney's trial will be under Judge Woods' direction just as all the other trials growing out of the armed march have been. Morgan County was selected by Judge Woods as the county for the trial after attorneys for the state and for the defense had failed to reach an agreement, as there is no coal mined in Morgan and because Judge Woods felt that it was not involved in the industrial controversy. Court will be convened at Berkeley Springs, Jan. 2.

Accidents in October Killed 186 Miners, 3.46 Per Million Tons Produced

Accidents at coal mines in October caused the death of 186 men, according to reports from state mine inspectors to the U. S. Bureau of Mines. Twenty-five of the fatalities were at anthracite mines in Pennsylvania and 161 at bituminous mines in all states. In October a year ago 180 miners were killed, including 42 at anthracite mines and 138 at bituminous mines. The death rate for October, 1922, was 3.46 per million tons of coal produced; a year ago the October rate was 3.43. During September, last, there were 153 fatalities, or 3.31 per million tons produced.

The average fatality rate for October during the past nine years (1913-1921) is 4.27 per million tons of coal mined, and the average number of lives lost during the same period is 238. It will thus be noted that the October, 1922, rate is much below the average rate for October for the nine-year period.

The loss of 186 lives in October, 1922, has brought the total number of deaths at coal mines during the first ten months of the present year to 1,378, as compared with 1,665 during the corresponding period of 1921. By a strange coincidence the fatality rates for the two periods are identical, 3.92 per million tons. The output of coal this year has reached 352,000,000 tons, while during the ten-month period last year the production was 425,000,000 tons.

Accidents due to causes other than explosions show no material change in frequency from those that occurred last year, except in the case of deaths due to the use of powder and other explosives, for which the rate has declined from 0.315 to 0.187 per million tons.

COAL-MINE FATALITIES DURING OCTOBER, 1922, BY CAUSES AND STATES

(Compiled by Bureau of Mines and Published by *Coal Age*)

State	Underground													Shaft					Surface							Total by States	
	Falls of roof (coal, rock, etc.)	Falls of face or solid coal	Mine cars and locomotives	Gas explosions and burning gas	Coal dust explosions (including gas and dust combined).	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.).	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip, or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Electricity.	Machinery.	Boiler explosions or bursting steam pipes.	Railway cars and locomotives.	Other causes.	Total	1922	1921
Alabama	3		4	1									10													10	3
Alaska																										0	0
Arkansas		1											1													1	1
Colorado																										0	5
Illinois	2		3			1						1	12										1	1	13	17
Indiana	4		6										6													6	5
Iowa		1											1													1	2
Kansas																										1	0
Kentucky	4					1				1			9										1	1	10	13
Maryland		1											1													1	2
Michigan																										0	0
Missouri	1												1													1	1
Montana		1											1													1	0
New Mexico																										1	1
North Dakota																										1	0
Ohio	10		2			1							13													18	12
Oklahoma	4			5	1			3					16				2	2								10	5
Pennsylvania (Anthracite)	1	1	10			1		2					29			2		2					2	2	33	33
South Dakota		2																								0	0
Tennessee	1												3													3	0
Texas								1					1													1	0
Utah	2		1										3						1					1	4	1	
Virginia													2													2	0
West Virginia	10	1	6			2		3		1			35						1				3	4	39	32
Wyoming													3													3	5
Total (Anthracite)	11	14	11	1	1	6		6		2		1	148			2	2	4	2				1	6	9	161	138
Pennsylvania (Anthracite)	1	11	3			4		1				1	23											2	2	25	42
Total (Oct., 1922)	28	25	14	1	1	12		10		2		2	171			2	2	4	2				1	8	11	186	
Total (Oct., 1921)	42	4	14	1	4	16	1	10		1	1		179		1	1		2	1	1	1		2	3	8		180

Is Strike Unavoidable? Western Operators Look Into Future as Through a Blue Glass Darkly

Is there bound to be a strike of union coal miners April 1?

Midwestern opinion among coal operators tends to follow one channel on this question. Only two things can prevent a strike—assuming that union bullheadedness continues—and each of them is rather indefinite. Either some unexpected factor enters the situation from the outside or some few operators with clouded vision and limber spines sign on the union's dotted line. Neither is confidently expected.

About the only source of a possible new factor is the Federal Coal Commission, and operators recognize that the commission is neither empowered nor expected to take a hand in the wage battle. It might possibly make some helpful suggestions in an early report to Congress; that's all. If these do not influence miners to recede from their stand for a continuation of the present wage scale and negotiation by regions at least as large as the four-state field, or if they do not make it somehow seem advisable for the operators to swallow the union's dose, then there is little hope of avoiding another coal crisis.

"I seriously can't decide which would be worse for the operators and the industry, a strike or a new agreement on the present wage scale," said an official of a company operating more than a score of mines. "A strike would mean a definite shutdown for all union mines while a settlement on union terms—which seem about the only terms that can be made without war—would keep coal so high in a season of probable poor demand that most mines, unable to dig coal cheaply enough to sell it, would either be closed all the time or would operate on such a hit-and-miss basis that the whole business would be continually at sixes and sevens. As between the two I don't know but that a strike would be preferable."

Thinks Fight to Finish Might Not Be Unmixed Evil

Another important Western operator frankly declared: "Six months of undiluted hell in a strike might be the very best thing for the whole industry. In the first place I don't think the union could weather it by any means as well as it did the last strike, and in the second place such an occurrence would give the Federal Fact-Finding Commission the best possible opportunity to see the evils of the industry come to a head. Such an unhappy event as a strike would focus the attention of the country, official and unofficial, on coal, so that really the situation would be of benefit to the commission in its effort to suggest remedies for the industry's ills. Nothing could then keep the commission's recommendations from getting full and undivided attention in Congress and elsewhere."

There is a general wish by operators everywhere that the commission do something soon that may clear the air at least a little. If it were to induce the Attorney General to define the government's position regarding four-state or other group agreements between operators and miners, it would have accomplished something for the direct benefit of everybody interested in coal, including the public, many men believe. This, of course, would have to be done within the next two or three months to be effective. But even this would not be conclusive. The Attorney General might express an opinion about the legality of group agreements which would bind nobody in case a new Attorney General were to succeed Mr. Daugherty. It would be far more beneficial if pressure could be brought to bear upon the federal court at Indianapolis to try at once the case against the 225 miners and operators long ago indicted for conspiring in four-state negotiations to restrict production and keep the price of coal up.

The failure of the miners and operators in special joint committee at Chicago to agree upon a method of future negotiations causes no unhappiness among Midwest operators. Since the miners would agree to nothing short of a resurrection of the four-state plan whose legal status is still so much in doubt, and since there is always a chance that the situation will take a new turn before April 1, when the present agreement runs out, it is considered advisable that no plan whatever be adopted for the time being.

"My idea of what to do," says an operator who has been playing a leading part in every recent labor struggle, is this: "On Jan. 3 if it still seems impossible for the operators to agree upon any plan acceptable to the miners, let's then go into session with the miners in the old four-state group. That will be better than to quit cold and it will not necessarily mean any settlement. We can chew the rag with Lewis until the very last cow comes home, offering him every reasonable plan which would allow the coal industry to work—a thing it simply can't do next summer at present wages—and then, if nothing crops up from the outside, why the strike will have to come, that's all. We'll fight it out about as usual, probably losing out in the end, but at a cost to the miners that they can hardly stand."

It is the general opinion in the coal trade that the union would have a harder row to hoe in a strike next summer because of the unlikelihood of a companion rail strike to aid it. Also it is generally believed that next time the government will not adopt the same attitude it took last summer.

Mining company officials with long experience are beginning to advise their superintendents to prepare to store coal wherever possible about the mining properties, and already storage arrangements are being made against a shutdown. Naturally industries are going to do a good deal of storing as the winter wears along unless a settlement appears more likely than it does now, and possibly the storage piles of the country next April 1 will be stupendous.

Illinois Operators Agree Not to Ask More Than $4.50 at Mine for Domestic Coal

Prices on domestic coals produced in southern Illinois have been adjusted by a number of operators, as shown in the following statement, issued Dec. 8 by Federal Fuel Distributor C. E. Spens:

"The following named coal operators in the Fifth and Ninth districts of Illinois have individually signified to the Federal Fuel Distributor a willingness not to exceed $4.50 per ton as a maximum f.o.b. price at the mines on prepared sizes of coal for household use, and in most instances these operators have stated that this maximum will be observed at least until April 1, 1923:

Southern Coal, Coke & Mining Co., St. Louis, Mo.
Breese Trenton Mining Co., St. Louis, Mo.
Mount Olive & Staunton Coal Co., St. Louis, Mo.
Prairie Coal Co., St. Louis, Mo.
St. Louis & O'Fallon Coal Co., St. Louis, Mo.
Groom Coal Co., Belleville, Ill.
Egyptian Coal & Mining Co., St. Louis, Mo.
Abbey Coal Corporation, Carbondale, Ill.
Jones Bros. Coal & Mining Co., Marion, Ill.
Mulberry Hill Coal Co., Freeburg, Ill.
Kolb Coal Co., St. Louis, Mo.
General Coal & Mining Co., Freeburg, Ill.
Dolese Coal Co., Belleville, Ill.
Fullerton Coal Co., Belleville, Ill.
Bank Twin Coal & Coke Co., St. Louis, Mo.

"These operators represent approximately 40 per cent of the production in these districts. Some of the best grades of domestic coal in these districts have been selling for as high as $5.50 per ton, and some have been selling, and are today selling, for less than $4.50 per ton. The maximum price of $4.50 should tend to establish prices on the different grades of domestic coal on a proper commercial level."

The various drafts of codes for mine rating and car distribution rules which have been laid before the Interstate Commerce Commission were discussed at a meeting of the railroad relations committee of the National Coal Association held in Washington, Dec. 11. The whole subject of rating and rules was discussed and the committee has under consideration supplemental suggestions which will be submitted to the Commission.

Wholesalers in Informal Conference with U. S. Coal Commission

[illegible] W. Marton, of Albany, N. Y., president of the American Wholesale Coal Association, and Nash H. Smith, Jr., of Philadelphia, held an informal conference with the United States Coal Commission Tuesday afternoon, Dec. 2. The scope of the wholesale coal business handled by the commission and the service performed by the wholesaler was discussed. The supplying of business credit to the small coal miner on the one side and to the smaller industrial consumer on the other was stated as a necessary function and an estimate of $100,000,000 was given as the total commercial ratings of members of the association. Coal engineering also was mentioned as a part of the service rendered to the coal consumer by the wholesaler, who in these days seeks to sell service along with the coal.

At this preliminary conference President Marton promised to submit through a formal statement to the Coal Commission suggestions on the points which have been discussed by representatives of the other branches of the coal trade. The executive committee of the association will convene at Washington, on Thursday, Dec. 14, and on Dec. 15 will meet the commission and submit in detail their observations, suggestions and recommendations.

H. J. German to Serve Fact Finders In Advisory Capacity

Arrangements have been perfected whereby H. J. German, vice-president of the Montour R.R., will serve the President's coal commission in an advisory capacity. In rounding out his technical staff, C. E. Lesher, who is in immediate charge of the engineering phases of the commission's investigations, found that he must have the help of a practical man experienced in moving coal.

Mr. German was reared, practically speaking, on the Chicago, Burlington & Quincy R.R. He also has had Western transportation experience in Colorado. He was in charge of the open-top car pool for the Railroad Administration from late in 1917 until September of 1919. In the latter month he was called upon by the Railroad Administration to direct the handling of coal during the big strike and during the emergency period which followed it. The success which followed his efforts at that time has caused him to be regarded as one of the best coal transportation specialists in the country.

Navy Asks Bids for 139,600 Tons of Coal For Navy Yards and Naval Stations

The navy has called for bids for 139,600 tons of bituminous or semi-bituminous run-of-mine coal for navy yards and naval stations. Tenders on sixteen classes are called for, among the principal items being the following: 50,000 tons for the Brooklyn Navy Yard; 5,400 tons, navy supply depot, South Brooklyn; 8,500 tons, naval air station, Lakehurst, N. J.; 25,500 tons, navy yard, Washington, D. C.; 10,000 tons, White Plains, Md.; 12,500 tons, Naval Academy, Annapolis, Md.; 14,000 tons, navy yard, Norfolk, Va.; 17,000 tons, naval operating base, Sewalls Point, Va.; 6,400 tons, Naval Hospital, Norfolk, Va.; 4,000 tons, navy yard, Charleston, S. C. The bids are to be opened Dec. 15.

Coal Commission Finds Bituminous Coal Industry Overdeveloped 30-60 Per Cent

Studies already made by the U. S. Coal Commission all point to the fact that the bituminous coal mining industry is overdeveloped. "Too many coal mines and too many miners" describes the situation in plain English. In these coal mines more capital is invested and more miners are employed than are needed to produce the coal the country requires. This condition, of course, involves waste on a countrywide scale.

How great is the present inflation of the industry cannot be stated exactly at this time, but unquestionably the inflation is excessive. Estimates of the excess mine capacity range from 30 to fully 60 per cent above the country's normal demand, which for the last five years has averaged about 510 million tons a year.

How to deflate the coal industry is one of many problems before President Harding's coal commission, and its reports may be expected to present facts bearing on this question. It seems plain enough, however, that the industry should not be further inflated by opening new mines.

J. W. Adams Probes Wholesale and Retail Distribution for Coal Commission

J. W. Adams, who is making studies of wholesale and retail distribution for the President's coal commission, is widely known in the coal industry as a result of having traveled extensively as a field agent for the Federal Fuel Administration during the war. During that period he



J. W. ADAMS

also served as director of prices for the Illinois Fuel Administration.

Mr. Adams is a native of Whiteside County, Illinois. His higher education was obtained at the Geneseo Collegiate Institute at Geneseo and at Northwestern University. Immediately after being graduated from the latter institution he joined the technical staff of the Federal Trade Commission, where he served until the outbreak of the war. When the war-time Fuel Administration was dissolved Mr. Adams returned to the Federal Trade Commission, where he has served as an economic examiner since.

Only Two Bids Submitted for Navy Coal

Only two bids were received in connection with the tenders requested on Dec. 6 by the Navy Department for fuel supplies for New York harbor, the Brooklyn Navy Yard and for the Navy Yard at Philadelphia. The Iron Trade Products Co., of Pittsburgh, offered to furnish 12,000 tons for railroad delivery Dec. 15 to Jan. 31 at $6.51 per ton and 6,000 tons for barge delivery during the same period at $5.95 per ton.

The Morrisdale Coal Co., of Philadelphia, made a tender of $7.35 per ton for 12,500 tons for barge delivery, Dec. 15 to Jan. 31. On another lot of 6,500 tons a price of $7.30 was quoted.

The Navy had called for bids on 15,000 tons of steaming coal for delivery f.o.b. at New York harbor and the Brooklyn Navy Yard, and 4,000 tons for delivery under the chutes at piers Philadelphia and 200,000 tons for delivery at Hampton Roads. An additional 18,000 tons of run-of-mine was requested for delivery at Philadelphia.

No Mediation of Wage-Scale Disputes Will Be Undertaken by U. S. Coal Commission

By Paul Wooton
Washington Correspondent of *Coal Age*

No fact finding which can be interpreted as mediating or arbitrating wage-scale disputes will be undertaken by the President's Coal Commission. This point was made emphatically clear by John Hays Hammond, chairman of the commission, in announcing that John L. Lewis and representatives of the mine workers and certain mine operators had been requested to confer with the commission.

Mr. Hammond declared that the commission is much concerned because of the failure of the Chicago conference to adopt machinery to negotiate wage scales for the coming coal year. He stated that the commission is fully alive to the gravity of the situation and that it had asked representative men on each side to confer with the commission. He pointed out that the conference is to be an informal heart-to-heart talk, in which the members of the commission will urge each party to the controversy to get together. Mr. Hammond declared, however, that the commission will acquaint itself thoroughly with the facts surrounding wage-scale matters.

One company, it is reported, made a detailed return on the cost questionnaire on the fifth day following the despatch of the questionnaire from Washington.

Chairman Hammond revealed that it is the intention of the commission to conduct formal public hearings on the important controverted issues during February. At these hearings arguments for and against nationalization of the coal mines, among other things, will be taken up. On the completion of those hearings, the commission expects to visit the mines.

As representatives of the operators, the mine workers, wholesalers, retailers and the carriers confer with the commission, each is being asked what he would do were he in the commission's place.

Will Gather Only Statistics Submitted Under Oath

Rather than take the chance of having its work discredited by having its figures questioned, the President's coal commission will insist on gathering statistics from individual operators, who make the return under oath. The members of the commission realize that their fact-finding activities would be simplified greatly were they to accept the figures of the various local associations. Were they to rely on these figures alone, it is feared that some members of Congress would make an issue of that point and thereby bring discredit upon many of the commission's findings. The commission apparently feels that it must be 100 per cent sure of its basic facts and must not leave itself open to destructive criticism regardless of how reliable the members of the commission may regard the figures of the local associations.

There were extended discussions between members of the commission and the bituminous operators' special committee, of which J. C. Brydon is chairman. These meetings consumed the greater part of two days, Dec. 6 and 7. The committee was assisted in its presentation by John W. Davis and Goldthwaite H. Dorr, of counsel.

The main object of the committee's visit to the commission was to obtain further information in regard to the cost and labor questionnaires. The conferences, however, were not confined to a discussion of cost and labor returns. Consideration was given to a wide range of coal mining questions.

The operators' committee contended that there should be simplification and clarification of these forms, but the commission rather was of the opinion that the data called for are necessary to an intelligent consideration of the subject and that the instructions on the forms are ample. It is possible that some changes will be ordered in the labor form going to non-union operators.

After the conferences the operators' committee sent out a statement to the members of the National Coal Association asking all operators to fill out these forms to the best of their ability and forward them promptly to the commission.

As a result of these conferences it is believed that the operators are more convinced than ever that the commission is making an earnest and intelligent effort to be of help to the coal industry. The desire to co-operate constructively in that effort is even stronger since this meeting. The committee very evidently is doing all that it can to convince coal operators generally that it has faith in the commission.

There is no disguising the fact that the commission is not well impressed with the operators' policy of employing expensive attorneys to assist them in the presentation of their cases. Mr. Davis has been Ambassador to England and Solicitor General of the Department of Justice. Were the commission considering certain international matters it would be willing to admit no doubt that Mr. Davis could enlighten it, but the issue presented at the time he made his brief statement for the coal operators was how best to determine the number of days an operative works in a mine. It is believed the commission would have been more interested in hearing from some of the accountants working in the offices of the operators than from such a distinguished legal light.

More Legal Notables to Be Heard

Apparently the commission is to hear further from distinguished counsel, as there is a rumor that the operators are about to engage former Secretary of War Stimson to assist them in their work with the coal commission. It is known that the commission is wondering why it is necessary to pay an attorney a single fee which is more than double the aggregate of the annual salaries of the members of the commission, when any one of a dozen operators who appeared before them last week is in a position to be of greater help in furnishing information which would enlighten the commission. The question naturally has arisen as to whether or not these large legal expenses form a proper item to add to the cost of coal.

The operators who participated in the conference with the commission were J. C. Brydon, T. W. Guthrie, S. H. Robbins, T. B. Davis, F. W. Wilshire, S. L. Yerkes, J. D. Francis, T. M. Farrell and J. D. Ord.

It was stated at the commission that much valuable information had been received from the representatives of the wholesalers who appeared before them last week. One of the points which appears to have impressed the commission very strongly is the fact that the wholesaler performs an important function in financing small operators and in extending credit to retailers.

The document submitted by the retailers is being studied. The fact that they emphasized their government fuel yard hobby has raised the question among the commissioners as to whether or not the proposal of the retailers to give the government a preferred price would not entail the same evil as grows out of lower prices on railroad fuel, which shifts more of the cost onto other consumers.

Washington, D. C., Dec. 11—Subpoenas were issued today by the President's Coal Commission to obtain testimony from several retail coal dealers as to the current price of anthracite. The hearing will be open to the press.

Check Off $4 by Dec. 15 or Indiana Strikes

Chicago, Dec. 5th—Unless the operators of Indiana agree by the night of Dec. 15 to check off a total of $4 from each mine worker's earnings for national union dues additional for November and December the whole state will be struck. John Hessler, president of District 11, delivered this ultimatum to the operators on Saturday, Dec. 2, after a week of wrangling with them over the legality of the addition under the terms of the contract. At first the operators refused to agree to it in a meeting Dec. 4. Since then their sentiment is said to have softened. The decision was scheduled to be made at the quarterly meeting of the Indiana Bituminous Coal Operators' Association on Wednesday, Dec. 13. Some operators made the November additional check-off, asserting that they didn't understand it because of evasive union explanations.

The proposal made to the operators' quarterly meeting was that Judge Anderson's District Court at Indianapolis, where 225 operators and miners were indicted for contempt lately because of the check-off, be now petitioned to enjoin the union from striking to enforce the check-off. This might draw from Judge Anderson some sort of decision as to the legality of the check-off. Those operators who went into the meeting weakening in the face of the union's demands contended that the legality of refusing the $4 for national dues was doubtful and that the question at issue is only a technicality not worth a strike.

The difficulty arose when it was learned late in November that the increase in the check-offs made at the mid-month pay included $2 for the national. It had not been explained to the operators that this special and temporary addition to the check-off was for that purpose, hence many of them paid without question. In cases where questions arose over the size of it, various answers were returned by the secretary-treasurers of the locals and the increases in most cases were spread over several items such as funeral expenses, initiation fees and the like.

On Nov. 28 Secretary Penna, of the operators' association, sent out a letter advising such operators as had been paying the swollen check-off to quit doing it, as it was in violation of the terms of the contract. He suggested that operators should not violate the contract if they expected the union to stand by it. On Monday, Dec. 4, an operators' meeting was held in Terre Haute at which the more or less complicated question of the justice of the thing was threshed out. The first vote on refusing to make the check-off was passed 35 to 15, 5 not voting; then it was made unanimous.

The contention was that President Hessler of District 11 had called the two-month increase a "special assessment" and therefore it could not be called "dues" collectable under the check-off clause of the agreement, which reads: "The operators shall offer no objection to the check-off for the checkweighman and for dues to the U.M.W. of A. provided that no check-off shall be made against any person until he shall have first given his consent in writing to his employer."

Mr. Hessler said in Chicago afterward that the "special assessment" was strictly union dues and therefore legitimate under the contract and that such mines as did not check it off at the mid-month pay would be struck and the rest would suffer at the last-month pay, Dec. 23.

Supreme Court Annuls Kohler Cave-in Law

Washington, D. C., Dec. 11—The United States Supreme Court handed down a decision today declaring the Pennsylvania subsidence law unconstitutional. This law, the Kohler Act, was commonly known as the "cave-in" law, inasmuch as its avowed object was to prevent the mining of anthracite under cities or other property which might be endangered by sinkage. The opinion was read by Justice Holmes. A dissenting opinion was filed by Justice Brandeis.

The case at issue was styled Pennsylvania Coal Co., plaintiff in error, versus H. J. Mahon and Margaret Craig Mahon. The Attorney General of Pennsylvania and the City of Scranton intervened as interested parties. In this particular case one house was involved. The coal company showed that a deed to the property had been executed in 1878 conveying the surface but in expressed terms reserving the right to remove all the coal under it. The Court of Common Pleas held that the Kohler Act if applied to the case at issue would be invalid. The Pennsylvania Supreme Court agreed that the coal company had contract and property rights protected by the federal Constitution, but held that the state law was a legitimate exercise of police powers of the state and directed a decree for the owners of the surface. The coal company appealed by writ of error.

Commerce Commission Rescinds Open-Top Restrictions and Priorities

All restrictions on the use of open-top cars have been removed by the Interstate Commerce Commission and all priority of movement of certain commodities has been cancelled as of Dec. 11. This action was taken Dec. 8, when the commission issued Amendment No. 4 to Service Order No. 5 and Amendment No. 2 to Service Order No. 24.

Service Order No. 22 is the only general service order still outstanding. This order directs all common carriers to forward traffic to destination by the routes best calculated to expedite its movement and to relieve congestion. There are a few orders outstanding dealing with the placement of cars to meet individual and specific emergencies.

The amendments follow:

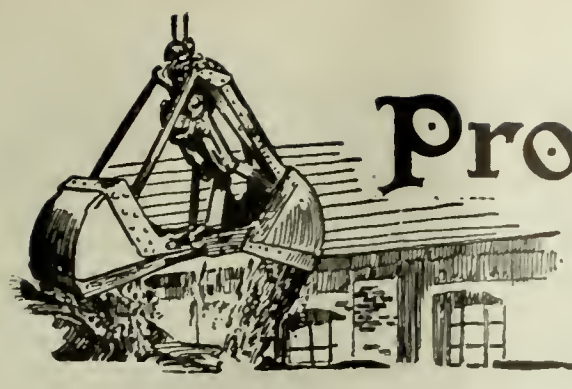
Amendment No. 4 to Service Order No. 11.—It appearing that the emergency which caused the commission on the 19th day of August, 1922, to make and enter its Service Order No. 21, and the amendment thereto made and entered on the 19th day of September, 1922, has been measurably relieved, it is ordered that said Service Order No. 24, as amended, be, and the same is hereby, vacated and set aside effective at midnight, Dec. 11, 1922.

Amendment No. 5 to Service Order No. 25.—It appearing that the emergency which caused the commission on the 19th day of September, 1922, to make and enter its Service Order No. 25, and the amendments thereto made and entered on the 17th of October, 18th of November and 23d of November, 1922, has been measurably relieved, it is ordered that said Service Order No. 25, as amended, be, and the same is hereby, vacated and set aside effective at midnight, Dec. 11, 1922.

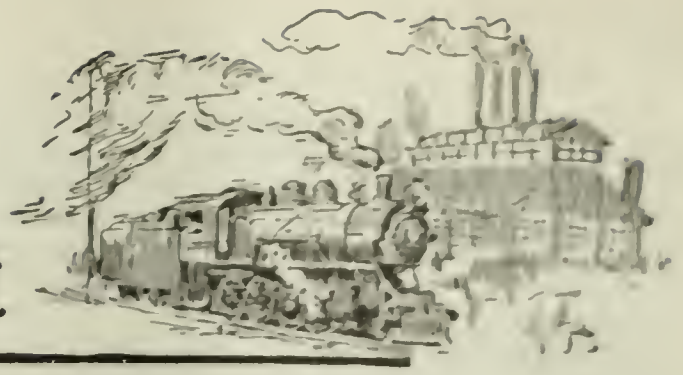
Amendment Penalizes Refusal to Answer Questions and Making False Returns

Washington, D. C., Dec. 11.—Representative Winslow of Massachusetts, chairman of the Committee on Interstate and Foreign Commerce of the House of Representatives, has introduced the amendment desired by the President's Coal Commission intended to remove all doubt as to the liabilities entailed by refusing to reply to questionnaires or for making false returns. The $5,000 fine and imprisonment for not more than one year is to apply not only to those who refuse to testify or who testify falsely but to those who refuse or neglect to answer any written questions propounded by the commission or any officer or agent thereof, "as herein provided for, and any person who shall wilfully give false testimony in respect of any matter or thing under investigation by the commission or shall make or cause to be made any false entry or statement of fact in any written answer or report called for by the commission or any officer or agent thereof, and any person who shall make or cause to be made any false entry or statement of fact in any book, account, record, document, correspondence, paper or other evidence, with intent to deceive the commission or any officer or agent thereof."

The amendment also provides that "judges of courts of the United States shall be eligible for appointment as members of the commission, and the appointment, qualification and service of a judge as member shall in no wise affect or impair his tenure as judge." This amendment is necessary to permit Judge Alschuler to qualify as a member of the commission. It provides that he is to receive his judicial salary while serving with the Coal Commission and that his traveling and per diem expenses may be paid by the Coal Commission.



Production and the Market



Weekly Review

Steam and domestic markets continue to see prices holding up well in the face of poor demand. The week opened with sagging prices on steam coals in every market save the North Atlantic region, where both high- and low-volatiles from Pennsylvania fields are holding their own and even exhibiting strength for the choice brands. Excepting only southern Illinois, the domestic lump prices are not sufficiently strong to sustain the generally weak steam demand and such fields as the Belleville, Hocking, Kanawha and Ohio No. 8 record price declines.

Difference in Markets a Complicating Factor

The smokeless situation is complicated by the difference in the markets East and West. The East will not pay more than $4.50 at the mines and the West is reaching for the same coal at prices up to $8. Difficulties in making deliveries westbound over both the Norfolk & Western and the Chesapeake & Ohio and the comparative amplitude of the supply at Tidewater account for this difference.

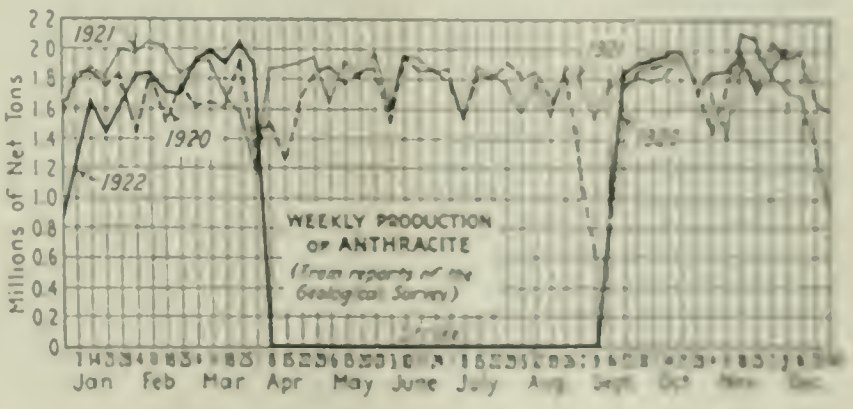
Production of bituminous coal is holding up around the 11,000,000-ton per week mark and although car supply continues to be the principal factor limiting production, lack of market is shutting down mines west of the Mississippi and limiting the running time of a number of small mines producing low-grade coal in the East.

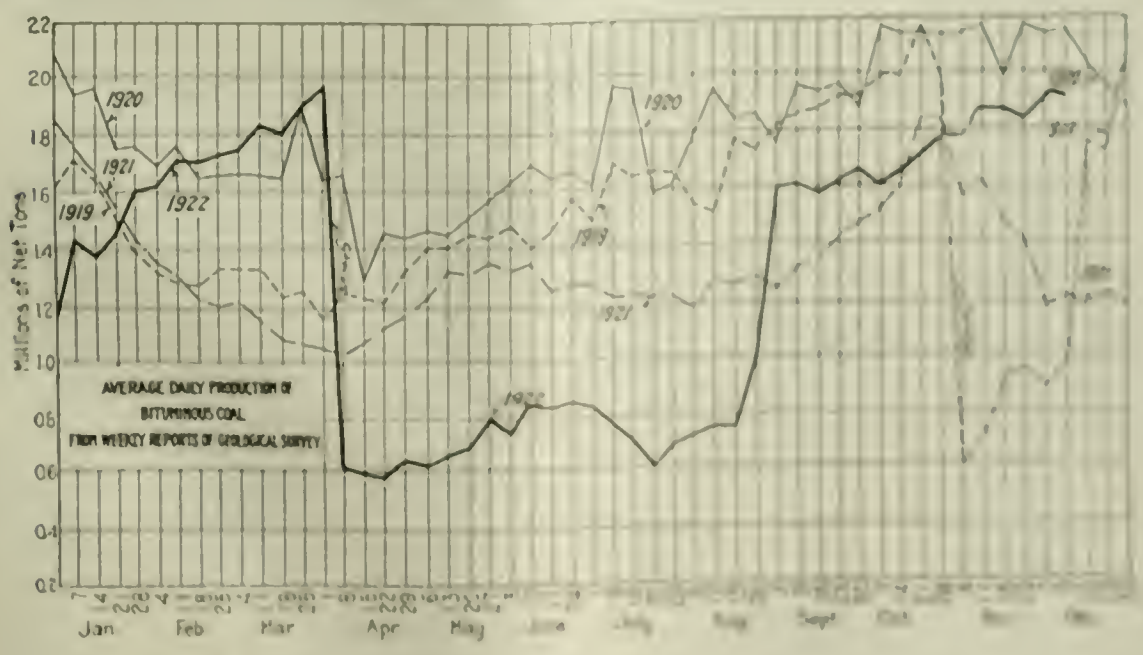
There is some stocking of soft coal by large consumers around Baltimore and by railroads in the Northern territory. Considering the country in general, however, there is little spot buying and what stocking is taking place is on contract. The East is feeling some stimulus from the purchases of retailers who are buying substitutes for anthracite. The New York State Fuel Administration now requires purchasers of domestic sizes of anthracite to accept 25 per cent of substitute fuel and forbids the sale of more than a month's supply of range and pea.

Several weeks ago it appeared that a large tonnage of soft coal might be left over at lower Lake ports. The last few days have seen a clean-up of these accumulations. It is expected now that there will be no holdover, the loading of 288,869 tons of Lake coal in the week ended Dec. 11 practically clearing out the accumulations and setting a new record for the first week in December.

The production of anthracite is holding up at high levels, prices being limited only by the conscience of the seller and the fear of the authorities. Company prices are, of course, unchanged. Dealers in out-of-the-way places report they can obtain plenty of independent coal of desirable sizes at mine prices of $12@$14. Distribution is under the control of the anthracite operators with a central organization in Philadelphia, the policy of which is governed, of course, by the Federal Fuel Administrator in Washington.

Restoration of man power in the Connellsville region, which was hit by the strike last summer, has now progressed to the point where mine labor and car supply for coal and coke combined are in excess of the market demand.





Estimates of Production

(Net Tons)

BITUMINOUS

	1920	1921
Year (Jan. 1 to Dec. 31)	[illegible]	[illegible]
Year (Apr. 1 to Mar. 31)	[illegible]	[illegible]
Year (July 1 to June 30)	[illegible]	[illegible]
Daily average	[illegible]	[illegible]
Calendar year	[illegible]	[illegible]
Daily av. (Jan. 1 to Dec. 11)	[illegible]	[illegible]

ANTHRACITE

Year (Jan. 1 to Dec. 31)	[illegible]	[illegible]
Year (Apr. 1 to Mar. 31)	[illegible]	[illegible]
Year (Sept. 1 to Aug. 31)	[illegible]	[illegible]

COKE

Year (Jan. 1 to Dec. 31)	[illegible]	[illegible]
Year (Apr. 1 to Mar. 31)	[illegible]	[illegible]
Calendar year	[illegible]	[illegible]

BITUMINOUS

The total estimated output of soft coal in the week ended Dec. 2, including coal coked, mine fuel and local sales, was [illegible] net tons, according to the Geological Survey. As Thanksgiving Day reduced the working time during that week to about 5½ days the average daily production was 1,909,000 net tons, the highest rate attained in any week this year.

"Preliminary reports of cars loaded during the week ended Dec. 9 indicate nearly the same rate of production and a total output of about 11,100,000 tons," the report continues.

"The estimated cumulative production of bituminous coal this year to Dec. 2 inclusive, stands at 365,387,000 tons, which is 11,500,000 tons, or 3 per cent, less than in the corresponding period of 1921; 139,970,000 tons, or 28 per cent, less than in 1920; 59,717,000 tons, or 14 per cent, less than in 1919; 174,800,000 tons, or 32 per cent, less than in 1918, and 145,000,000 tons, or 28 per cent, less than in 1917. The cumulative production of soft coal during the first 284 working days of the past six years has been as follows, in net tons:

[illegible]	[illegible]	1920	505,166,000
1919	[illegible]	1921	377,286,000
1918	[illegible]	1922	365,387,000

"The mine reports for the week ended Nov. 25 reveal the fact that increased traffic difficulties were largely responsible for the slump in production during that week. Increased losses through transportation, though generally small, were widespread and perceptible improvement occurred only in the Harlan district and in Arkansas.

"Losses attributed to no market were general throughout the Western states, except in Utah and New Mexico. Of the Eastern fields only Illinois, New River and western Kentucky showed losses of more than 1 per cent through lack of demand.

"Frequent rumors have been heard of a softening of the Eastern markets, but the limitation placed upon production by transportation disability has been such that apparently there has been little difficulty in absorbing all the coal that could be transported.

"All-rail movement of coal to eastern New York and New England increased in the week ended Dec. 2 principally and notably in the quantity of anthracite shipped. Three thousand and 55 cars of bituminous coal and 4,247 cars of anthracite were forwarded, as compared with 2,770 cars and 3,020 cars, respectively, in the corresponding week in 1921."

Railroad coal is understood to constitute the bulk of the movement recently. Prices on Southern coals are such as to

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

	Market Quoted	Nov. 13, 1922	Nov. 27, 1922	Dec. 4, 1922	Dec. 11,† 1922
Low-Volatile, Eastern					
[illegible]	Columbus	$6 85	$6 75	$6 50	[illegible]
[illegible]	Columbus	6 25	6 15	6 15	[illegible]
[illegible]	Columbus	5 85	5 75	5 75	[illegible]
[illegible]	Chicago	[illegible]	6 25	6 25	7 50 @ 8 00
[illegible]	Chicago	[illegible]	5 60	5 60	6 00 @ 6 50
[illegible]	Cincinnati	6 00	6 00	5 55	5 15 @ 8 00
[illegible]	Cincinnati	6 10	6 00	5 40	4 85 @ 6 00
[illegible]	Cincinnati	6 25	5 85	5 30	4 60 @ 6 00
[illegible]	Boston	4 00	4 00	7 50	7 50 @ 8 00
[illegible]	Boston	3 50	3 50	3 50	3 25 @ 4 00
[illegible]	Boston	4 25	4 25	4 25	4 00 @ 4 75
[illegible]	Boston	3 75	3 85	3 85	3 50 @ 4 25
[illegible]	New York	4 85	5 10	5 25	5 00 @ 5 50
[illegible]	[illegible]	[illegible]	4 75	5 15	5 00 @ 5 35
[illegible]	[illegible]	4 00	4 00	4 85	5 00
[illegible]	New York	4 20	4 50	4 60	4 50 @ 4 75
[illegible]	Philadelphia	4 10	4 50	4 65	4 50 @ 4 85
[illegible]	Baltimore	4 10	4 60	4 10	4 25 @ 4 50
[illegible]	New York	3 50	3 85	4 95	3 75 @ 4 25
[illegible]	Philadelphia	3 50	3 75	3 95	3 80 @ 4 15
[illegible]	Baltimore	3 35	3 35	3 35	4 00
[illegible]	New York	3 00	3 25	3 00	3 00 @ 3 50
[illegible]	Philadelphia	3 15	3 15	3 35	3 25 @ 3 50
[illegible]	Baltimore	3 00	3 10	3 00	3 00 @ 3 25
High-Volatile, Eastern					
[illegible]	New York	3 41	3 50	3 25	[illegible]
[illegible]	Philadelphia	3 50	3 50	3 55	[illegible]
[illegible]	Baltimore	3 30	3 30	3 10	3 00
[illegible]	Pittsburgh	4 50	4 50	4 85	5 00 @ 5 50
[illegible]	Pittsburgh	2 60	2 60	2 60	2 50 @ 2 75
[illegible]	Pittsburgh	3 00	3 00	3 25	3 00 @ 3 50
[illegible]	Columbus	5 75	5 75	5 75	[illegible]
[illegible]	Columbus	3 35	3 35	3 35	[illegible]
[illegible]	Columbus	3 25	3 25	3 25	[illegible]
[illegible]	Cincinnati	6 25	6 25	6 25	[illegible]
[illegible]	Cincinnati	3 60	3 60	3 50	[illegible]
[illegible]	Cincinnati	3 45	3 45	3 15	3 00 @ 3 50
[illegible]	Columbus	3 25	3 25	3 25	2 75 @ 3 25
[illegible]	Columbus	5 05	5 05	[illegible]	[illegible]
[illegible]	Columbus	3 25	3 25	[illegible]	[illegible]
[illegible]	Cleveland	4 10	4 10	4 50	[illegible]

	Market Quoted	Nov. 13, 1922	Nov. 27, 1922	Dec. 4, 1922	Dec. 11,† 1922
Pitts. No. 8 mine run	Cleveland	$3 56	$3.70	$3.20	[illegible]
Pitts. No. 8 screenings	Cleveland	3 31	3.20	2 85	2 75 @ 3 00
Midwest					
Franklin, Ill. lump	Chicago	5 35	5 00	5 00	5 00 @ 5 50
Franklin, Ill. mine run	Chicago	4 10	4 10	4 10	4 00 @ 4.25
Franklin, Ill. screenings	Chicago	2 60	2 50	2 50	[illegible]
Central, Ill. lump	Chicago	4 70	4 25	4 25	4 00 @ 4.50
Central, Ill. mine run	Chicago	3.10	3.10	3 10	3 00 @ 3.25
Central, Ill. screenings	Chicago	1 85	1 65	1 65	1 60 @ 1 75
Ind. 4th Vein lump	Chicago	5 10	5 10	5 10	5 00 @ 5 25
Ind. 4th Vein mine run	Chicago	3 85	3 85	3 85	3 75 @ 4 00
Ind. 4th Vein screenings	Chicago	2 05	2 05	2 25	2 15 @ 2 40
Ind. 5th Vein lump	Chicago	4 75	4 75	4 75	4 50 @ 5.00
Ind. 5th Vein mine run	Chicago	3 60	3.60	3 60	3.50 @ 3 75
Ind. 5th Vein screenings	Chicago	1 85	1 85	2 00	1.90 @ 2 10
Standard lump	St. Louis	4 25	4 00	4 25	4 00 @ 4 50
Standard mine run	St. Louis	2 50	2 60	2 60	[illegible]
Standard screenings	St. Louis	1 30	1.35	1 35	1 25 @ 1 50
West Ky. lump	Louisville	4 75	3.75	3 75	3 50 @ 4 00
West Ky. mine run	Louisville	2.55	2.25	2 25	2 00 @ 2 50
West Ky. screenings	Louisville	1.75	1.50	1 50	1 25 @ 1 75
West Ky. lump	Chicago	4 10	4 10	3 85	3 75 @ 4 00
West Ky. mine run	Chicago	3 10	2 60	2 60	2 50 @ 2 75
South and Southwest					
Big Seam lump	Birmingham	3.95	3.95	3.95	3 45 @ 4 45
Big Seam mine run	Birmingham	2.35	2.35	2.35	2 25 @ 2.50
Big Seam (washed)	Birmingham	2.60	2.60	2 60	2 50 @ 2.75
S. E. Ky. lump	Chicago	5.50	6 10	6.10	6 00 @ 6.50
S. E. Ky. mine run	Chicago	4.25	4.25	4.25	4.00 @ 4 50
S. E. Ky. lump	Louisville	6.60	6.50	6.50	[illegible]
S. E. Ky. mine run	Louisville	4.25	3.75	3.40	[illegible]
S. E. Ky. screenings	Louisville	4.00	3.60	3.25	3.00 @ 3 50
S. E. Ky. lump	Cincinnati	6 25	6.35	6 50	[illegible]
S. E. Ky. mine run	Cincinnati	3 85	3.60	3.35	3.00 @ 3.75
S. E. Ky. screenings	Cincinnati	3.60	3.25	3.00	[illegible]
Kansas lump	Kansas City	5 75	5.00	5 00	5.00
Kansas mine run	Kansas City	3 75	3.50	3.50	3.50
Kansas screenings	Kansas City	2.50	2 50	2.50	2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in heavy type, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Latest Pre-Strike Independent	Latest Pre-Strike Company	Dec. 4, 1922 Independent	Dec. 4, 1922 Company	Dec. 11,† 1922 Independent	Dec. 11,† 1922 Company
[illegible]	New York	$2 [illegible]		$7 60 @ $7.75	$9.00	$7.75 @ $8.15	$9.00	$7 75 @ $8 15
[illegible]	Philadelphia	2 [illegible]	$7 [illegible] $7 50	7 75 @ 7 85		7 90 @ 8 10		7 90 @ 8 10
[illegible]	New York	2 [illegible]	7 [illegible] 2 75	7 60 @ 7.85	9 25 @ 10 75	8 00 @ 8 25	9 25 @ 10 50	8 00 @ 8 35
[illegible]	Philadelphia	2 [illegible]	7 2[illegible] 7 75	7 75	9 25 @ 11 00	8 10 @ 8 35	9 25 @ 11 00	8 10 @ 8 35
[illegible]	Chicago	[illegible]	7 50		12 50 @ 13 00	7 20 @ 8.25	12 50 @ 13 00	7 20 @ 8 25
[illegible]	New York	2 [illegible]	7 [illegible] 8 20	6 90 @ 7 40	9 25 @ 10 75	8 00 @ 8 35	9 25 @ 10 50	8 00 @ 8 35
[illegible]	Philadelphia	2 [illegible]	7 [illegible] 8 10	7 90 @ 8 10	9 25 @ 11 00	8 15 @ 8 35	9 25 @ 11 00	8 15 @ 8 35
[illegible]	Chicago	[illegible]	7 7[illegible]	8 05 @ 8 25	9 25 @ 11 00	8 15 @ 8 35	9 25 @ 11 00	8 15 @ 8 35
[illegible]	New York	2 [illegible]	7 [illegible] 8 20	7 20 @ 7 60	12 50 @ 13 00	7 35 @ 8 25	12 50 @ 13 00	7 35 @ 8 25
[illegible]	Philadelphia	2 [illegible]	7 [illegible] 8 10	7 90 @ 8 10	9 25 @ 10 75	8 00 @ 8 35	9 25 @ 10 50	8 00 @ 8 35
[illegible]	Chicago	[illegible]	7 7[illegible]	8 05 @ 8 25	9 25 @ 11 00	8 15 @ 8 35	9 25 @ 11 00	8 15 @ 8 35
[illegible]	New York	2 [illegible]		7 20 @ 7 60	12 50 @ 13 00	7 35 @ 8 25	12 50 @ 13 00	7 35 @ 8 35
[illegible]	New York	2 [illegible]				8 15		8 15
[illegible]	New York	2 [illegible]	[illegible] 5 75	5 75 @ 6 45	7 00 @ 10 00	6 15 @ 6 30	7 00 @ 10 00	6 15 @ 6 30
[illegible]	Philadelphia	2 [illegible]	[illegible] 6 00	6 10 @ 6 25	7 00 @ 8 00	6 15 @ 6 20	7 00 @ 8 00	6 15 @ 6 20
[illegible]	Chicago	[illegible]	6 00	5 60 @ 6 10	7 00 @ 8 00	5 40 @ 6 03	7 00 @ 8 00	5 40 @ 6 03
[illegible]	New York	2 [illegible]	2 7[illegible] 1 50	3 50	3 50 @ 4 00	3 50 @ 4 25	3 50 @ 4 50	3 50 @ 4 25
[illegible]	New York	2 [illegible]	2 7[illegible] 1 25	3 50	3 25 @ 4 00	4 00	3 25 @ 4 00	4 00
[illegible]	Philadelphia	2 [illegible]	[illegible] 2 50	2 50	2 00 @ 2 75	2 50 @ 3 00	2 00 @ 2 75	2 50 @ 3 00
[illegible]	New York	2 [illegible]	[illegible] 2 50	2 50	2 00 @ 2 75	2 75 @ 3 00	2 00 @ 2 75	2 75 @ 3 00
[illegible]	Philadelphia	2 [illegible]	[illegible] 1 85	1 50	1 00 @ 1 75	1 50 @ 2 00	1 50 @ 2 25	1 50 @ 2 00
[illegible]	New York	2 [illegible]	[illegible] 1 73	1 50	0 75 @ 1 75	2 00	0 75 @ 1 75	2 00
[illegible]	[illegible]	[illegible]		2 [illegible] 2 50		2 25		2 25

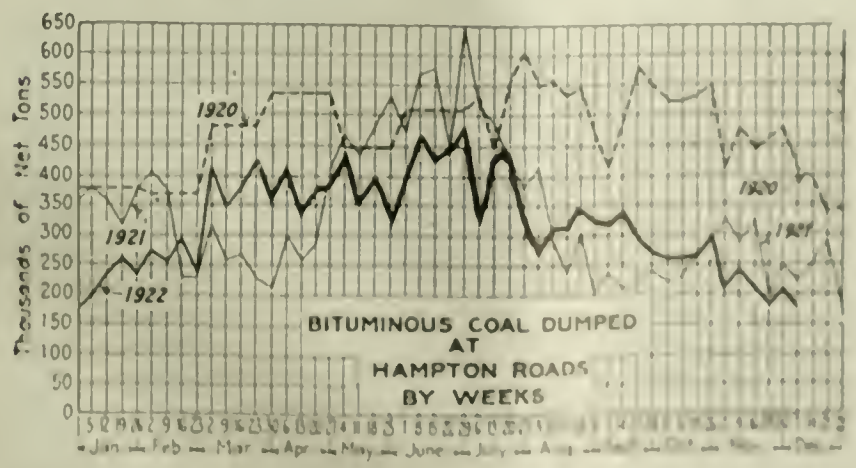
* [illegible] † Advances over previous week shown in heavy type, declines in *italics*.



Coal Age Index 325, Week of Dec. 11, 1922. Average spot price for same period, $3.93. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

encourage central Pennsylvania all-rail purchases, where the requirements and demand are more than normal for this time of the year.

Hampton Roads situation continues dull. Tonnage on hand at the C. & O. and N. & W. piers gained last week and dumpings likewise increased. At Sewalls Point, on the



contrary, coal on hand and coal dumped last week showed a decline from the previous week. The interest of the producer is in a high-priced Western market, where, however, he can ship but a small portion of his output. Eastern buyers, of course, take advantage of this, thus holding Hampton Roads prices down.

How the Coal Fields Are Working

Percentage of full-time operation of [illegible] reported by the U. S. Geological Survey in Table 3 of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 8, 1922 Inclusive	Week ended Nov. 25, 1922 Inclusive	Week ended Dec. 2, 1922 Inclusive
U. S. Total	45 6	51 7		
Alabama	63 5	64 6	64 2	64 2
Somerset County	55 5	74 9	55 6	54 6
Panhandle, W. Va.	55 3	91 6	57 1	57 5
Westmoreland	54 9	80 9	69 6	73 8
Virginia	54 8	70 6	58 7	60 5
Harlan	53 3	54 8	26 6	33 5
Hazard	51 7	58 4	18 1	18 8
Pocahontas	49 8	68 9	33 9	39 2
Tug River	45 1	65 7	52 2	54 6
Logan	47 6	81 5	25 7	24 6
Cumberland-Piedmont	46 6	56 6	42 4	41 8
Winding Gulf	45 7	64 5	43 1	44 8
Kenova-Thacker	38 2	54 6	42 3	44 1
N. E. Kentucky	32 9	47 7	28 1	28 6
New River	24 3	67 9	41 3	39 3
Oklahoma	63 9	59 6	53 2	51 4
Iowa	57 4	79 4	53 3	53 8
Ohio, Eastern	52 6	46 6	42 6	38 8
Missouri	50 7	68 9	72 1	69 7
Illinois	44 8	54 3	48 6	46 9
Kansas	42 0	54 3	53 6	56 7
Indiana	41 4	51 8	47 7	47 6
Pittsburgh†	41 2	54 8	43 8	44 3
Central Pennsylvania	39 1	58 2	56 6	44 2
Fairmont	35 3	44 5	46 2	45 7
Western Kentucky	32 5	47 7	44 9	48 1
Pittsburgh*	30 4	45 9	38 6	42 4
Kanawha	26 0	43 6	45 4	26 1
Ohio, southern	22 9	34 1	38 3	38 7

* Rail and river mines combined.
† Rail mines.
‡ No report.

Car Loadings, Surplusages and Shortages

	Cars Loaded All Cars	Coal Cars
Week ended Nov. 25, 1922	[illegible]	[illegible]
Previous week	[illegible]	[illegible]
Same week in 1921	[illegible]	[illegible]

	Surplus Cars All Cars	Coal Cars	Car Shortage All Cars	Coal Cars
Nov. 23, 1922	[illegible]		[illegible]	[illegible]
Nov. 15, 1922	4,643		[illegible]	[illegible]
Same date in 1921	215,000	[illegible]		

End of the Lake season is fast approaching. During the week ended Dec. 11 cargo coal dumped reached [illegible] and fuel coal 8,267 net tons, a total of 288,869, which is a high figure for this time of the year. The season's total is now past the 19,000,000-ton mark, approximately [illegible] tons behind last year. The Northwest is abundantly supplied with soft coal, for on top of the Eastern coal via Lake, all-rail coal from Illinois keeps pouring in.

ANTHRACITE

Work at the anthracite collieries virtually ceased on Thanksgiving Day, and in consequence production for the week ended Dec. 2 declined to 1,813,000 net tons, according to the Geological Survey. This estimate is based on shipments of 34,788 cars, including besides freshly mined coal, that recovered by washeries and river dredges, and allowances for mine fuel and sales to the local trade. Although this was less than in recent preceding weeks it was 10 per cent more than the output in Thanksgiving Day week of 1921 (1,650,000 net tons). Preliminary reports of cars loaded during the first four days of the week of Dec. 4 indicate that output will be about 2,100,000 tons.

COKE

Production of beehive coke improved slightly during the week ended Dec. 2, in spite of the occurrence of Thanksgiving Day, according to the Geological Survey. The coal output is estimated from railroad shipments at [illegible] net tons, an increase of 4,000 tons over the week before. With the exceptions of Utah and Washington, all districts showed improvement, or at least maintained the record of the week preceding.

The steady improvement in the Connellsville region that began early in June finally halted and, according to the *Connellsville Courier*, the output in that region increased from 301,100 to 303,700 tons. The Courier attributes the decline to the temporary shutdown of two furnaces for repairs, with a consequent curtailment in demand for coke.

Foreign Market And Export News

British Coal Output Again Shatters Record; Buying Pressure Relaxes

After a slump during the week ended Nov. 18, British coal output recovered and during the week ended Nov. 25 established a new high mark for the year, with 5,472,000 tons mined. This is 36,000 tons greater than the previous week's output and 51,000 tons more than the previous record made during the week ended Nov. 11.

Buying pressure has now relaxed, but new business is coming along at a steady total for best grades and collieries are not concerned with the outlook, showing no desire to relax prices materially. Current exports are still up to the pre-war level. Colliery owners are well booked for the next week or so, so far as the superior grades are concerned, but secondary and lower grade coals, especially smalls, are still in greatly excessive supplies.

There has been a disposition on the part of foreign buyers, in view of the adverse exchange rates and other factors, to hold back fresh orders with the object of forcing down prices, but with the approach of the Christmas holidays miners believe that this bolshevism process will not last long.

Increased exports are reported to France, South America, Spain, Greece and coaling stations, but Italian shipments declined approximately 22,000 tons and minor declines are recorded to Portugal, Canada and other countries. The direction of export for the week ended Nov. 17 was as follows:

To	Tons
[illegible]	125,145
[illegible]	45,781
[illegible]	74,910
[illegible]	18,233
[illegible]	8,878
[illegible]	8,215
[illegible]	14,162
[illegible]	3,127
[illegible]	84,198
[illegible]	74,229
Total	451,468

The coal market in north England is quiet. Buyers are showing a tendency to hold off. Germany, though in need of coal, finds the exchange so adverse that deliveries are being postponed for the present. The collieries are well booked up for the most part to the end of the year and concessions in prices are confined to buyers with tonnage which will fit into loading positions. There are complaints of congestion and delay in loading at the Tyne ports and the teamers and trimmers have been urged to return to the three-shift system of working as the only remedy, so far without success.

Welsh owners are complaining bitterly of inadequate loading facilities at Cardiff and are pressing for longer working hours for loaders. The Great Western Ry. has made a request to the coal tippers and trimmers to accept the three-shift system of working at the docks. The workers have opposed the three-shift system all along, and still express emphatic opposition to the change. The colliery owners and coal exporters generally advocate the three-shift system, as savings could be made in freight and dock charges, which would help to cheapen the cost of coal to foreign ports.

Output Greater in Northern France

Most of the collieries of the Nord and Pas-de-Calais are unable to accept new orders for domestic coals except for delivery after the end of the present year. Industrial coals also are becoming scarcer.

Pithead stocks in that coal field, which in April last amounted to nearly 2,000,000 tons, have gradually decreased until now they may be estimated at about 300,000 tons.

On the other hand, the coal output of the North of France had increased as follows in October:

	Sept., 1922 Tons	Oct., 1922 Tons
Non-departmental mines of the Pas-de-Calais	616,006	638,190
Departmental mines of the Nord and Pas-de-Calais	694,234	728,164
Totals	1,310,240	1,366,354

British coal imports, which had increased in October have been interfered with to some extent by the recent rise of sterling. For the same reason French coals made a quite unusual appearance on the Antwerp market.

The situation in the French Central and Southern coalfields, excellent for domestic coals, is fairly satisfactory for industrial coals, although the iron works in that part of France might be more active.

Coke from the Loire coal field is in good demand from Switzerland and Italy.

Sarre coals, owing to the collapse of the mark, are being more largely diverted from German into French home markets.

Parisian coal factors who agreed to an increase in contract prices in order to obtain domestic coal contracted for in Belgium—a step which was against all admitted rules—find deliveries no better since the revision than before, and their association has just written a strong letter about it to the Association Charbonnière du Bassin de Charleroi.

From Nov. 1 to Nov. 19, inclusive, Germany has delivered to French blast-furnaces 219,000 tons of reparation coke, which is at the rate of 346,000 tons per month, whereas 410,000 tons per month is due.

In October 1,261,499 metric tons of coal were received in French maritime ports, as follows:

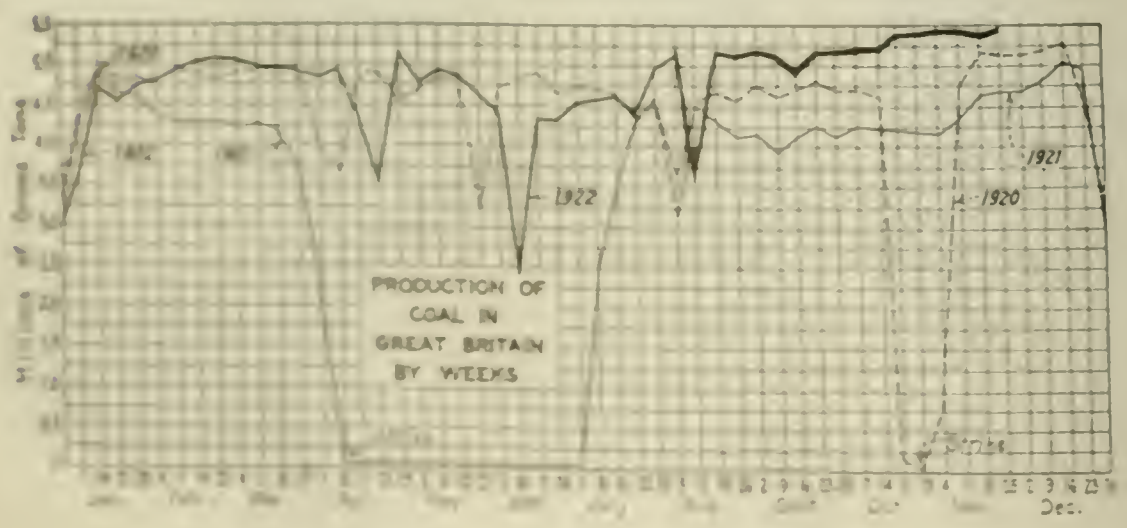
	Metric Tons
British coals	1,149,897
German coals	109,719
Belgian coals	1,883
Total	1,261,499

IMPORTS

From	Oct., 1922	First 10 months of 1922
Coal		
Sarre	286,798	2,912,454
Great Britain	998,909	9,621,589
Belgium	203,262	2,010,095
United States		23,255
Germany	254,125	3,110,828
Netherlands	24,536	510,397
Other countries	117	3,823
Totals	1,767,747	18,192,441
Coke		
Great Britain	1,406	42,021
Belgium	38,948	409,005
Germany	372,981	3,522,442
Other countries	27,644	188,812
Total	440,979	4,162,280
Patent fuel		
Great Britain	6,775	116,471
Belgium	14,230	606,809
Germany	55,406	398,099
Other countries	360	4,103
Totals	76,771	1,125,482

EXPORTS

To			
Coal			
Belgium		61,406	291,395
Switzerland		85,773	444,558
Spain		74	488
Italy		21,635	41,836
Germany		114,054	360,643
Austria			697
Other countries		102,951	313,827
Bunkers	French steamers	10,497	73,134
	Foreign steamers	4,089	25,148
Totals		400,479	1,551,726
Coke			
Switzerland		16,204	72,875
Spain		365	1,548
Italy		10,890	141,481
Germany		1,348	8,604
Other countries		17,342	158,898
Total		46,149	383,406
Patent fuel			
Switzerland		2,439	26,511
Austria			4,187
Other countries		4,919	32,611
Bunkers	French steamers	4,005	16,131
	Foreign steamers	20	673
Totals		11,383	80,113



United States October Coal Exports

(In Gross Tons)

Coal:	October, 1921	October, 1922
Anthracite	306,082	404,999
Bituminous	1,330,304	1,729,425
Exported to:		
France	480	
Italy	33,012	
Other Europe	1,226	145
Canada	1,124,718	1,647,323
Panama	19,229	9,485
Mexico	10,377	7,048
British W. Indies	10,201	8,736
Cuba	43,328	48,702
Other W. Indies	7,827	6,704
Argentina	30,133	
Brazil	15,892	
Chile	1,017	
Uruguay		
Egypt	12,385	
French Africa	13,588	
Other Countries	6,891	1,282
Coke	22,256	38,613
Briquets and other compositions		1,923

British Coal Exports in October

Country	Gross Tons 1920	1921	1922
Russia	8,008	34,648	112,254
Sweden	50,802	204,398	225,840
Norway	46,364	91,341	116,140
Denmark	68,235	260,919	287,874
Germany		114,333	918,598
Netherlands	11,181	255,545	697,920
Belgium	30,899	119,325	298,420
France	745,608	879,149	1,143,552
Portugal	25,379	53,686	47,109
Azores and Madeira		3,116	6,744
Spain	30,794	120,900	113,970
Canary Islands	12,412	19,598	32,443
Italy	171,837	474,412	642,159
Austria	1,401		
Hungary			
Greece	4,987	29,393	16,699
Algeria	17,259	61,108	66,179
French W. Africa	8	4,024	10,119
Port. W. Africa	5,471	6,707	16,825
Chile	112	1,951	5,518
Brazil		19,573	83,758
Uruguay	2,835		29,668
Argentine Republic	11,043	111,792	200,509
Channel Islands	8,410	13,939	11,832
Gibraltar	49,069	35,886	57,846
Malta	19,528	6,057	38,397
Egypt	51,619	115,159	130,760
Anglo-Egypt. Sudan		3,505	10,623
Aden and Depend.	5,529		3,881
British India		134,704	14,893
Ceylon		10,904	14,381
Other Countries	38,708	219,900	841,500
Total, October	1,417,498	3,405,972	6,196,411
Total September	1,475,623	3,406,579	7,082,729

QUANTITY AND VALUE

	Gross Tons October	1st 10 Mos.
1920	1,417,498	21,269,053
1921	3,405,972	16,757,526
1922	6,196,411	51,672,984
	Value October	1st 10 Mos
1920	£6,108,497	£84,600,973
1921	4,851,452	32,707,611
1922	6,992,631	58,403,566

World Coal Production, July-August

In comparing present coal production with the average pre-war production it will be seen that France, on account of her gain in territory, produces more coal at present than before the war and this in spite of the fact that the coal mines in the northern departments of that country suffered seriously during the war. In addition to her own production France receives monthly about one million tons of so-called reparation coal, so that the country is better off than before the war as far as coal is concerned. The greatest decrease has taken place in the United States, probably on account of the miners' strike. German production remains far behind that of the ante-war time—by about one-third—chiefly due to the loss of mining districts and partly due to the decreasing output. Great Britain's coal production also remains considerably behind pre-war time, but has largely increased as compared with the preceding year (miners' strike) partly due to the strike in America. An increase in production as compared with ante war production took place in the Netherlands, South Africa and Japan.

MONTHLY AVERAGE OF COAL PRODUCTION

Countries	In Million Tons 1913	1921	1922 July	August
Germany	15 84	11 35	9 59 *b*	10 21 *b*
France	3 40 *a*	3 21	3 51	
Belgium	1 90	1 82	1 67	1 70
Netherlands	0 16	0 33	0 39	0 39
Poland		0 63		
Czechoslovakia	1 19	0 97	0 78	
Great Britain	24 34	13 76	18 92 *c*	19 37 *c*
United States	43 10	38 09	15 56	20 36
Canada	1 14	0 89		
South Africa	0 67	0 87	0 82	0 79
Japan	1 78	1 94	1 96	
Total	93 52	73 86		

(*a*) Since 1921 including Alsace-Lorraine and Saar.
(*b*) Exclusive of lost part of Upper Silesia but including the district of Beuthen
(*c*) Four weeks.

Increased Bunkering in Liverpool

The expansion in Mersey bunkering in 1922 as compared with 1921, says a Northern weekly, is illustrated in the figures for October, which are now available. These show that in the ten months ended October there was an increase in bunker shipments from Liverpool of 742,790 tons as compared with the ten months of 1921, and 267,575 tons increase in Manchester bunker shipments over the figures of 1921. The official bunker shipments for the two ports for the ten months of this year as compared to 1921 are as follows:

Liverpool Ten Months Ended October 1921 Tons	October 1922 Tons	Manchester Ten Months Ended October 1921 Tons	October 1922 Tons
1,155,157	1,897,947	67,554	335,132

The relative positions which the main bunkering ports occupy so far as volume of bunker export is concerned for the month of October, 1922, was as follows:

Port	Quantity Shipped Tons
Cardiff	246,716
Liverpool	212,919
Newcastle and South and North Shields	141,125
Hull	132,335
Glasgow	111,652
London	110,419
Manchester	29,492

The total shipments as cargo from Liverpool in October of this year were 79,232 tons, and from Manchester 34,829 tons, and the total from the northwestern ports of the United Kingdom 114,561 tons, which compares with a total of 10,856 tons in October, 1921.

Export Clearances, Week Ended Dec. 2, 1922

FROM HAMPTON ROADS

For Cuba
Br. SS. Berwindvale, for Havana 6,

For West Indies
Nor. SS. Corona, for St. Thomas 1,

FROM PHILADELPHIA

For Cuba
Am. Schr. Lillian E. Kerr, for Cienfuegos
Am. Barkentine, Cecil P. Stewart, for Cayo Francis

For West Indies
Am. Schr. Victoria S. Baltimore, for Port de France

POLAND—According to statistics from Kattowitz the coal production in Polish Upper Silesia from Oct. 23 to 29 amounted to 461,728 tons. Of this, 231,686 tons were sent abroad to various states of central and northern Europe, Germany getting the largest quota, 167,362 tons, Austria next with 44,062 and Czecho Slovakia, 1,854 tons.

Week-End Strength at Hampton Roads

The market at Hampton Roads showed signs of strength at the end of the week, although dullness was the main feature throughout the period. Car shortage continued the outstanding factor in the trade, with little prospect of immediate improvement in the situation.

Bunker business was showing more activity, but the coastwise and foreign trade was extremely dull. January 1 was the earliest date set by shippers as promising any improvement in a general way.

The market was spotty during the week, prices depending somewhat on the class of cargoes demanded. Few dealers had sufficient supplies to give any sort of flexibility to their trade. Small lots in most instances were the general thing.

Hampton Roads Pier Situation

	Week Ended Nov. 25	Dec. 1
N. & W. Piers, Lambert's Pt.		
Cars on hand	444	241
Tons on hand	12,277	6,862
Tons dumped for week	14,256	17,784
Tonnage waiting	4,073	4,200
Virginian Ry. Piers, Sewalls Pt.		
Cars on hand	1,014	993
Tons on hand	28,840	27,600
Tons dumped for week	32,880	37,440
Tonnage waiting	28,420	14,840
C. & O. Piers, Newport News		
Cars on hand	624	496
Tons on hand	22,800	22,400
Tons dumped for week	24,125	28,313
Tonnage waiting	6,000	4,500

Pier and Bunker Prices, Gross Tons

	Dec. 2	Dec. 9
PIERS		
Pool 9, New York	$7 [illegible]	$7 75 — $8 00
Pool 10, New York	7 [illegible]	7 25 — 7 50
Pool 11, New York	6 [illegible]	6 [illegible]
Pool 9, Philadelphia	7 [illegible]	7 [illegible]
Pool 10, Philadelphia	7 [illegible]	7 [illegible]
Pool 11, Philadelphia	6 [illegible]	6 [illegible]
Pool 1, Hamp. Roads	7 [illegible]	[illegible]
Pools 5-6-7 Hamp. Rds.	7 [illegible]	[illegible]
Pool 2, Hamp. Rds.	7 [illegible]	[illegible]
BUNKERS		
Pool 9, New York	$7 [illegible]	$8 25 — $8 40
Pool 10, New York	7 [illegible]	7 65 — 7 90
Pool 11, New York	6 [illegible]	[illegible]
Pool 9, Philadelphia	7 [illegible]	[illegible]
Pool 10, Philadelphia	7 [illegible]	[illegible]
Pool 11, Philadelphia	6 [illegible]	[illegible]
Pool 1, Hamp. Rds.	7 [illegible]	[illegible]
Pool 2, Hamp. Rds.	7 [illegible]	[illegible]
Welsh, Gibraltar	[illegible]	[illegible]
Welsh, Rio de Janeiro	[illegible]	[illegible]
Welsh, Lisbon	[illegible]	[illegible]
Welsh, La Plata	[illegible]	[illegible]
Welsh, Genoa	[illegible]	[illegible]
Welsh, Algiers	[illegible]	[illegible]
Welsh, Pernambuco	[illegible]	[illegible]
Welsh, Bahia	[illegible]	[illegible]
Welsh, Madeira	[illegible]	[illegible]
Welsh, Teneriffe	[illegible]	[illegible]
Welsh, Malta	[illegible]	[illegible]
Welsh, Las Palmas	[illegible]	[illegible]
Welsh, Naples	[illegible]	[illegible]
Welsh, Rosario	[illegible]	[illegible]
Welsh, Singapore	[illegible]	[illegible]
Welsh, Constantinople	[illegible]	[illegible]
Welsh, St. Michaels	[illegible]	[illegible]
Welsh, Port Said	[illegible]	[illegible]
Welsh, Oran	[illegible]	[illegible]
Welsh, Fayal	[illegible]	[illegible]
Welsh, Dakar	[illegible]	[illegible]
Welsh, St. Vincent	[illegible]	[illegible]
Welsh, Montevideo	[illegible]	[illegible]
Welsh, Alexandria	[illegible]	[illegible]

Current Quotations British Coal f.o.b. Port, Gross Tons

Cardiff	Dec. 2	Dec. 9
Admiralty, large	[illegible]	28 6 — 28 6
Steam smalls	[illegible]	17 — 18
Newcastle		
Best steams	[illegible]	[illegible]
Best gas	[illegible]	[illegible]
Best bunkers	[illegible]	23 6

† Nominal.
Other declines [illegible]

North Atlantic

Prices Firm on High Grades, Slipping on Low Qualities

Car Supply Improves Slightly—Buyer's Indifference on Quality Prevents Price Recession—Railroads Heaviest Buyers—Woodin's Order Expected to Be Helpful Factor

An indication of the market situation in this territory is found in the firmness of prices on high-grade coal, while quotations on low-grade coal here and elsewhere over the country are slipping. Car supply is slightly improved in a number of spots but the indifference of the buyer on quality has prevented marked price recessions.

Railroads are now the heaviest buyers. Some of them are accumulating good stocks. Here and there there is some inquiry for delivery after the first of the year for storage against another big strike, but the market is not the least nervous over this possibility at this writing. Producers are more concerned now with getting for their coal a price that will yield a profit on the short car supply than in quoting prices for the first quarter of next year.

Fuel Administrator Woodin's order to buy one-fourth substitute as fuel with household anthracite is calculated to relieve the pressure on bituminous coal as well as anthracite steam sizes at Tidewater.

NEW YORK

The better grades are growing stronger and scarcer. At times operators are in a position to take care of orders and offer reasonably quick delivery, while at other times this is impossible because of the uncertain car supply.

There is a heavy demand for prepared bituminous domestic coals and most buyers are heavily booked ahead. Quotations on some grades are from $6.25 for furnace to $6.50 for range.

The Southern market is tightening considerably, reports indicating that some operators are hesitating to accept further business.

Shipments of British coal to this port have practically ceased. A local house points out that British coal can be landed in Boston at $1 less cost than American coals.

There were 1,886 cars at local terminals Dec. 4 as compared with 1,478 cars Dec. 2. Comparatively little of this tonnage was better than Pool 11 grade while there was considerable of cheaper coals.

Some fancy grades were quoted around $4.75; low-sulphur gas coal, run-of-mine, $3.50@$4; 2 lump, $4.25@$4.50; high-volatile steam grades, $3.75@$4.25; and slack, $2.50@$3.

PHILADELPHIA

The spot market on the distinctly high-grade coals remains quite stiff at last week's prices, with some reporting advances. The supply of cars nowhere seems to be anywhere near the demand and unless decided relief is soon given, prices must soar still higher.

The consumer remains fairly cheerful and pretends to be puzzled for a reason for the recent stiffening of prices. However, those with orders placed several weeks ago at more favorable than the current prices are now insisting on prompt shipments. The railroads are still the biggest takers of fuel, and have accumulated good stocks.

Some shippers are not particularly anxious for business even at present prices, as they are doing their best to clean up orders placed three or four weeks ago. This refers to the best of the low-volatile steam coals and some high-grade gas fuel.

At tide there is only ordinary bunkering, while pier business is not even that.

BALTIMORE

The early part of last week witnessed a slide in prices for all except the better grades of soft coal, but the recession proved brief. At this writing there has developed a decided call for fuel from large consumers, public service corporations being particularly active in purchasing.

Several coal men here who had reported that they were having difficulty in getting rid of Pool 11, and even Pool 10, now say these are absorbed as rapidly as offered. During the past week while Pool 9 coal held pretty well above $4, the net ton f.o.b. mines, Pool 10 was offered around $3.50, Pool 11 around $2.75 and Pool 18 at from $2.25 to $2.50. The gas coal market was off also, Pool 64 being obtainable in many cases at $2.75 and Pool 63 at $3.25@$3.50. At this writing, however, there has been an advance of 25@50c. right along the line and not much of Pool 10 is now on the market below $4. Very little of Pool 9 is now offered here and is readily commanding $4.50.

FAIRMONT

Keeping pace with the general market, prices have been showing a downward trend but marked recessions have been prevented owing to the fact that a shortage of cars is still retarding production. Yet car service is somewhat better, in spots at least, and some mines during the period ending Dec. 2 had as large a supply as 50 per cent. In general the range on mine-run is $2.75@$3.25, with egg and lump ranging $4.50@$4.75.

CENTRAL PENNSYLVANIA

Improvement is noted in the situation both as to cars and prices. A new market is opening for bituminous coal that can be adapted to use where formerly anthracite was used. Coals for this use are found in Pools 1, 9 and 71 and the price is strong at $4.75@$5. Pool 10 advanced from $3.90 to $4.10, and Pool 11 from $3.50 to $3.75. Railroad supply cars are being cut down, thus leaving more cars for commercial distribution.

Production for the month of November will reach 80,000 cars, as compared with 82,714 in October. Complete figures are not yet available. During the week ending Nov. 26 the production was 18,552 cars as against 19,849 cars the previous week.

UPPER POTOMAC

Upper Potomac and Georges Creek fields in the aggregate have not been able to produce as much coal as during the latter part of November chiefly because Upper Potomac mines fell behind previously established records to the extent of 13,000 tons. The loss was solely attributable to a car shortage, market conditions having played little or no part in curtailing production, though prices have been declining as the demand waned somewhat. Pool 18 is bringing as low as $2.50 per ton.

West

DENVER

Car supply that is growing slowly better continues to increase the output of Colorado and the market in this city and elsewhere in this region has whetted up sufficiently to absorb the production without much forcing. Domestic demand is fairly strong and industrial call for steam coal is picking up a little. Canon City and Walsenburg lump is selling at the mine for $6@$6.50 and Trinidad lump at $5.50. Nut from these fields runs about 50c. lower than this. There is a noticeable firmness in all domestic coals.

KANSAS CITY

"No-bill" cars in the southern Kansas field have begun to move. The surplus at the mines is estimated at from 50 to 75 per cent less than it was two weeks ago. This is attributed partly to the advent of colder weather but more to idle time at the mines. One company, with headquarters in Kansas City, reports its mines have been operating only 25 per cent of normal, while other firms report between 25 and 50 per cent.

The transportation situation remains about as it has been since September, with perhaps a little more blame for slow movements placed upon lack of motive power than upon lack of cars. It is estimated that at the present rate of demand, dealers have sufficient coal in their yards to last 30 days. Quotations on Kansas coal are: Lump, $5; nut, $4.50; screenings, $2.50. Arkansas semi-anthracite lump is $6 and screenings $1.50@$2.

SALT LAKE CITY

Mines are working around 56 per cent of capacity now. Market conditions are fair. The demand for lump coal is such that the smaller sizes may soon constitute a problem. Stocks in Salt Lake City are still low but now that the car situation has improved the severest weather is not likely to precipitate a crisis. Labor conditions are excellent.

Anthracite

Wintry Winds and Bare Bins Stir Tardy Householders

Cold Blast More Potent Than Warm-Weather Warnings—If Present Output Can Be Maintained Anthracite Problem Will Be One of Distribution.

Cold weather is focusing attention of the householder on the ever present lack of sufficient anthracite to meet his needs. Warm weather warnings of shortage to come broadcast by every local administrator and retail dealer in New Jersey and New York failed to stir the householder like one week of sharp cold and a short supply in the cellar.

Providing production can be maintained at its present rate of around 2,000,000 net tons per week, which figures, of course, include about 200,000 tons, or 10 per cent used by the mines themselves, the anthracite situation may be summed up as a problem in careful distribution aiming at eventual equality but seeking to fill the more distant points first.

The market for steam sizes in anthracite continues exceedingly dull. Some are hopeful that buckwheat at least may move in more volume as a substitute for larger sizes when the consumer gets really pinched.

NEW YORK

In an effort to relieve the domestic situation and at the same time reduce the tonnage of small coals on the railroad terminals in New Jersey, in boats and in the retail yards the State Fuel Administration on Dec. 8 issued instructions to retailers that deliveries of two tons or more of grade, broken, egg, stove, chestnut or range coal must be preceded or accompanied by not less than 25 per cent of buckwheat, coke, bituminous or other substitutes.

Dealers are buying more independent coal because of the demands made upon them and inability to obtain larger shipments from the companies.

Outside of price increases already announced by some of the companies, some of the larger independents have advanced their quotations, mostly to cover the Pennsylvania State Tax.

Consumers here need not go without fuel. When they are unable to get the particular size wanted there is always some substitute available. No suffering has been reported as yet.

Quotations reported during the week included some washery chestnut at $12.75 and washery pea at $9.75 f.o.b. mine.

The steam-coal situation is clearing up. At the end of the week there were upward of 100 loaded boats in the harbor, some of which it was said had been loaded a couple of months. All three sizes are stronger, with rice the most inactive. The better grades of independent buckwheat and rice were quoted above company circular while some cheaper grades were quoted below.

BUFFALO

Delivery is still slow, though emergency cases are not as numerous as they were. Complaints are made that with a good increase of mining over former autumns much less coal has been sent this way than in the past.

Shippers who handle independent anthracite say that the demand for that coal is so active that prices are stiffening. They find it next to impossible to get any coal unless one stays on the spot and sees that the cars are not billed to anyone else. Canada has been buying Welsh anthracite at about $18 delivered, but that is now cut off by the closing of the St. Lawrence River season.

The lake trade, which is coming to a close, has been smaller than expected. At the close of November shipments were 947,080 net tons. Shipments for the first six days of December were 56,300 tons. Freight rates since Dec. 1 have been uniformly $1 per ton.

BALTIMORE

The hard coal situation is not at all satisfactory but dealers realize that this is a general situation and not a local one. As a matter of fact nature was a bit good to Baltimore during the recent very cold snap which swept the West and Northwest by sending the cold area around this section and not through it. The result has been that while the period since Dec. 1 has had some raw days it has not been marked by extremely cold ones and coal consumption was held down very materially. Dealers, however, are rather anxious about the last days of December and are hoping that there will be a material increase in shipments here.

During October Baltimore coal dealers received a total of 1,478 cars of anthracite, but November saw a drop of 213 cars from this record. December so far has failed to show any increase. Dealers in Baltimore are trying as far as possible to co-operate with the Maryland Fuel Distribution Committee, and agreed willingly to take care of emergency cases whenever possible.

PHILADELPHIA

Colder weather has increased demand, with dealers poorly prepared to meet it. Though mine prices have been radically increased by some independents, and lesser advances made by company shippers, the increase in retail prices has been moderate. There is still quite a good deal of coal being sold at $14.50 for family sizes and $11.50 for pea. Of course this is by dealers who are getting mostly company coal. Other dealers have increased from that point up to $16.

Substitutes, such as bituminous coal and coke, are making headway. Progress also is being made on buckwheat as a domestic fuel although most dealers insist that a portion of buckwheat must go with each order for larger sizes. Yet even on this fuel dealers are reporting satisfied customers who have used the coal in steam heaters without mixture, and expect a regular trade on this size in the future. Prices for buckwheat at retail are as @$9.25.

The steam coal market is better. Little free buckwheat is available at less than $3.50 and many smaller producers with the good grades are getting $4. Of course the companies have not cut this price. Rice is still plentiful, with probably the least improvement shown in this size. Barley is in good demand but with a fair supply still offered on the market.

BOSTON

Domestic sizes are seriously in short supply in most of the cities. It is difficult to generalize for the whole of the territory, for distribution is by no means horizontal, depending upon originating companies that have varying policies in sending coal forward. A really notable effort has resulted in adequate supplies for the present in points like Bangor and Augusta up the Maine rivers, but ports open to navigation through the winter have been kept on hand-to-mouth deliveries. There is some ground for expectation, however, that after Jan. 1 the general situation will be easier.

There is no special change in the retail situation. The City of Boston has landed at the Navy Yard a cargo of Welsh steam coal, called "semi-anthracite," and is making deliveries at $14.65 per net ton. Retail dealers are managing measurably well to keep regular customers supplied with small amounts, the great difficulty is over householders who duplicate orders.

South

BIRMINGHAM

So far the approach of the holidays has stimulated the market very little. The railroads are reported as buying a little extra coal for stocking, but aside from this, general demand is no greater than for several weeks past. There is no surplus supply, however, as production is restricted by car shortage.

Domestic grades are still in strong demand and scarce, conditions in the steam trade limiting supply from commercial mines and lack of equipment adversely affecting both classes of operations. Dealers are receiving about enough coal to meet wants of consumers.

Prices on both steam and domestic grades are practically unchanged from last week. Production is about 340,000 net tons per week. Car supply ranges from 40 to 60 per cent of normal requirements, the former representing the supply at furnace mines and the latter that of commercial and domestic operations.

VIRGINIA

Losses in production have resulted from inability of the railroads to keep up car supply, the result of which has been to increase the production of coke, which now amounts to about 12,000 tons a week. "No market" losses have not made their appearance, the demand still being amply sufficient to absorb all that the field can produce.

Chicago and Midwest

Market Slightly Better For Both Steam and Lump

Both Far Below Normal for This Time of Year—Even Raw Weather and Indiana Strike Threat Have Little Influence—Cars More Numerous

The recent slump of domestic trade was practically stopped during the past week by raw weather but the general market remained so quiet that the volume of fuel offered dwindled. This had the inevitable effect upon steam coal, which strengthened slightly but did not develop into anything even faintly resembling a rush. A consistent effort on the part of a few railroads and a group of big consumers to restrain Illinois prices by accepting considerable quantities of cheap western Kentucky coal has had the desired effect in Chicago. The demand for select domestic has increased the price of Eastern smokeless a little, but that is primarily because there is almost none to be had.

What little strength there is has been more apparent in Chicago than elsewhere, though in Kentucky there is a better feeling in both domestic and steam, and in St. Louis, while domestic demand is nearly flat, steam has picked up ever so little. Car supply generally is better just at a time when "no bills" are numerous.

SOUTHERN ILLINOIS

Last week's story of this region is a repetition of the report for the past few weeks: Warm weather and no demand. The only coal moving with any ease is screenings. Larger sizes go only under pressure. While the association operators are still maintaining their prices, the ranks of the independents seem to be growing. Association prices are $3.50 for lump, egg and nut. The independents have gotten down to $3 for nut and from $3.50 up for lump and egg.

Some mines have a hard time working two days a week on account of no orders. There seems to be plenty of cars for the business offered. A shortage of water is a serious factor. The same conditions prevail in the Duquoin field as to prices, working conditions and water supply.

Mt. Olive district is almost at a standstill. A little coal is moving north and west and steam sizes in Chicago and on contract, but the domestic demand is almost nil. Domestic prices in this field still stick at $4 for 50-Lump shipments and range from $4.50 to $5 in the country. The railroad business is fairly good out of both Mt. Olive and Carterville fields.

The Standard mines are about demoralized on prices. Two-inch lump is around $2.50, steam, nut and egg $2 @ $2.25 and screenings $1.25@$1.50. The 6-in. lump is from $3 up. Everything is hard to move and most mines have unbilled coal. Car supply is in excess of the demand.

ST. LOUIS

Summer weather prevails, with summer business. Domestic buying is at a standstill. Steam wagon business is unusually light on account of the weather and carload business is slow. The only demand is for a little screenings.

All over the Middle West cars are strung out on consignment and a lot of coal is rejected because it was not ordered or because the dealers have refused it for any one of several reasons. Dealers are all loaded and cannot take any further shipments regardless of price. A little anthracite is moving through. No smokeless and nothing from Arkansas is arriving. Some Alabama coke is coming to this territory to replace anthracite chestnut, but the tonnage is light.

WESTERN KENTUCKY

It is reported that demand has been just a little better the past week as a result of colder weather. Prepared leads while mine-run sells in fair volume. Increased consumption by heating plants and better industrial buying are making the market slightly firmer.

As a rule car supply is taking care of present demand fairly well, although the usual complaints are heard. A fair tonnage is moving out through the state and South, with some into southern Indiana and to St. Louis. River movement from western Kentucky has been checked for weeks by low water, but recent heavy rains are expected to improve boating stages.

Prices in the western Kentucky field are firm. Mine-run is $2@$2.50; lump, $3.50@$4; screenings, $1.25@$1.50 for pea and slack, and $1.50@$1.75 for nut and slack. Demand for egg and nut is improving.

INDIANAPOLIS

Little change was seen in the coal situation in Indiana until the threat of an immediate strike was made. Then most big buyers who depend upon Indiana mines started a rush for coal. Warmth has held down domestic trade. Better transportation facilities are providing plenty of coal for industries. Prices are about the same though there is a little strength in steam coal. There appears to be slightly more demand than a month ago, but the slight increase in demand has had little to do with the price. Industrial users say they can get screenings at around $2.25 at the mine. There is no apparent effort to begin building up reserves, though the threatened tie-up of Indiana mines is causing some concern.

CHICAGO

A gentle pick-up in domestic demand from various quarters and a continuance of the steady but slow call for screenings characterize the market. Raw weather has had small effect upon domestic trade. Yards still have so much soft coal on hand that it will require the worst kind of winter to empty them and create much liveliness. Steam consumers show little sign of heavy stocking. They still are satisfied to go along slowly, picking up a little fuel for storage only when considerable quantities got into distress here.

The only recent increase in price on this market is in Eastern smokeless, which reaches here in the thinnest kind of stream. Smokeless mine-run brings $6@$6.25 and those occasional cars of lump and egg which appear bring $7.50 @$8.25. The presence of a fair quantity of anthracite has its effect on West Virginia domestic. Thus, while southern Illinois circulars have steadily quoted lump and egg at $5.50, there have been various recessions. Today, however, that price is fairly firm and central Illinois is maintaining its $4.50 level with much better success. Eastern Kentucky prepared stays well above $6.

LOUISVILLE

Colder weather has resulted in slightly better demand for prepared sizes, as well as industrial coal. Prices in eastern Kentucky are making for slower demand, but operators, while needing business in mine-run, assert they are able to sell full production of lump, and screenings output is light and taken up without much trouble.

In eastern Kentucky operators are asking $6@$6.50 for 2-in. lump and small prepared, while block is quoted at $6.50@$6.75, with Straight Creek operators and some Harlan operators asking $7. Not much coal moving at prices over $6.75. Mine-run is quoted at $3.50@$3.75 for gas while non-gas and screenings are $3@$3.50.

Western Kentucky movement is better in view of lower prices, which are quoted in the Louisville market at $3.50 @$4 for lump, $2@$2.50 for mine run, and $1.25@$1.75 for screenings, buyers to pay brokers' commissions.

Railroad buying is reported as quiet, while general industrial demand is a shade better, although on a hand-to-mouth basis. Retailer buying is much improved

South

TORONTO

There is practically no change in the situation as regards anthracite. Moderate supplies are being received by the dealers, who refuse to receive orders when these are disposed to until further consignments come in. Consumers unable to wait can generally obtain immediate delivery of "brokerage" coal by paying higher prices, which average about $18 per ton. Some Welsh coal remains which is being rapidly disposed of at $15.50 per ton, deliveries being delayed by a rush of orders.

Prices for carload lots of bituminous f.o.b destination are a little easier, ranging $8.50@$9.25 and Pennsylvania smokeless $8.25. There is no noticeable increase in the demand.

Eastern Inland

Fears of Huge Lake Surplus Have Largely Disappeared

Clean-up at Lower Erie Ports Promises to Be Unusually Good—Domestic Prices Easier Than Elsewhere—Consumers Await Price Fall.

Fears of a week ago that the Lake season would suddenly close and leave a huge tonnage to be thrown back on the local market have largely disappeared. In the week ended Dec. 11 there was dumped 288,869 tons of cargo and bunker coal in lower Lake Erie ports and it is now expected that the clean-up will be unusually good.

Domestic prices are easier in this section than in any other part of the country, warm weather and a plentiful supply softening prices on such coals as Hocking, No. 8, Kanawha and eastern Kentucky.

Consumers are patiently awaiting the market drop and steam prices are losing strength every week.

BUFFALO

Trade is very quiet. Supply is running ahead of demand and prices, of course, are weakening. Shippers try hard to hold up prices and are succeeding fairly well so far, but they are apprehensive of the full force of the lake closing.

Better car supply is responsible for more plentiful coal, but it is by no means good; if it were prices would touch bottom. Predictions of considerably lower prices are made by shippers, but that may not happen right away. Then if the railroads should go to stocking up that alone would add stiffness to the market.

Consumers say their stocks are increasing. They are now able to mix in coal at present prices with some that they bought awhile ago at higher prices. Consumption keeps up and may be increasing.

Quotations are $4.75 for Youghiogheny gas lump, $3.75@$4.25 for Pittsburgh and No. 8 steam lump, $3.25@$3.50 for all mine-run and $3 for slack, adding $2.09 to Allegheny Valley and $2.24 to other coals to cover freight to Buffalo.

PITTSBURGH

The market continues to soften, except on domestic lump, which is strong in price and shows unsatisfied demand. Car supply shows no great change.

The chief movement is on contract. Little coal is moving through the open market in odd lots. It is thought that many consumers are stocking a small part of their contract receipts.

Regular Pittsburgh district steam coal remains quotable at $2.50@$2.75. Connellsville steam coal, some Sewickley seam and some regular Pittsburgh seam is offered freely down to $2.25 and there has been some curtailment of production on account of not finding takers. Odd lots of good grade Youghiogheny gas coal can be had for $3 and good sized lots for regular shipment over a short period fall short of $3.50. Byproduct coal shows little activity, but could probably be picked up at $3@$3.25. Some contracts for particularly good grades have been adjusted to $3.75 for December shipments. Domestic 1¼-in. lump is bringing $5@$5.50 in most quarters. The Pittsburgh Coal Co. continues to bill at $4.50.

COLUMBUS

There is a slight weakness in domestic sizes, caused principally by the continued warm weather. Retail stocks are generally good, but dealers are loath to increase them under present conditions. Retail prices are steady at former levels with Hocking and Pomeroy lump moving fairly well.

Steam trade is quiet. Steam users have accumulated stocks for 15 to 45 days. Consumers apparently are waiting for lower prices, regardless of the possibility of a strike April 1. Utilities are buying well and railroads are taking about the usual amount. During the week ending Dec. 9 there was an exceptional shortage of cars in the eastern Ohio field.

Prices appear to be giving ground, although domestic sizes are holding up best. Screenings are hard to move in some instances and this aids in maintaining lump prices, as operators are sacrificing slack in many instances.

NORTHERN PANHANDLE

Production is about on a par with that of other parts of northern West Virginia. Mines are unable to work anything like full time owing to the difficulty in securing an adequate car supply, though there is a better supply available since the general movement to the Lakes ceased. Demand for steam has slackened somewhat with railroads getting more coal than any other class of customers. Domestic buying is more active than for any other kind of fuel, though extremely irregular. Lump and egg bring $4.25@$4.75, with mine-run priced at $3@$3.50.

EASTERN OHIO

Output for the short week was 263,000 tons, or approximately 50 per cent of capacity, a decrease from the preceding week of 75,000 tons. It is conservatively estimated that car shortage caused a loss of at least 200,000 tons in output. Railroads are taking between 40 and 45 per cent of the output of eastern Ohio mines.

Cumulative figures indicate that output of this field for the calendar year up to Dec. 2 was 10,007,500 tons, as against a potential capacity of 28,974,000 tons.

Operators and jobbers state that steam demand is less active than in some time. In contrast to the slump in steam demand, inquiries from retail dealers are quite active, as domestic consumers have been able to procure coal only in a small way. However, smokeless fuels from West Virginia and eastern Kentucky are coming through more freely and likewise more Ohio domestic lump is now available than formerly.

Spot prices on steam sizes, which have receded from 50 to 75c. per ton during the past few weeks, are about the same as those quoted last week, namely: Eastern Ohio No. 8 slack, $2.75@$3; nut and slack, $3@$3.15; mine-run, $3@$3.25; ¾, 1 and 1¼-in. lump, $3.75@$4; 2, 4 and 6-in. lump, $4.25@$4.50. Ohio No. 6 or Middle District f.o.b. mine prices as well as coal from West Virginia Panhandle district are quoted at about the same figures.

During the week ended Dec. 2 Cleveland industries and retail yards had the largest receipts on record. A total of 2,495 cars was received, 1,748 of which were consigned to industries and 747 cars to retail yards.

In the Lake trade it is now expected that a good clean-up will be made before navigation actually closes and little coal will be left over at the lower lake docks. Lake shipments up to Dec. 4 were 17,171,965 tons, as compared with 22,385,495 tons during the same period of 1921.

CLEVELAND

Industrials continue to delay buying for future needs, filling only spot requirements. Soft-coal prices generally are 25@50c. lower than a week ago. Buyers in this territory believe that the bottom has not been reached, but producers in northern and eastern Ohio look for an upturn in prices soon.

Retailers assert that delivery cost to consumers is increasing steadily because of piecemeal buying by most domestic users.

Some grades are not difficult to obtain, and since the virtual close of Great Lakes shipping, releasing more than 1,000,000 tons of coal weekly to other channels, Pocahontas is coming into this market in much larger quantities. West Virginia and Kentucky coals have shown a price softening here in the last few days.

DETROIT

Offerings of bituminous coal seem to arouse little interest among buyers for Detroit steam plants or the retail dealers. The waiting policy, long characteristic of the market, is still popular. Wholesalers and jobbers report orders small and irregular. Buyers for the steam plants are ordering only current requirements for a few days' operation. Even with the dragging demand there is virtually no free coal.

A slight improvement in supply of smokeless is reported by some of the jobbers, though the quantity is still far short of normal.

Lack of active interest among steam buyers and retail dealers apparently is based on an expectation that prices will be lower when the Lakes close. Considerable coal is still being loaded for the Lake trade.

Most of Detroit's supply is coming from Ohio. Hocking lump is quoted at the mines at $3.50 per ton, egg $3, mine-run $3 (or) nut, pea and slack $2.75. Pittsburgh No. 8 three-quarter lump is $4@$4.25, mine-run $3.50, slack, $2.50@$3.00. West Virginia and Kentucky lump and egg is $4, mine-run $3.50, slack $3. Southern lump and egg is offered at about $4 with mine-run $3.50.

Northwest

Soft Coal Continues Plentiful and Lower

Volume on Hand Leads Docks to Cut Here and There—Anthracite About Gone and Little More Expected—Rail Embargoes Penetrate Deeper and Deeper.

Further weakness in the price of dock bituminous was evident throughout the Northwest during the past week, especially before a wave of raw cold blew down out of the North about the middle of the week. All shippers have so much on hand and are so pestered by rail coal from the states at the south that they are unloading as swiftly as they can, with little thought for the future except that they are not making future contracts at anything less than circular.

Hard coal is practically exhausted and little more is expected, for the extended navigation season ends Dec. 15. Everybody is prophesying higher prices, but these have not yet made themselves deeply felt. It is to be observed that the battle for markets between docks and bituminous rail shippers is growing steadily stiffer and that rail coal is reaching points a good deal farther north than is customary in normal seasons.

MILWAUKEE

Real wintry weather throughout the Northwest has put life into the coal market, both wholesale and retail. The general public has been strangely indifferent to the abnormal fuel conditions, but the sharp downward turn in the temperature has weakened some country communities. At Green Bay, the State Fuel Commission has been called to investigate a charge that coal-dock operators are discriminating in favor of local residents.

Everything indicates higher prices for anthracite in the near future. A uniform grade has been maintained for years, but now many dealers charge $16.70 per ton for chestnut, carried in while others charge $17.85; egg ranges from $16.50 to $16.25; pea, $16.75; $16.50, $16.45 and $16.30; and nut, $16.20. Soft coal is holding steady. Illinois and Indiana coal is being substituted by many consumers for the higher-priced Eastern product.

Coal is still coming by lake, but not with the expected final rush. Docks seem to have soft coal enough. One cargo of 10,000 tons of soft coal which arrived in the harbor a day or two ago, was sent to Indiana Harbor, Ind. The soft coal received has not been up to the usual standard, it is said, and more prices are right. Anthracite is still coming, however, and late arrivals will extend of hard coal. December receipts thus far aggregate 23,050 tons of anthracite and 15,642 tons of soft coal. This makes the season's receipts thus far 291,502 tons of the former and 1,259,207 tons of the latter, against last year's record of 988,767 and 2,574,374 tons respectively.

MINNEAPOLIS

At last some real cold weather has struck the Northwest, and the surplus steam coal which has been awaiting a buyer immediately took a better standing. All-rail coals from Illinois, Indiana and western Kentucky have been sold in this market at various mine prices, ranging from $1@$2.50 for Kentucky coal up to $4@$5 for Illinois coals. Practically every grade had been selling off from the supposed price until the cold wave braced the market.

The soft-coal market is so completely a weather proposition that producers who send quantities of coal to this market would do well to study the weather predictions before shipping. In many cases demurrage charges run high. One car is rumored to have had a total of $700 against it. The tendency to use this district as a surplus market is making it a less stable one.

Hard coal is certain to be very short with the close of navigation Dec. 15. Something over 400,000 tons of hard coal had reached the docks up to Dec. 1 with little more reported en route. This is some 400,000 tons short of the amount pledged, and will doubtless be reduced somewhat in the few days before the close.

DULUTH

Official figures show that 204,221 tons of anthracite and 1,453,406 tons of bituminous were received at Duluth-Superior harbor during November. This brings the grand total received this year to 736,845 tons of hard coal, 21,875 tons of hard coal screenings and 4,952,594 tons of soft coal. Last year there had been received to Nov. 30, 1,813,336 tons of hard and 8,294,541 tons of soft. Last year, however, the docks were empty when the season started and this year a considerable supply was on hand. By comparing figures it readily can be seen that the Northwest is long on bituminous and short on anthracite.

Receipts are falling off. This week only 36 cargoes arrived, but of these, 8 were anthracite. There are 16 cargoes reported on the way of which 6 are hard coal. The weather is bad, with heavy snow here and it does not seem possible that much more coal will be shipped though the docks have supplies of hard coal to last but 20 days. Most docks here are holding their anthracite for the local trade.

Prices on hard coal remain firm but bituminous shows some weakness, because of the lessening of the market area through orders of the Fuel Administrator. Lump sells for $9.50 still but run of pile is fluctuating between $8 and $8.75, with screenings between $6 and $7. It is worthy of note that docks are not taking contracts for future delivery at less than list.

New England

Market Shows Betterment; Prices Stiffen at Roads

Buying Slightly Improved — Western Demand Attracts Larger Share of Cars—Only Small Tonnages Available for Coastwise Shipment.

Improvement in this territory is by no means conspicuous. A few of the textile mills have bought limited amounts for delivery through the winter, but the aggregate tonnage is not enough materially to affect the market.

Car supply on the Southern roads is still light, and while there is no pressing spot demand, prices have again stiffened somewhat at the piers. Western demand for prepared coal is strong enough to attract the larger share of cars, and in consequence there are only small tonnages available for coastwise shipment. At the same time contract requirements are being met with little or no delay.

For inland delivery $9.25 has been paid per gross ton on cars Boston, a price that compares with $7.75 f.o.b. vessel at Norfolk or Newport News, but as an average quotation this has been shaded within a few days. On-car prices in excess of $9 open a little wider the gate for deliveries all-rail from central Pennsylvania.

The Cambria and more favorably known Clearfield grades maintain a reasonably steady position with respect to price and shipment. Most operators with good connections are able with reduced car supply to keep orders ahead for two to three week period, and while prices show no signs of hardening for the present the mines are able to operate in most cases without reducing their asking price.

Receipts all-rail have diminished the past fortnight, but this is probably due more to reduced shipments of locomotive fuel than to any marked decrease either in buying on the part of industries or to any slowing up of shipments on contract.

There continues fairly constant inquiry for prepared bituminous to take the place of anthracite. In the smaller cities, and in some towns, the great shortage of anthracite has at last induced householders to take small quantities of such bituminous as can be had. A few operators in the Broad Top district have been able to do a flourishing business on screened egg and chestnut sizes at prices far more remunerative than if they were restricted to their normal steam coal trade.

Cincinnati Gateway

Disarrangement of Traffic Nears the Scandal Stage

Situation Upset on Three Roads from South—Collusion to Hold Back Output Inferred—Business Picks Up—Tone More Stable.

Traffic conditions on the three coal carriers using the Cincinnati gateway from the South are fast reaching a point that causes eyebrows to raise and scandal to pop. The Norfolk & Western seems to be in the worst plight, the Chesapeake & Ohio is a little better off, but on the Louisville & Nashville things have come to such a pass that various of the operators' associations have had meetings with those who direct its affairs and they have placed the burden at the door of the shopmen's strike. By inference also it would seem that there is collusion somewhere to hold back production through the channels of transportation so that in the event of trouble April 1 these great producing fields will not have their share of coal above ground.

Business picked up a bit last week. The tone of the market was more stable. Moderate buying by steel plants and byproduct users helped some and the colder weather also deserves a share of credit.

LOW-VOLATILE FIELDS

New River and the Gulf

As a great many mines are not working more than a day a week, the field as a whole cannot even handle contract orders promptly, leaving little or no free coal to be disposed of in the open market. Not a large proportion of the output is being shipped to Western markets, since equipment is not to be had. Furthermore demand has improved at Tidewater, where prices are attracting larger shipments, the prevailing price being about $5.25 a ton. Prepared grades in the Eastern and Southern markets are bringing from $7 to $7.50.

There has been a slight improvement in transportation conditions affecting the Winding Gulf region. Virtually all the tonnage is going to Tidewater, since the western outlet is restricted. The price, too, is on a higher level, with mine-run bringing over $5 a ton.

Pocahontas and Tug River

Distribution of empties is not now equal to more than 40 per cent of allotment, so that few mines are operating more than two or three days a week. There is an increase in the movement to Tidewater, where prices are on a somewhat higher level, the ruling price at the piers on a spot basis being $5@$5.25.

In view of the fact that so large a proportion of the tonnage originating in Tug River territory is marketed in the West the difficulty in obtaining equipment to transport Tug River coal to western markets is being seriously felt. Prepared grades, being scarce, are bringing high prices, with $8.50 the maximum, in some parts of the West.

HIGH VOLATILE FIELDS

Kanawha

Car supply has improved of about 5 per cent as compared with previous weeks. Mines are able to work two days at best and many only one day a week. Therefore a waning demand has exerted less effect than might otherwise have been the case, for output barely suffices for regular customers. Tonnage to be had in the open market is not large nor is it bringing as high a price as it did. Steam mine-run ranges $3 @$3.75. Restricted use of the larger cars of the C. & O. is tending to throw more Kanawha coal to Eastern markets.

Logan and Thacker

Because of the failure of the C. & O. to furnish anything like an adequate car supply, this district is not loading more than 160,000 tons a week. The falling market has not had any adverse affect on the region as a whole for the simple reason that there is little or no surplus coal to be had in the Logan region. What little coal there is moving on a spot basis is of course bringing lower prices, especially in so far as steam mine-run is concerned.

Conditions in the Kenova-Thacker field are much the same as in other fields served by the N. & W., with mines limited to two and three days a week because of poor car service. Western equipment is used almost entirely by the Thacker field since nearly all the coal originating in this territory is marketed in the West. Production is scarcely more than equal to the needs of regular customers, so that a declining market and softening prices has not affected production so far.

Northeast Kentucky

With production not over 100,000 tons per week, or about 27 per cent of potential capacity, there is little coal to be had over and above that needed to take care of standing orders, so that prices obtaining in this territory are somewhat higher than those in the general market. Lump is bringing $6 a ton and mine run $3.50@$4.

CINCINNATI

The smokeless market has been pretty well riven to "sixes and sevens" through the traffic difficulties. With tide prices $1.50 a ton below those of this and the market inland the movement west over the N. & W. since the middle of November has been a minimum for Pocahontas coal. That from New River has been of no great tonnage and what has fallen into the hands of the jobbers has been held at prohibitive prices.

After a drop of considerable proportions the steam market took a brace under better buying and both slack and mine-run made a slight recovery. Domestic sizes are holding their own, though there is a disposition to grant concessions in price.

With 60,000 tons of river coal placed in the local harbor the retail trade served by companies handling it again became a potent factor in this angle of the business. One firm is selling its splint lump at $8.75, while all-rail brings up to $10. Buying from brokers has forced the price on Pocahontas lump up to $11 with mine-run bringing $9.75@$10; bituminous slack is quoted at $7.50.

Coke

CONNELLSVILLE

The coke market has gone contrary to expectations, as prices have been softening and production is being curtailed at some points from lack of demand.

The spot furnace coke market, quoted a week ago at $7.25@$7.50, is down to $6.50@$7, while shipment over the balance of the year can be done at $6.75@$7, against $8, formerly demanded. Foundry coke is off; at the former range of $7.50@$8.

The *Courier* reports production in the Connellsville and lower Connellsville region in the week ended Dec. 2 at 121,000 tons by the furnace ovens, a decrease of 7,350 tons, and 77,770 tons by the merchant ovens, an increase of 20 tons, making a total of 198,770 tons, a decrease of 7,330 tons. These are the first decreases since the strike started, except early in July.

UNIONTOWN

With several thousand former miners still on strike operators have been forced to cut production with new labor, as they see no market for their product. The closing of the Great Lakes trade left a big gap in the destination of Connellsville coal and operators have not been able to make arrangements for the delivery elsewhere.

Consumers are buying extravagantly. Prices for steam coal continue at the $2.25@$2.50 level with byproduct at $3@$3.50. The cost of output is approaching too near the market to be comfortable.

Practically the same condition prevails as regards coke. A limit of $7 apparently had been placed upon furnace coke by a number of operators and they now have their choice of revising their price views or suspending. The market has definitely dropped to $6.25 and $6.75 and even at that figure furnaces do not care to buy heavily.

BUFFALO

The demand for coke, especially for domestic purposes, is good. The local ovens do not get any surplus for the merchant use, so that it all has to come from some other source. The use of coke in place of anthracite is increasing and that keeps prices up. Jobbers quote 72-hour foundry coke at $7.50@$8, furnace at $6.25 and stock at $6, with domestic sizes at $9 and $10, adding $1.75 for freight.

News Items From Field and Trade

ALABAMA

James D. Strong, one of Ore killed and [illegible] in the Birmingham district, who for the last 18½ years has been general superintendent of mines for the **Alabama Company**, has been elected to a vice-presidency in that corporation and will have jurisdiction over the administrative and operation of the physical properties.

ALASKA

A fire which started Nov. 20 in the **Evans Coast** coal mine on a spur of the Alaska G.E. and is still burning has brought Anchorage fuels to face with a fuel famine. Every available lump and three cubic yards have been transported to the city to tide over the winter and get coal from it to the railroad.

CALIFORNIA

Announcement of the **McCormick Steamship Co.** of Los Angeles as Pacific Coast representative for the **Coolmer, Curran & Baillie Co.** of New York, is bringing another big fuel coal line into the [illegible] trade. Eight steam schooners, ranging in size from 4,000 to 12,000 tons deadweight, are owned by the company, and most, if not all, will be pressed into the new service. Under the scheme of operation the vessels will carry coal from North Atlantic ports to the Pacific Coast, returning to the Atlantic seaboard with Pacific Coast lumber. The principal Pacific Coast [illegible] to receive the first cargo. It is expected that most shipments from the East coast will be consigned to Los Angeles from there on.

COLORADO

A cave-in at the Fox mine near Cripple Creek, in which Superintendent Baldwin, a miner and two shovelers were at work, caused the loss of 5 hours and 12 minutes [illegible] a pinning partition. The men freed themselves and were [illegible] and with no injuries except a severe shock. The outstanding fact due to the falling of timbers in such a position that they rode down on a mine car and although the accident itself was [illegible] shows what the men up in the stope beneath were [illegible]. When everyone, digging through the 24 ft. of [illegible] at the point of the cave-in had worked frantically for six hours they [illegible] and were astonished to know that he was alive. After [illegible] the physician removed a heavy rock from one of his legs and took him to safety. This is the third cave-in at the Fox mine within a short time.

Gross receipts of the Colorado Fuel & Iron Co. for the [illegible] ending with September were $1,244,961, an increase of $[illegible] over those for the corresponding period in 1921, operating expenses were $[illegible] larger than during the 1921 [illegible] totaling $4,378,491. From the [illegible] were $[illegible], while in the [illegible] they were $[illegible]. Other [illegible] brought the total gross [illegible] to $[illegible], not after taxes, [illegible] $[illegible] compares for the [illegible] $[illegible] in the fiscal months and [illegible] $[illegible]. The [illegible] for the [illegible] were $[illegible], while [illegible] $[illegible], and [illegible] $[illegible] on account $[illegible] [illegible] the [illegible] for the [illegible] $[illegible] larger than the [illegible] for the same period last year.

The Royal Fuel Co. [illegible] to operate [illegible] Colorado.

ILLINOIS

The claim of the city of St. Louis against the St. Clair Coal & Mining Co. arising out of the short weight frauds at the city water works from 1911 to 1921 for $9,000 has been settled for $7,000. J. M. Brickler, secretary of the coal firm, who turned state's evidence paid $15,000 for his interest in the firm in the settlement. This action has no effect upon the present sentences of two years each against M. L. Rosenheim, city weigher, and Edwin F. Kleine now out on bond, and F. W. Kleine, yet to be tried.

Five hundred children of coal miners at West Frankfort who had no public schools for sixty days resumed school duties Dec. 3. Local differences in that coal-mining community defeated the bond issue for $64,000 for teachers' salaries.

Earth tremors lasting several minutes were felt at 9:30 p.m., Nov. 27, over the greater part of the southern Illinois coal fields. At places chimneys were toppled over, but no damage reports from mines are in.

Plans are under way to organize a company to construct a 16-in. water main from the Mississippi River near Grand Tower to Christopher in Franklin County, by the way of Murphysboro, Carbondale and Herrin. This would go through the center of the Jackson, Williamson and Franklin County coal fields and is approved of by the leading business and coal men in southern Illinois. This might eliminate for all time the scarcity of the water in the coal belt. It is expected that an expenditure of $10,000,000 would be necessary for equipment to pump 7,500,000 gallons of water daily. The railroads in southern Illinois also might get water from this main, which would lie on private right of way.

In a "safety first" week just ended at No. 2 mine of **Donk Bros. Coal & Coke Co.** at Maryville a record of **no accidents** was established for the first time in the 20 years of operation for that mine. Heretofore accidents per week were from 10 to 15. The mine employs 550 men. **William Vanline** is manager and **Clarence A. Naern**, safety engineer. A similar campaign is scheduled for the Edwardsville mine.

The Chicago Trust Co., through J. W. Marshall, manager of its bond department, denies that it is in any way interested in any bond issue of **The Sunnyside Mining Co.** of Herrin, and that no trust deed for a bond issue by that mining company has been filed with it.

Silas Shafer, president of the Assumption Coal & Mining Co. of Assumption, is recovering satisfactorily from the effects of an automobile wreck in which he was caught. Mr. Shafer's machine turned over, breaking his left arm. Having suffered five arm breakages during his life, Mr. Shafer takes such things as matters of course.

Coal was struck recently in the new mine located near Cantrall, Sangamon County, owned by Sidney Grant, Frank Boyer and Henry Strode. The vein which was found to be 8 ft. thick was struck at a depth of 720 ft. Sinking had been going on since early last spring. The mine is served by the Chicago & Northwestern railroad and will be equipped with modern machinery and ventilation.

E. L. Berger, [illegible] of the Bell & Zoller Coal Company, Zeigler who underwent a serious operation in a Boston hospital recently has recovered and is back at work.

Fifteen thousand acres have been prospected for coal near Hamel. As a result a W. Crawford, of Carmiville, acting as a representative of St. Louis capitalists, is buying coal lands. About $[illegible],000 has been paid out in cash to the farmers in the last ninety days.

INDIANA

The American Coal Mining Co., at Brazil, Ind., has filed a preliminary certificate of dissolution with the secretary of state.

The car situation in southern Indiana, especially with the mines in the region served by the Southern Railway, **is improving**, according to Harry W. Little, manager of the Southern Indiana Coal Bureau. During a recent week the 16 mines along the road received 53.5 per cent of the cars ordered. A total of 1,631 empties were ordered. Forty-eight cars were furnished by the E. S. & N., 881 by the Southern and 143 by the Big Four railroad. The mines were able to operate about 47.2 per cent of the potential running time. It is believed it is only a question of time until the mines will be receiving 100 per cent of cars ordered.

A trust deed for $150,000, drawn by the **Lemaire Coal Co.** and in favor of the Aetna Trust and Savings company of Indianapolis, has been recorded. The coal company, whose home is in Terre Haute, did not set out any specific use to which the money is to be put. Its lands in Greene County were given as security.

IOWA

The Whitney Coal Co. of Des Moines has been incorporated with a capital stock of $15,000. The following are the officers: George E. Whitney, president; C. W. Rhoads, vice-president; A. S. Burnette, secretary; and James H. Deemer, treasurer. These men form the board of directors with Fred W. Evans.

KANSAS

The Oklahoma coal field near the Kansas line, which was opened last year, has spread into Kansas and promises to bring a new industry into this part of the state. **The Central Coal & Coke Co.** has been acquiring leases in Labette County near Edna.

Lon Mitchell, a farmer living near Englevale, in this county, dug up dirt on a public road near his place to get at coal that was underneath. A warrant was issued at the instance of C. M. Cooper, county engineer, ending the project and Mitchell will have a trial soon at Girard, Kan.

KENTUCKY

Kentucky production this year should exceed the mark of 31,588,270 tons reported for 1921, in a Geological Survey report released a few days ago. During the early days of the coal strike Kentucky ran practically full, and piled up a big tonnage increase, which will make up, to a considerable degree, for the car shortage. The L. & N. had some months this year which exceeded any previous months in the history of the road. All told, production this year has been very good, in spite of the complaint of operators, and indications are for larger tonnage showing.

The Inland Waterways Co., a $2,000,000 company, formed some months ago, **has started work on combination rail and river terminals** at the east end of Louisville and is having conveyor equipment built for use from a floating dock in unloading cargoes of coal, merchandise, etc. The company is having a number of steel barges built and is towing a good deal of coal from its Kentucky River mine subsidiaries to Louisville when open water permits.

W. D. Beerman, of Nashville, Tenn., **has** joined the sales force at the **Dixie Coal Co.**, Louisville. **Manager Harry H. McBratney**, of the local office, has been spending a few days at the Chicago office of the company.

The Falls Branch Coal Co., Louisville, capital $70,000, has been chartered by **Powhatan Woolridge**, of Pewee Valley, C. F. Woolridge, Louisville, and J. P. Woolridge, of Woolridge, Tenn., for the purpose of owning and leasing coal and timber property and mines.

Frank Sneed, of the Harlan Coal Co., recently was elected vice-president of the Pendennis Club, of Louisville, one of the oldest and finest social clubs in the South.

The Madisonville Coal Properties Co., of Madisonville, has been incorporated with a capital of $100,000. The incorporators are J. B. Ramsey, B. C. Mitchell and R. H. Gatton.

MINNESOTA

The shortage of hard coal to the Lake Superior docks is seriously disturbing the coal commission of Minnesota, which has been struggling to induce a rushing forward of additional cargoes, but with limited success.

MISSOURI

Sam Reftt, 79 years old, who has been digging coal for 68 years and who is good for several more years in the mines, believes that his record is the best in Missouri and that it would be hard to equal in any part of the United States. He declares that he can still do as much work as any man and his pay checks bear him out. He was born in Brazil, Ind., but has lived in Bevier 73 years. Reftt declares that he once dug coal for 50c. per ton and mined it on the bench. He has been a member of the United Mine Workers ever since its organization. When he joined, the initiation fee was 25c. He also remembers when the coal companies compelled the miners to buy all of their supplies and provisions from the company store. He never has had an accident in the mine during his long career and is an advocate of plenty of hard work, declaring it does not hurt anybody.

A company formed at Sedalia has **leased the George Penrod farm,** near the Pettis-Johnson county line, where mining for coal will be started at once. The company is made up of Pettis and Johnson County stockholders. The construction of a switch from the main line of the railroad has been completed.

The Missouri-Kansas Coal Co. has been incorporated with $10,000 paid in to operate a coal mine at Worland.

OHIO

A dozen towboats left Dam 26, near Gallipolis, at noon Wednesday, Dec. 6, for Cincinnati, with 60,000 tons of coal for distribution to dealers. Nine other boats left Huntington, W. Va., Tuesday, with 35,000 more tons for Cincinnati, according to J. A. Reilly, manager of the Queen City Coal Co. With these two shipments the market will be supplied for about 10 days, Reilly said, and more shipments will be forthcoming soon. The river, he said, is in excellent condition for navigation.

Bids will be opened Dec. 21 by R. W. Smith, clerk of the Board of County Commissioners of Columbus, for 100 tons of lump or mine-run for the Court House; 2,000 tons of the same kinds of coal for the county infirmary and 500 tons for the Memorial Hall. Coal for the Court House and Memorial Hall must be delivered while that for the County Infirmary is to be placed on the infirmary switch.

Steps are being taken by the newly incorporated **Caledonian Coal Co.,** of Columbus, **to sell its mining property** near Nelsonville. The company was chartered with a capital of $50,000 by James Williamson, George Williamson, E. M. Blower, Charles Wallace and John Williamson. The property consists of 400 acres with a working mine.

It is unlikely that any coal will be purchased by R. V. Johnson, Superintendent of Purchase of Ohio, on bids received Dec. 1 for supplying approximately 125,000 tons of coal to the various state institutions under the Department of Welfare. The bids ran too high, according to Mr. Johnson. Low bids at the mine for Hocking nut, pea and slack were $2.39 and for mine-run $2.99. It is believed that bids will be called for again about the first of the year.

If the estimate submitted to Congress, in the annual report of Major General Lansing H. Beach, Chief of Engineers, U. S. Army, is approved, $7,000,000 will be available in the fiscal year 1924 for the continuance and completion of work upon the locks and dams under construction in the Ohio River at the close of the present fiscal year. The financial summary of the Ohio River lock and dam project contained in the report shows that total appropriations to date amount to $72,196,579,178, of which $65,737,290 has been expended on new work. The amount expended on new work during the fiscal year ending June 30, 1922, was $4,481,101, leaving an unexpended balance of $6,450,289.

A new coal road, which will result in the development of **thousands of acres of coal land lying west and north of Steubenville,** in Jefferson County, will be built by the Cleveland & Pittsburgh division of the Pennsylvania R.R. Permission to construct the tracks across the county highway north of Steubenville has been granted by the County Commissioners and negotiations have been commenced by the company for the purchase of a strip of city property needed for the right of way.

Inasmuch as the order of attachment in the case of **Harvey Sipe against the United Mine Workers of America** has been quashed by the Circuit Court of Harrison County it has now become possible to pay over to the union the proceeds of the check-off collected in Harrison County, W. Va. As long as the order of attachment was in force, coal companies in Harrison County were forbidden to pay any check-off funds to subdistrict officers. The ruling releases between $5,000 and $6,000 in check-off money. Sipe sued the union when it refused to enter into any contract with him for the operation of his mines, because the mines belonged to the Hudson Coal Co., which has refused since the end of the strike to make an agreement with the union.

PENNSYLVANIA

Additional tank trains have been placed in service recently in hauling water from the Susquehanna River at Sunbury, twenty miles distant for use at collieries at Shamokin, where **production of anthracite is being gradually curtailed as a result of the acute water situation.** Several large industries operating their own power plants were forced to shut down a majority of their boilers, continuing only sufficient for heating purposes and are purchasing power transmitted from Hauto, forty miles distant.

A conference of official representatives from all cities, boroughs and townships in the anthracite region at Wilkes-Barre, Dec. 14, has been called by the Wilkes-Barre City Commissioners. The conference is to discuss proposed legislation which would give the anthracite region municipalities a fair share of the tax on anthracite to repair damage to roads and other public property caused by mining operations and for other municipal purposes.

Actual work on the **erection of a mammoth power plant** at Springdale by the **West Penn Power Co.** in addition to the large plant now being operated, will begin within a few weeks, according to A. M. Lynn, president of the company. The financial outlay, according to Mr. Lynn, will exceed $6,000,000, and the new plant will be much larger than the present one. When the present plant at Springdale, one of the most modern and complete power plants in the country, was erected, provisions were made for the enlargement, which will soon be under way and which, when completed, will multiply its capacity several times.

Coal miners of the country are being assessed to liquidate a $1,000,000 loan incurred by the United Mine Workers of America in the last strike, according to assessment notices in the Wilkes-Barre district. Thomas Kennedy, president of District No. 7, U. M. W. A., has sent out the following notice: "During the six months' strike in the anthracite and bituminous regions the organization was compelled to borrow more than $1,000,000. In order to secure the loan of this money every international office of the United Mine Workers of America, including the national board members, who owned real estate or any property, mortgaged his home and property as collateral. This money helped to win the strike and made it possible for the mine workers to enjoy and hold their old conditions and rates of wages, and this money must now be paid back and our obligations liquidated."

A banquet in honor of the members of **the mining department helmet team of the Cambria Steel Co.** was given recently by company officials. Each member of the team was presented with a watch as a tribute to the valor of the men in rescuing fourteen entombed miners at the Reilly mine at Spangler on Nov. 6, when seventy-seven men lost their lives. About fifty men attended the banquet. The watches were presented by L. R. Custer, vice president in charge of operations, to the following members of the crew: Edmund Williams, David Malcolm, William A. Thomas, George Winder, Paul Smolnik, Richard G. Lewis, Owen Robertson, Arthur Schallenberger, Fred Smith and Joseph Martin. Mr. Custer praised the men highly for their efficient service and reviewed the work of the helmet crew in other mine disasters.

C. F. Ingold, vice president of the Berths Coal Co., Pittsburgh, has just returned from a western business trip during which he visited with T. P. Jones, resident manager of the company at Cleveland and Vaughn J. Jolliff resident manager of the company at Detroit. Mr. Ingold reports the prevalence of healthy business conditions and while there is a great shortage of cars sufficient equipment is available to move all the coal required.

UTAH

The Columbia and Pacific Steel companies, which recently entered the Utah field, are to **merge their interests.**

The case of the United States vs. the State of Utah and the Pleasant Valley Coal Co., involving the question of the known quantities of a tract of land in Carbon County in 1896 the year in which Utah was admitted to statehood, is to be reopened. The state held the land to be coal land, but Mark P. Braffet, later sold application to the federal authority for the land, believing it belonged to the United States. The case is an old one and the question to be decided is: **Was it known that the land contained coal on Jan. 4, 1896 when Utah become a state?** The Secretary of the Interior has ruled that the point in question might be determined by geological inference rather than from the actual exposure of a seam of coal.

R. V. Gibson and **N. M. Madsen** of Madsen Bros. are opening up a new mine about one mile south of and above Scofield on Clear Creek, branch of the D. & R. G. W. R.R. It is expected that shipments will be made on or soon after Jan. 1.

WASHINGTON

T. E. Doremus, who for the past three and a half years has represented E. I. du Pont de Nemours & Co. as general eastern manager for the Orient, with headquarters at Shanghai, China, has returned to the United States. Mr. Doremus is now located at Seattle, where he is manager for the explosives department of the Du Pont company.

The **Pacific Shipping & Fuel Co.,** of Seattle, has increased its capital stock from $75,000 to $100,000.

WEST VIRGINIA

The property, plant and assets of the **Mason Coal & Chemical Co.,** with its extensive coal holdings in Mason County, have been acquired by **J. K. Oney,** a Huntington operator, associated with others. The purchase price is said to be $[illegible]. Included in the purchase are between [illegible] acres of coal land. Others interested with Mr. Oney in this property are S. A. [illegible] of Charleston and John D. Smith of Hamlin. After being closed down for nearly a year it is understood that the mine will be reopened by the new owners after improvements have been made.

Charleston people have just chartered the **Colgate Coal Co.** which will operate in southern West Virginia [illegible] territory. Charleston is to be the general headquarters of the company for a time. The enterprise is capitalized at $[illegible]. Among those interested in it are A. L. [illegible] C. Pauley, M. D. Hill, [illegible] Nathan all of Charleston; A. W. Phillips of Blakeley.

Coal lands in the [illegible] section of Monongalia County are to be developed by the **Indian Hill Coal Co.** just organized with a capital stock of $[illegible]. The officers of the company are to be at Morgantown. Having an active part in the organization were Samuel J. Jones, Jr., C. H. Jenkins, Hugh M. Bradford, James E. Greene and C. H. Humphreys of Morgantown.

Said to be the **first shipment of coal** coming down the Ohio River from mines on the Allegheny River [illegible] tons in tow of the Steamer Transport **passed through Pt. Pleasant,** during the closing days of November destined for the Portsmouth mill of the Wheeling Steel Corporation. The Transport is said to be the largest towboat on the Upper Ohio having been recently secured from the War Transport Co. by the steel corporation. This boat will be used regularly to tow coal from the mouth of the Kanawha to the Portsmouth plant.

Suit has been instituted in Mercer County growing out of a controversy over three cars of coal furnished by the **Blue Flame Coal Co.** to **C. W. Otto** of Pittsburgh, who in turn had a contract with the **Bertha Coal Co.** The suit in this case brought by the Blue Flame Company is against the Bertha company. Otto according to an agreement signed in May, 1922, was to furnish the Bertha company [illegible] tons of coal within a period of 90 days the price being $2.75. The Bertha company in its answer alleges that there was no meeting between it and the Blue Flame company and that the three cars purchased by Otto from the Blue Flame company were purchased of the latter by the Bertha company.

There was a toll of 11 deaths in connection with the production of coal in West Virginia **during the month of October.** 11 of the fatalities being due to the use of coal and coal. There were seven deaths at the result of mine explosions. Mine [illegible] explosions took a toll of [illegible] lives and were fatal to [illegible]. Fourteen of the fatalities were in Kanawha County but there were six each in Logan and Raleigh counties.

John L. Newell of Bluefield, W. Va., president of the National Association of Coal Operators and the **Norfolk-Tidewater Association** in an address [illegible] coal miners were [illegible] with high prices, commented a condition which would [illegible] to the [illegible] of the Bituminous coal [illegible] by reason of [illegible] activity.

CANADA

The Company of Pioneers of Calgary, Alberta, during the last two years has purchased 12 **Alberta has held the premier** position among the coal-producing provinces of Canada, with Nova Scotia, the former holder of this honor, second, and British Columbia third, with Saskatchewan and New Brunswick following in order.

This appeared to have been caused by the **International Coal & Coke Co.** mine at Coleman, near Lethbridge, in the early morning hours of [illegible]. The damage is estimated at $[illegible], and it will be at least a month before it will be possible to resume the mining operations. The origin of the fire is unknown. T. Mackie, who rendered considerable assistance in fighting the fire, says it was evident that the building could not be saved, and went into the mine to get their helmets and has not been seen since.

Fire of unknown origin destroyed the boiler room, washrooms and other buildings of the Dunsmuir mine in the Cardiff coal fields, twenty miles north of Edmonton, Alta., during a strike of coal miners in the province. A building boom was noted in various offices of Toronto. The financial loss could not be estimated. All the mines in the Cardiff district are closed. The Grand Carbonet Company's shaft in the district [illegible] a mine explosion. [illegible] It is believed a month's [illegible] before the operations can be resumed.

Coal shipments for the British Empire Steel Corporation, Sydney, N. S., for the St. Lawrence Market have been **closed for the season** with the unloading of the last cargo [illegible] at Levis. The total shipments for the season amount to [illegible] tons. The largest total for any previous year was in 1914, when 5,800,000 tons were moved on the river from Cape Breton.

The Sun [illegible] Alta., government [illegible] E. J. Roberts, manager of the Drumheller coal mines, and Hiram Irvine, [illegible] were **suffocated by gas** in the Drumheller mine, Calgary, Alta. The [illegible] were smouldering and the men had gone into the mine to ascertain if it was safe for the fire fighters to enter and fight the fire.

WASHINGTON, D. C.

The outcome of the budget has approved proposed **expenditures of $8,358,790** to be made during the [illegible] fiscal year **by the U. S. Geological Survey and the Bureau of Mines.** The greater part of that sum will be expended on work of direct concern to the mining industry. The budget carries $[illegible] for the Geological Survey and $[illegible] for the Bureau of Mines. In each case this represents an increase over the amounts appropriated for the current fiscal year.

The principal items proposed for the Geological Survey are as follows: For the preparation of reports on the mineral resources of the United States, $124,250; for geologic surveys, $[illegible], an increase of $[illegible] for the clerical staff, supplies, traveling expenses and printing, $324,600; for topographical and physical researches relating to the geology of the United States, $[illegible] for preparation of illustrations, $[illegible] for work on the mineral resources of Alaska, $75,000, for engraving and printing geologic maps, $110,000; for gaging streams and determining the water supply of the United States, $179,500; for the classification of lands, $200,000, an increase of $75,000.

The principal items comprising the appropriations of the Bureau of Mines follow: For mining experiment stations, $175,000, an increase of $[illegible], for mineral-mining investigations, $125,000; for investigations of mineral fuels, $116,000, an increase of $[illegible], for operating mine-rescue cars, $[illegible], for investigations as to the causes of mine accidents, $393,000, an increase of $[illegible] for clerical help and general expenses, $78,700, for inquiries and investigations and dissemination of information concerning the mining, preparation, treatment and utilization of petroleum and natural gas including economic conditions affecting the industry, with a view to economic development and the conserving of resources through the prevention of waste, for enforcement of the Leasing Act, for enforcement of laws relating to leases on Indian lands and naval petroleum reserves, $[illegible], for supervision of coal and mineral leases, $[illegible], for mining investigations in Alaska, $[illegible], for the purchase of 78 acres of land at Bruceton, Pa., now occupied by and adjacent to the buildings and equipment of the explosives testing station and experimental mine of the Bureau of Mines, together with 10 acres of unmined coal, $33,000.

The budget includes substantial additions to cover the leasing work being done by the Bureau of Mines. This includes the expense of furnishing technical supervision over leasing on Indian lands. This responsibility has rested with the Bureau since Secretary Fisher's day, but it was necessary to take from other appropriations for this work. The need of making this inspection more systematic has become apparent and a special fund is being asked. An increase has been allowed so as to permit the purchase and operation of equipment for investigating liquid oxygen. Another increase provides for the study of a classification of coals by use. In addition, it is expected that other substantial sums will be available to the Bureau on transfer from the Navy for work on naval petroleum reserves and from both the Army and Navy for work on helium and for testing explosives.

The appropriations asked for but not allowed by the Director of the Budget include that providing for a field testing station for oil shale work and for its operation for the first year. The Director of the Budget also reduced the amount requested for the bureau's leasing work and it probably will be necessary to ask for a deficiency appropriation, especially for the coal leasing work. To meet that emergency the Secretary of the Interior has authorized the temporary transfer to the Bureau of Mines of several of the field agents of the Land Office.

No appropriation was asked for new mine-rescue cars. The cars appropriated for last year are nearing completion and will be available for service after the first of the year.

The Government Fuel Yard is now operating on a basis which will permit of a reduction in the revolving fund from which coal purchases are made. This reduction was requested by the bureau.

Kingman Brewster has been made chairman of the committee on appeals and review of the **Bureau of Internal Revenue.** Mr. Brewster has been serving as special attorney for the Bureau in the office of the solicitor.

Traffic News

Complaint has been filed by the **Capen Fork Coal Mines** against the C. & O. with the public service commission of West Virginia, to [illegible] locations in Braxton County, the complaint being that such facilities are inadequate and do not permit of the prompt handling of the product of the company.

An **[illegible] embargo** exists on the line of the C. & O. because of the [illegible] by fire of a large [illegible] and [illegible] the C. C. C. has ordered that effective Nov. 17, the C. & O. furnish [illegible] cars to the **Elkhorn Piney Coal Manufacturing Co.** at Weikbury, Ky., for the loading of coal now in stockpile at the rate of 50 cars per day for each [illegible] working day until a total of 500 cars are assigned. The cars so placed shall be counted against the [illegible] according to the rules.

Canadian roads having withdrawn their **[illegible] freight charges to the border** on coal and coke from United States mines in Canadian destinations must be prepaid. However, efforts are arranging to secure these allowances [illegible] and after Dec. 15 1921 will cease to collect.

The Missouri Pacific R.R. is an [illegible] the C. R. Speer and the I. C. C. is [illegible] to operate in the State. Ark. coal will take 40 coal cars [illegible] to relieve the pressure for [illegible] to western Missouri and Iowa, [illegible] Kansas and Illinois, [illegible] the purchase of Pennsylvania hard coal.

An effort to increase the first zone coal freight rate was resisted by Northern West Virginia coal shippers when that question came up for a hearing before representatives of the Interstate Commerce Commission in connection with the case of the Pittsburgh Coal Co. against the B. & O. et al. The present rate is 7c. per ton [illegible] Wheeling and the proposal is to increase the rate from 7c. to 10c. a ton. West Virginia shippers claim that Pennsylvania producers are [illegible] the improvement in [illegible] rate increases and have retained [illegible] to operate. Quite a few [illegible] have been sent to [illegible].

Beginning Dec. 1, consumers of coal in Terre Haute and other cities in the Wabash valley were affected favorably by a recent ruling of the Public Service Commission carrying a **10 per cent reduction in the Indiana short-haul coal rates** for distances of thirty miles and less. The reduction was ordered as a result of a complaint filed by the Terre Haute Chamber of Commerce, which was heard by the Public Service Commission Aug. 31. The local chamber was represented by W. M. Myers, general manager of the Highland Iron & Steel Co., and vice chairman of the executive traffic committee; Samuel Royse, W. S. Blauvelt, president of the Indiana Coke & Gas Co., and R. I. Pierce, traffic manager of the local chamber. If the rates had not been [illegible] the cheapest rate on coal into Terre Haute would have been 89c. a ton instead of a minimum of 50c. a ton. As approximately 1,000,000 tons of coal are consumed by Terre Haute industries yearly, a saving of more than $300,000 a year will result.

Association Activities

Northern West Virginia Coal Operators Association

A conference between directors of the Northern West Virginia Coal Operators Association and executives of the Baltimore & Ohio Railway was held at Fairmont late in November, officials of the railroad making a special trip to Fairmont to go over the transportation situation with the operators. A. Dale Watts, of Clarksburg, president of the association, acted as chairman of the meeting. C. H. Jenkins, of Fairmont, former president of the association, acted as spokesman for the operators and presented their grievances which had been incorporated in a statement prepared by Secretary George S. Brackett. Former Governor J. J. Cornwell, [illegible] general counsel of the road and C. W. Galloway, vice-president of the road reviewed at length the conditions responsible for the shortage of equipment and told of the [illegible] of marked improvement.

Obituary

John Dolan of the United States Fuel Company died recently in a Gary, Ind., hospital where he had been confined for over three years. Dolan was assisting in paying off a large payroll at the Middle Fork mine near Benton, Ill., June 27, 1919, when five bandits drove up and shot him without warning, one bullet taking effect in his spine. He was rushed by a special train to a St. Louis, Mo., hospital but never regained health again. One of the bandits was instantly killed in the skirmish while running to his car while the other four were duly sentenced to the penetentiary. Dolan was a man highly respected by all who knew him.

John Martin Rowe, who has been connected with the operations of the Yolande Coal & Coke Co., Yolande, Ala., for a number of years, died Nov. 26 as the result of a stroke of apoplexy. He was well known in mining circles. Mr. Rowe is survived by one daughter and three sons, one of whom is Edgar J. Rowe, of the coal sales agency of Adams, Rowe & Norman, Inc.

George Crooks Silcott, aged 58, president of the **G. C. Silcott Coal Co.**, with offices in the Brunson Building, Columbus, died rather suddenly at his country home at Worthington, a suburb of Columbus. He had been a resident of Columbus for seven years, coming from Nelsonville, where he was interested in the operating end of the coal business for twenty years. He was born in Ravenswood, W. Va. He leaves a widow and a son, Gordon R. Silcott.

Coming Meetings

American Engineering Council will hold its annual meeting Jan. 11 and 12 at the headquarters of the Federated American Engineering Societies, 24 Jackson Place, Washington, D. C.

Northern West Virginia Coal Operators' Association will meet Feb. 13 at Fairmont, W. Va. Secretary, G. S. Brackett, Fairmont, W. Va.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, *Editor*

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The Important Point In the Anthracite Tax Decision

BY ITS decision in the Pennsylvania anthracite tax case the United States Supreme Court has permanently settled the question of whether anthracite is coal or something else. It has long been a matter of concern to the coal people that the consuming public would not differentiate between the product of the mines in that tight little community known as the hard-coal region and the product from the multitude of mines scattered elsewhere over the United States. So different are the conditions surrounding the mining and marketing of anthracite from those for bituminous coal that what can be said with respect to the one cannot be said with respect to the other. To keep the public from mixing them up in its thinking has been a task as yet wholly unsolved. The low mine price (usually) for soft coal and the high delivered price for anthracite have troubled the uninformed and caused a world of doubting on the subject of mining profits.

The Supreme Court sets the matter forth in clear language. "The difference between them is a just basis for their different classification; the differences are great and important. They differ even as fuels, they differ fundamentally in other particulars." Thus are its conclusions set forth. Having satisfied itself that the imposition of a production tax on anthracite did not constitute discrimination as between that fuel and bituminous coal, the court turned to the question of whether the tax imposed at point of production was in fact a tax on interstate commerce.

It seems to us that here is reiterated and reviewed in unmistakable language a question of more import to the coal industry than the mere matter of whether anthracite is just coal or a special kind thereof. The sum and substance of the court's opinion is that the production of coal is intrastate and not interstate commerce. Representatives of other states were in attendance upon the court, arguing that the action of Pennsylvania in taxing the coal they required was illegal because it would prevent free commerce between the states, as covenanted by the Constitution. To this the court says: "Whether any state or action of a state impinges upon interstate commerce depends upon the statute or action, and not upon what is said about it or the motive that impelled it . . . we can estimate then the contention made. It is that the products of a state that have, or are destined to have, a market in other states are subjects of interstate commerce, though they have not moved from the place of their production or preparation."

This contention is dismissed with the statement that if the "certainty of exportation of a product" from a state should determine it to be in interstate commerce before the commencement of its movement, the result would "be curious. It would nationalize all industries . . . coal yet unmined," because in varying percentages it is destined for consumption in states other than that in which it is to be produced.

The production of coal is intrastate commerce, not interstate, and coal ceases to be governed and protected by domestic law exclusively and begins to be protected and governed by the national law of commercial regulation at the moment it is on railroad cars and commences its final movement to another state.

Looking at the Hands of Accusers

WEST VIRGINIA and non-unionism as practiced in that state were thrown into the ring in a letter from the United Mine Workers to the U. S. Coal Commission last week. Taking Logan County as an example, the letter sets forth that union men, union organizers and union sympathizers are not allowed in that coal field. They are "eliminated" by deputy sheriffs in the pay of the coal companies. The union is simply not tolerated. In fact, the mine workers there and elsewhere in that state are parties to a form of individual contract binding the employee on the one hand and the company on the other from any participation with the union. The statement alleges that union members are "thrown into jail," "brutally mistreated," "killed while thus held prisoners," "arrested and jailed for no reason except that they are union members," etc. It is added that the "Commission itself will realize that something must be done in Logan County and certain other counties in West Virginia if the coal industry is to be stabilized and placed on the level where it should be."

The union spokesmen also contend that this is a condition "provocative of indignation and strife. It should not be allowed to continue. We believe this commission should find out just how the Logan County and West Virginia situation affects the coal-mining industry, for if the commission can find a way to put a stop to the practices that prevail in that field, it will take a long step toward the establishment of industrial peace on a permanent basis."

Then follow quotations from Senator Kenyon's report on that situation, and from President Harding, Woodrow Wilson, Theodore Roosevelt, William Howard Taft, Charles Evans Hughes, John D. Rockefeller, Jr., and others with respect to the inherent right of workers to organize, a right which it is contended is denied in Logan County and other parts of West Virginia. The purpose of this document is not concealed; it is plainly labeled as an invitation to the Coal Commission to investigate the non-union fields and to find some way to force the relinquishment on the part of the operators of their policy of keeping the union out. On a previous date the commission was told by the union that all mines should be unionized—the power of the United Mine Workers extended over the whole country.

Now the existence of non-unionism in one part of

the country is a fact that the commission may properly inquire into. It is entirely proper that the United Mine Workers should call attention to conditions in West Virginia. The opposition of the operators of that state to the union is growing instead of becoming less; there are fewer members of the United Mine Workers there today than a year ago. The union is concerned about this, for the more non-union mines there are the more coal the country can get when the organized districts go on strike. The mine workers have stated their case well. But they have, of course, stated but one side of that case. No one should expect them to put up the arguments for the other side.

Strikes, especially national strikes, and the causes thereof are matters of fact that the Coal Commission is charged to investigate. Measures to establish industrial peace may be looked for among its final recommendations to the President and Congress. It may be that to this end there will be much searching into these bitterly controverted points concerning the methods of certain operators to preserve their freedom from the United Mine Workers. But there also may be questions raised with respect to the methods pursued by the union in keeping intact its territory and in reaching forth for more worlds to conquer. To many it would appear that the anti-union contract of West Virginia is no more iniquitous than the check-off north of the Potomac. Both produce close shops.

No, the union has not stated the whole case to the commission in this document. One has but to change a few words, as Illinois for West Virginia, as union organizers for armed guards, to produce as strong an argument the other way. An impartial investigation may disclose that West Virginia non-union operators are fighting fire with fire, that the closed shop in the North is as fraught with dangers to the industrial peace of the coal industry as that of another kind in the South.

One may be pardoned for looking at the hands of those who protest the methods of the South. The union offers to produce as witnesses numerous persons who "have been victims of the Logan County system who can give direct first-hand evidence." But who will bring in the victims of Herrin?

Function of Storage

IN ALMOST all considerations of the value and purpose of storage of coal at the mines attention is mainly directed to the possibilities, advantages and disadvantages of storage for a period of months rather than to the hour-to-hour and day-to-day stabilization that storage affords. It may be well at the outset to point out that an ability to store about one hundred tons of coal at the tipple is in itself an advantage not to be overlooked.

Suppose that at a mine loading three sizes the supply of empty cars on hand has been cut down by loading to a single car partly full of one size. That single car, if there is no reserve at the tipple, cannot be loaded, for if it is to be filled with slack, then what shall be done with the lump, or if it is to be loaded out with lump, what will become of the resultant slack? The car must be, and quite generally in practice is, held over as a "part load."

As a part load it is counted as one car on the next day's quota. It will be constructively placed the next working day and the mine will lose a car.

It is clear then that the ability to store a small quantity of coal is desirable, but the expense of storage of this kind is by no means inconsiderable. Height rarely is provided at the tipple for the storage of slack and lump or of three sizes unless a conveyor belt is provided. As soon, therefore, as storage is afforded to fill so small a need the question arises, why not seek to obtain other advantages that will make the storage more profitable still? Why not provide for those many occasions where few cars are supplied or where none of them is of the kind that it can be loaded with slack or in other cases with lump, whichever may be needed? Why not arrange to provide against tipple breakdowns, the delay of operations due to dirt, manure or stone in railroad cars, or due to cars needing repairs, the derailment of mine locomotives or mine cars, the delay in running that would result if railroad cars were placed late, left the track or ran out before the day was wholly done? Why not, in short, create storage facilities that would stabilize running and give the tipple crew and all the men on day wage about the plant an efficient day's run?

The additional cost of the coal thus handled is not the real consideration. The loss of storage should not be distributed on the coal thus stored but on all the coal mined. If on the entire output the loss will average but little, it may be safely concluded that the gain from stabilization will far outweigh it.

Suppose, owing to a late arrival of railroad cars, a scheduled run proves abortive; the day force must be paid for two practically wasted hours. In fact after the two hours are concluded the coal standing in cars along the roadway of a drift mine may have to be hauled back to, and into, the mine to keep them free from frost. The distance they must be taken inside may be not inconsiderable if the roadway is the intake and if the ventilation must be kept as strong by night as by day.

For these reasons, or for others which anticipate longer periods of storage, operators are coming to favor the creation of coal storage at mines. In many regions the practice is growing. The intermittent demand for slack, the desire to keep the men from wandering when cars are scarce and rivals for the services of miners are persistent, the anxiety to fill orders when no place can be found for the sizes of coal that the fulfilment of those orders would create, the possibility that railroad cars will be more plentiful later and the assurance that storage will have some effect when the railroad coal quotas are made up, is making operators store coal at the mines. To leave cars unloaded, even single cars, is a sure way to earn a reduced quota from the railroad by which the mine is served.

It should not be overlooked that using a railroad car as a storage bin is a poor way to increase car supply. Producers who more or less regularly tie up one, two or even three cars overnight with part loads are penalizing themselves as well as the railroads. A railroad car costs about $2,500. How much pocket storage on the tipple will that construct? The railroads cannot be blamed if they penalize heavily those who use their cars for such a purpose, even though it be a time-honored custom.

NOMINATIONS OF MEMBERS OF THE UNITED STATES COAL COMMISSION, the fact-finding body authorized by Congress Sept. 22 and appointed by President Harding Oct. 10, were confirmed Dec. 11 by the Senate, giving the commission official status.

At Coverdale Mine Nut and Lump Are Picked on Circular Picking Tables

By A. F. Brosky*
Pittsburgh, Pa



Repicking Table Proposed for Boiler Coal—Bone and Slate Go to Separate Hoppers—Two Sizes of Lump Picked on One Table—Provisions for the Coal and Rock Hoisted in Same Cage

DISTINCTIVE as is the two-car cage shaft of the Pittsburgh Terminal Railroad & Coal Co.'s Coverdale mine, described in *Coal Age* Nov. 30, the tipple is not less so. It does not make many sizes of coal but it is notable for its picking tables and for the flexibility provided in its loading arrangements. Thus on either of two tracks (Nos. 3 and 4) can be loaded lump, combined lump and nut, combined lump and slack and picked run-of-mine. On track No. 1 can be loaded slack and emergency run-of-mine and on track No. 2, nut and combined nut and slack.

The tipple as it is today will handle 350 tons of coal per hour on the assumption that the coal separates in the proportions of 65 per cent lump, 10 per cent nut and 25 per cent slack. In order to maintain this hourly tonnage the coal must be hoisted at the rate of three 2½-ton mine cars per minute. As the cars are carried two at a time in self-dumping cages, it will be seen that the actual speed of hoisting is less than is customary for a single-car cage, the usual practice being to make about two hoists per minute as against 11 which is the speed customary at this mine. The ultimate capacity of the tipple will be 500 tons per hour, which will be attained by the addition of another picking table for lump coal. This will extend out beyond track No. 4. The present plan of the tipple together with the proposed addition is detailed in Fig. 2.

The tipple design is unusual also in that it provides for the future installation of a table to repick refuse from the present lump-coal picking tables, thus furnishing a boiler fuel if desired. In years to come if it be found necessary to store slack coal a belt conveyor will be installed to carry it to a storage bin. The present screening rig is built to accommodate an egg screen with chutes to deliver the screened egg coal to the proposed lump table, which after picking may be diverted to the boom over No. 4 track.

Coal is discharged from the two side-by-side mine cars on each of the self-dumping cages into individual receiving pans that guide it to weigh baskets, each of which has its own scale and recording dial. Each of

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NOTE—Headpiece shows Coverdale tipple with its four railroad tracks. The fifth track is used by the refuse-trucking lorry which can be seen under the refuse bin.



Fig. 1
Picking Tables

its four weigh baskets hoist to a 12-ton receiving hopper. A shaking pan feeder delivers coal from the receiving box to the screen. By reversing a plate in the bottom of the feeder, however, run-of-mine coal is fed direct to the emergency loading chute and is discharged into railroad cars on track No. 1.

Lump coal, after passing over the screening area of the screen, is divided into two parts by a diverting arrangement on the upper screen deck. In consequence half the lump coal goes to each of the two circular picking tables. The lump coal thus divided before discharging onto the picking tables passes over a grizzly screen that separates it into two sizes, over and under 3 in. The small size is fed toward the inside edge of the circular table and the large size toward the outside edge. In this way a more uniform coal bed is provided, with consequent increase in the efficiency with which the coal is picked.

The picked lump coal coming from the two tables is delivered to loading booms over No. 3 and No. 4 tracks. The nut coal passing over the lower deck screens is distributed to its picking table, from which it is loaded through a chute into cars on track No. 2. If desired, the nut coal may be delivered to either or both the lump tracks in combination with the lump coal. After being gathered in a steel pan the slack coal may be delivered through a chute to No. 1 or No. 2 track. Delivery to either track is controlled by the two-way chute and a flygate.

For the benefit of those not already familiar with circular picking tables it might be well to give briefly the details of their construction, dealing first with the two lump tables. These are of duplicate construction, each having an inside diameter of 10 ft. and an outside diameter of 20 ft. The table is a circular structural-steel frame covered by removable sections of ¼-in. steel plate. On the under side is a circular track of steel rail, which also fastens to the frame. The inside wall of the table is formed by an angle 6 in. high that revolves with the table frame; but on the outside stationary guard angles form the wall. The table is supported on eight cast-iron pedestals equipped with 12-in. cast-iron supporting wheels designed with but a single flange. The nut table is constructed in a similar manner but is larger, having 18-ft. and 28-ft. diameters.

All three tables are driven by one 50-hp. slip ring motor, the countershafts which drive the two lump tables being actuated by a single cut-steel spur gear. The countershaft of the nut table is driven through a chain transmission, one bevel-gear and a spur-gear reduction. The master wheel of the spur-gear reduction is a segmented rack bolted to the under side of the frame. A jaw clutch on the driving sprocket allows any one table to be operated independently of the others.

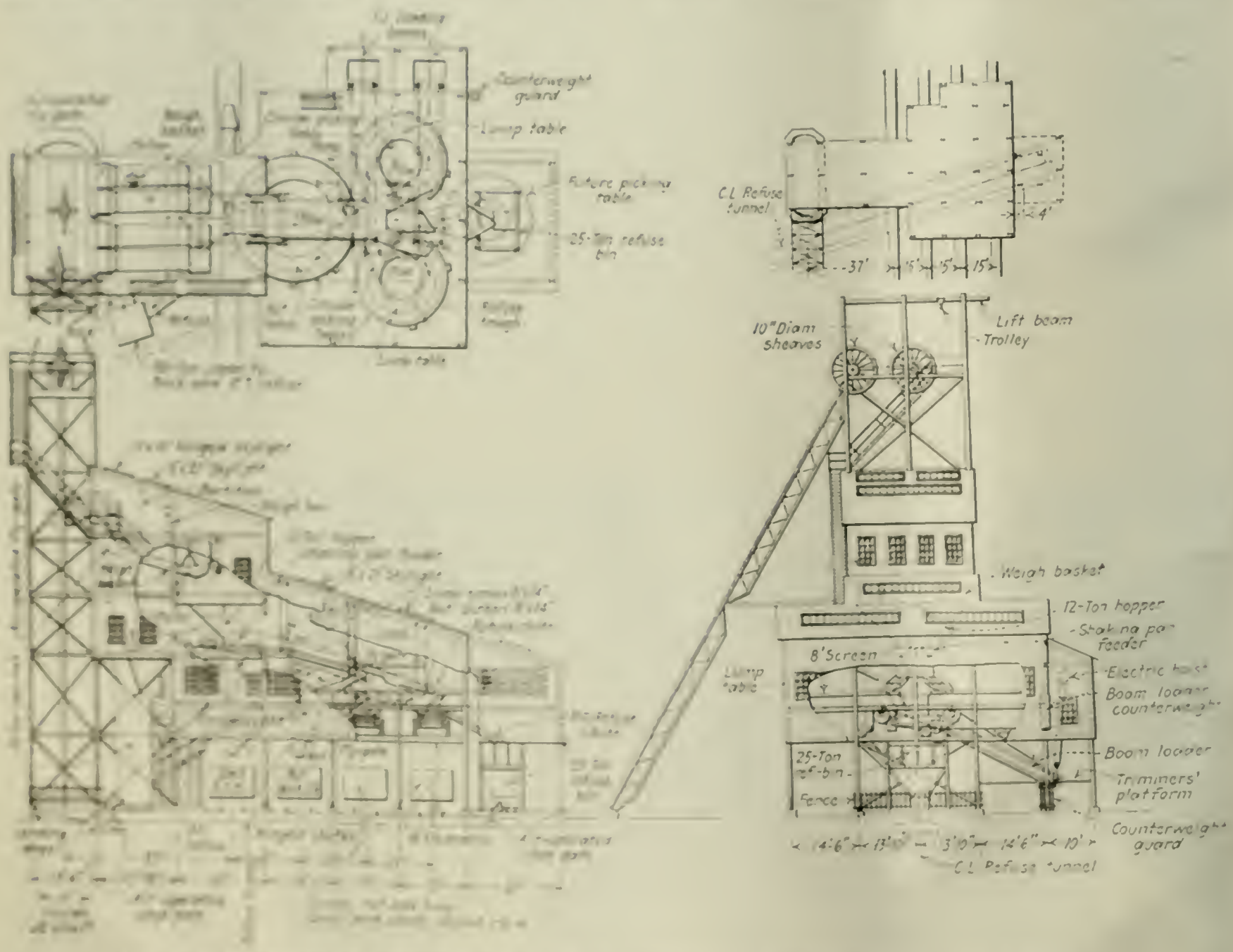


FIG. 3—ELEVATIONS OF COVERDALE TIPPLE OF PITTSBURGH TERMINAL RAILROAD & COAL CO.

...picking table for lump coal will be provided ... drawing. There also is provision ... may be obtained a more passable ... material

A stationary steel plow on each lump table delivers the picked coal through a chute to the loading boom over track No. 4, and a removable plow diverts the coal to a chute leading to the loading boom over track No. 3.

The problem of dumping hoisted rock and bypassing it to the rock bin, while simple enough for the single-car cage, is more difficult of solution where two cars are dumped side by side, perhaps one loaded with rock and the other with coal. For this purpose each receiving pan is provided with a flygate operated through a four-way valve. Either or both flygates on the dumping side may be thrown to let the rock down into a 50-ton bin, where it is removed to the slate pile by means of a refuse-stacking car.

The cager on the shaft bottom signals the dumper or check taker and designates the car or cars containing rock by pressing one or two contact buttons, as the case may be. This operates a remote-control switch, ringing a warning bell and lighting the lamp or lamps by which the slate cars are indicated. The dumper then throws his air-operated flygates accordingly. The cage on dumping throws a trip switch, thus breaking the circuit. A klaxon signal, when sounded from the trimmers' platform, warns the dumper to hold the coal just dumped in the weigh baskets, and the picking-table crew to stop the table and screens. The picking-table crew may likewise warn the dumper to hold the coal.

Refuse picked from a lump table is thrown into one of five small boxings and into a dirt trough. It is then collected by five revolving dirt plows attached to the table frame, which carry the refuse to a conveyor, which in turn transports it to a refuse bin. This bin is wholly separate from the rock bin. The refuse from the nut table is deposited directly on the conveyor which leads to the refuse bin.

In addition to the two weighmen the tipple force consists of eleven men. The man who is stationed at the dumping point to make sure that the cages dump properly also lifts the checks. Each picking table is manned by two pickers, one on the inside and one on the outside of the table. Four car trimmers attend to the coal loading and drop the railroad cars. Rock and refuse from the tipple is conveyed to the dump by a crew of two men.

The tipple was designed and built by the Heyl & Patterson Co., Inc., of Pittsburgh, Pa. The tipple structure is built of steel and concrete and covered with corrugated siding and roofing. Six skylights provide excellent natural lighting for the weigh office and the picking deck. All floors are of concrete.

The picking tables have now been in use for two years and consequently it may be well to set forth the advantages that the officials of the Pittsburgh Terminal Railroad & Coal Co. regard as points in their favor. Foremost among these, it is urged, are the small number of moving parts in their construction; less energy therefore is used in driving them. It is pointed out that the apron picking table has two strands, the upper and the lower. Both are in motion, but only the upper one is available for picking. Thus only half the apron conveyor is serving a directly useful purpose, yet the movement of both parts consumes energy. It is said that the circular table consumes one-third as much power as the straight table.

In every tipple there is much fine dust which has the ability to work its way between moving surfaces, such as the pins, bushings, rollers, links and pans of



FIG. 4.—A CHUTE TO LUMP PICKING TABLE

In the rear can be seen the main screen, at which the nut is removed. In the foreground to the left of the cage chutes by which half the lump coal passes to one of the picking tables. The bar grizzly may be noted, by which the lumps which will make a 2-in. screen are separated and allowed to fall on the upper side of the table.

which the conveyor is built up, parts which when assembled cannot be efficiently lubricated. When such rubbing surfaces are lubricated the lubrication is not retained for any satisfactory length of time.

The circular picking table for lump coal in the Coverdale tipple is 20 ft. in diameter and the inside diameter is 10 ft. This circular table has then a mean diameter of 15 ft. and if straightened out would have a length of πD, or approximately 47 ft. But the segment between the throat of the shaker screen and the discharge point is not effective, so, instead of 47 ft. being the equivalent length of the table it should be figured as only 40 ft. The links, pins, pans, etc. of the straight table when assembled form an endless belt which if cut at one point and straightened out will have a length more than twice that of the table. Allowing, let us say, 5 ft. as the length of those portions that pass over the sprocket wheels, the total length of the belt is about 90 ft.

Further, it is pointed out that in a conveyor 90 ft. long the length of roller chain is 180 ft. and for every 3 ft. of chain are four pans, five pins, four bushings, four rollers and eight links, or in all 1,440 moving parts all subject to friction and to wear. There are 240 pins and bushings that must be lubricated as against eight supporting wheel bearings on the circular table.

The straight table with its many moving and bearing parts must be lubricated frequently, but the circular table not only has fewer bearing parts but needs the application of a lubricant less frequently. The supporting pedestals and wheels of the circular table are lubricated through grease cups that are filled only at intervals. It may be added that the table is absolutely rigid. It is supported by cast-iron pedestals on which are mounted large supporting wheels. In these bronze and not steel bears on steel. As they are placed under the picking table they are protected from particles and small lumps of coal which might work their way between the moving surfaces.

How the Coal Trade Is Organized in Germany*

Trade Parliaments Eliminate Economic Tension Between Employee and Worker—Council of Economics Advises on Legislation Affecting Basic Industries—Distribution of Coal in Charge of Federal Coal Commission

BY F. Z. NEIDEN, M.E.

THE real Germany, like China, rarely is visible to the foreigner. This has never been proved more true than within the last few years. While the eyes of the world and the ears of public opinion were fixed on the external signs of a gigantic struggle in Germany between democratic, pacifist and socialistic tendencies on one side and monarchists, militarists and conservatives on the other, while the disastrous effects of the Versailles Treaty daily became more painfully evident, and while the casual observer saw little but political unrest, economic decay and the glaring contrast between a false luxury and utmost human misery, Germany has been busy in a silent and unobtrusive way thoroughly reorganizing her economic structure along lines entirely new and original. Quite a number of her new organizations have now been working for two or three years under the heaviest economic stress and have stood the test of practicability. They are, therefore, no longer to be regarded as experiments, but worthy of the most earnest attention of all industrial countries of the world—all the more so as the social and economic problems confronting the young German Republic are different only in degree but not in essence from those familiar to all the rest of the civilized world.

Trade Parliament an Interesting Innovation

Among the innovations which Germany called into life on her way to her new ideal of a government of an industrial people, by an industrial people, and for an industrial people, her economic self-administrative bodies, or "trade parliaments," are of the most immediate interest. They represent a new way to alleviate or eliminate economic and social tension between employers and employed, producers and consumers, and form a platform upon which the problems arising in each trade can be settled separately and by men who know the trade, thus immensely simplifying the regulation of the whole industrial machinery of the country and preventing political ignoramuses from meddling with the fine tissues of its productive life.

It will be remembered that in 1920 Germany created a provisional central parliament of industries and trades known as the Federal Council of Economics (Reichswirtschaftsrat). This body is to counsel the Reichstag and the government in all economic matters and especially in all questions of economic legislation. Eventually this Federal Council of Economics is to be based throughout on branch or trade parliaments representing all the various trades separately; but as far only four of these self-contained trade councils have been instituted to represent the most important basic productions, namely that of coal, iron, metals and potash. Of these the Federal Coal Council (Reichskohlenrat) is of most immediate interest to the readers of *Coal Age*.

This council historically developed out of conditions which only 30 years ago were practically identical with those prevailing in the United States today. No trusts or syndicates existed among the operators. The mining association (Bergbauvereine) which had formed in various districts did not in any way interfere with the absolute freedom of the individual colliery as regards production, prices and competition. Some 20,000 to 30,000 coal merchants, dealers and agents, mostly without any organization whatsoever, supplied the channels by which the coal had to make its way from the mine into the bin of the "last consumer."

Owners Form Ruhr Syndicate

Within the last decade of the nineteenth century ruinous competition both from without (England) and within drove the coal owners of the Ruhr to forming the well-known Ruhr Coal Syndicate. Its functions consisted in apportioning a certain percentage of the total Ruhr output—fixed at every new extension of the syndicate agreement—to each individual pit, and in lowering or raising the total output according to the needs of the moment. The Prussian state collieries joined the syndicate on equal terms with the private coal mines, the state collieries being allowed about 10 per cent of the total output of the Ruhr. The syndicate took over and sold through its central sales department all coal mined by its members, including the Prussian state collieries, with the exception of such fuel as certain collieries connected with other industrial enterprises, such as furnaces, iron works, etc., were allowed to put aside for their own consumption in these affiliated works, a maximum percentage of such privileged reservation being stipulated in the syndicate agreement. The Syndicate fixed the prices at general meetings of its members.

This arrangement proving effective and satisfactory, the Syndicate was extended from term to term and other groups of collieries, like those of Lower Silesia, followed the example of the Ruhr collieries. Furthermore, the central sales department of the Syndicate gradually simplified the selling organization by concentrating the most important coal merchants within the various states and provinces of Germany into eleven trading companies, one for each district.

This was the state of development in 1914. The exigencies of the war were at first well met by the organization as it stood, the syndicalized output of the Ruhr mines constituting about two-thirds of the total German coal production. Not until 1917 did the economic stress become so heavy that the then Imperial Government and the Reichstag found it necessary to regulate by imperial authority the distribution of the entire German coal output. For this purpose the office of Coal Commissioner was created, but his powers were and are by no means absolute. As his title of "Federal Commissioner for the Distribution of Coal" indicates, his powers are limited to distribution only, production, transport, and the fixing of prices being beyond

his jurisdiction. His activities, however, served greatly to promote the crystallization of the German coal trade. For the purpose of distribution he established twelve district offices of distribution, one for each of the eleven main coal- and lignite-mining districts and one for the combined production of gas coke. He also formed, for the purposes of control, twenty-five coal-trade bureaus for the various states and provinces. These measures served to accustom the various groups of mines and traders to co-operation, but they also enhanced the desire of the federal and state authorities to retain permanently the control over this basis of all industrial activity which the temporary needs of warfare had thrust into their hands.

Committee of Socialization Named

When, therefore, the revolution of 1918 forced into the forefront the demand for "socialization" of the mines, even those governmental circles which, like the Prussian Mining Administration, were by no means in sympathy with the then socialistic majority, were not opposed to this measure in so far as it involved the complete submission of the coal industry to government control and the absorption by the federal exchequer of its profits. The coal trade itself, however, was strongly opposed to all such attempts and offered a united front against both the socialistic and bureaucratic tendencies. Under the stress of public opinion and the socialistic majority in the federal government the celebrated Committee of Socialization was formed. It consisted of miners' representatives, socialistic theoretical economists and a few practical business men, who, however, did not belong to the coal trade. This committee could neither arrive at a unanimous decision nor did any of its various suggestions appear practicable. Times were too precarious for extreme socialistic experiments. The opponents of "socialization," therefore, won some ground. Yet it was impossible altogether to return absolute power to the owners in the domain of the coal trade as it had existed before the war.

The resultant had to be found in the polygon of these six component forces: Public opinion (coal consumers), theoretical socialists, governmental bureaucracy, and the three diverging interests within the coal trade itself, coal owners, miners and merchants. The National Assembly, by passage of the Coal Trade Act of March 23, 1919, ordered the creation by a "council of experts" of a permanent Federal Coal Council which was to be the instrument through which the community controlled the coal trade of the country. The composition of the "council of experts" closely resembled that of the permanent Coal Council which formed the ultimate result of its deliberations. This result was laid down as an integral part of the Coal Trade Act, received the consent of the National Assembly on Aug. 20, 1919, and immediately went into force.

Considering the structure of the German Coal Trade Act and the organization for which it forms the basis, as well as the various historical influences which were at work at its inception, it must be owned that they were balanced very cleverly indeed. The intention of the Committee of Socialization—namely, to transfer the mining property into the hands of the community in one shape or another—was frustrated. It was acknowledged that individual liberty in enterprise is an asset which cannot be dispensed with in carrying the coal trade, and with it the whole nation, through the dark and bitter years which were to come. The property rights of the coal owners, therefore, remained untouched. However, in order to prevent liberty becoming license, the individual coal owner was firmly placed in an organization that left him enough space in which to move about and enjoy his life, yet kept him from running amuck.

Corresponding to the twelve district offices of distribution as instituted by the Federal Coal Commissioner twelve syndicates were organized. Each syndicate comprises all mines within its territory. The syndicates formed voluntarily. Seven syndicates (the Upper and the Lower Silesian, the Ruhr, the Aix-la-Chapelle, the Saxon, the Lower Saxon, and the suspended Saar Syndicate) are composed of collieries, three (the Rhenish, the East Elbian and the Central German Syndicate) consist of lignite mines, and one syndicate each is composed of the Bavarian low-grade soft-coal mines and the gas works as producers of coke.

These twelve corporations in turn compose the central representative organization of fuel producers, called the National Coal Association (Reichskohlenverband). This association, however, is not autocratic or supreme, but is subordinated to the parliament of the coal trade, the Federal Coal Council (Reichskohlenrat).

All syndicates and the "Association" are limited companies. Under the act each syndicate and the association must elect one miners' representative into its management and two or three miners' representatives and one representative of the employees into its board of directors. The National Coal Association (the "syndicate of syndicates") must, in addition, elect one representative of the consumers into its board of directors. The voting power of each syndicate in the association corresponds to its salable output during the preceding year.

Distribution of Federal Coal Council

The Federal Coal Council is not a company, but a parliament composed of 60 delegates from all parties immediately interested in the coal trade, distributed as follows: 15 representatives of the coal- and lignite-mine owners; 15, miners; 3, employees of the coal and lignite mines; 1, gas works; 1, workmen employed in gas works; 5, wholesale and retail coal merchants; 1, coal merchants' employees; 3, governments of the German states, representing the bulk of the consumers not specially represented (they have by no means a privileged voting power); 2, industries consuming coal; 2, workmen employed in those industries; 2, artisans as consumers of coal; 2, co-operative societies; 1, town consumers; 1, country consumers; 1, railroads; 1, ocean shipping; 1, river and lake shipping; 1 coal mining expert, 1 expert for the scientific exploitation of coal and 1 representative of the boiler-inspection societies.

About one-half of the members of the Federal Coal Council (12 representatives of the coal owners, all of the miners, and the employers and workmen of the coal-consuming industries and the gas works) are indirectly elected by the workers' councils and workmen's committees over the country through the intervention of another parliamentary body called the "Working Community" (Arbeitsgemeinschaft). This institution was created in 1918 for the purpose of constituting a platform on which all social and economic questions and controversies between employer and workmen are collectively settled by an equal number of workmen's and employers' representatives. The "Working Community" as

far has excellently fulfilled its object, and is the given electoral body for the purposes of the Federal Coal Council, as its members have without exception come forth from predatory elections starting in each single shop or mine and then concentrating according to branches of industry on one hand and districts, provinces and states on the other. The members elected to the Federal Coal Council by the "Working Community," therefore, carry the confidence of all employers and men.

The other half of the members of the Federal Coal Council are elected by the big associations for the representation of the interests of the coal merchants, the local dealers, the crafts and trades. The organization of wholesale and retail coal merchants has developed particularly during the last ten years, into a powerful central association with a complete network of branches all over the country.

A few members are not elected, but are appointed by the Federal Secretary of Economics and Production (Reichswirtschaftsminister), among the representatives of the state-owned collieries (the German Federation as such owns no mines nor collieries). The term of membership is three years. One-third of the members are changing each year, but re-election or renomination is admissible. In this way the council is always well stocked with members who are intimately acquainted with its business.

In perusing the list of membership we find the best known names of the German coal trade. Hugo Stinnes, Dr. Silverberg, president of the Rhenish Lignite Syndicate; Dr. Hugenberg, of the Krupp Works; several directors of the Rhenish-Westphalian (Ruhr) Coal Syndicate; Dr. Hilger, the well-known president of the Vereinigte Koenigs und Laurahuette of Upper Silesia; Geheimrat Arnhold of the old firm of Caesar Wollheim, and many other notable "coal barons" are among the coal owners' and merchants' delegates, while the general secretaries and secretaries of all the various miners' unions act as representatives of the men. The Federal Coal Council elected for its president the general manager of the Harpen Colliery, Bergrat Kleine. The vice-presidency was turned over to a representative of the workmen, Herr Imbusch, general secretary of the Christian Miners' Union, which is the least radical among the organizations. Both still hold their office.

A considerable percentage of the members belong to the Reichstag, to the Federal Council of Economics or to the Diets of various German states. This has proven a great advantage in synchronizing the business in the various political and economic parliaments.

The council was fortunate in obtaining at its inception the services of Eugene Kroegeter as general secretary. It is principally due to his great commercial and diplomatic abilities, his knowledge, tact, resourcefulness and broad common sense, that the work of the council was initiated and conducted not on bureaucratic but on sound business principles.

In looking over the above list it will be observed that the fifteen coal owners are in a minority and could be outvoted by the sixteen consumers' representatives if the workmen kept neutral. It must be remembered, however, that it is improbable that the coal miners would remain inactive in questions affecting the development of production and further, that all coal and lignite mines are combined in the National Coal Association and, their representatives therefore, generally constitute a solid vote while it is difficult to get all of the sixteen consumers' representatives "under one hat." Moreover, the coal owners' expert knowledge of all economic and technical questions connected with mining and the sale of coal secures for them a mental weight which often turns the scales of the deliberations of the council in their favor. As regards pure questions of wages, hours or other conditions of employment, these are threshed out within the mining group of the "working community," and the disadvantage in which the composition of the 60 members of the council might here leave the 21 representatives of the employers is, therefore, rarely, if ever, to be feared by them.

Headlight for Mine Service Made Bump-, Dust-, Moisture- and Jolt-Proof

IN the darkness of the mine the best warning to others of the approach of a trip is a powerful headlight on the locomotive. It also enables the motorman to make speed with safety, as it permits him to see obstructions in time to stop and guard against emergencies.

The new headlight manufactured by the Jeffrey Manufacturing Co. is made with a body of great strength shaped so as to cause heavy blows such as may result from falling coal to glance off without doing any injury. The headlight is mounted on a sub-base with a three-point double spring suspension; no small hinges, knobs or thin gratings are used, such as would be readily broken by falling coal.

The parabolic reflector is made of brass, nickel plated and highly polished, to insure a long beam of brilliant light. The metal reflector is used because it is more suitable for mine work than one made of glass.

To have the headlight give satisfactory light continuously it was necessary to make it dust proof and moisture proof. The construction used is that ordinarily required when a headlight is approved by the government, for use in gaseous mines.

The lens, which is a ¾-in. thick plate glass, is held in place in a heavy cast-brass ring by a nut and heavy packing. The ring with its lens is screwed onto the main body of the lamp.

In the top of the lamp body is a hand hole which is closed by a large brass plug. Through this hand hole the focus of the lamps can be adjusted. The cable leading into the lamp is a three-conductor Duracord and passes through a stuffing box which is of the same construction as that used in making permissible motors approved by the United States Government. One of the novel features of this lamp is the use of two standard sockets, one to receive the concentrated filament lamp, which is a 94-watt 110-volt connected two in series with a balancing resistance for 250 or 500 volts. The second socket takes the ordinary lamp used about the mine. The lamps in this socket are used only in case the concentrated filament lamp is not available.



BUMP- AND DUST-PROOF HEADLIGHT FOR MINE SERVICE

Mining a Two-Foot Coal Seam at Forest City

Two- and Three-Road Chambers Are Driven Sixty and One Hundred Feet Wide Respectively—Mining Machines Undercut Coal—Rock from Roadway Used to Pack the Chambers from Which Coal Is Removed

By Dever C. Ashmead*
Kingston, Pa.

FOR many years the anthracite coal field has been known as one in which the beds are thick. From his early study of the geography of Pennsylvania everyone knows that in some places the Mammoth bed reaches a thickness of 100 ft. or more. Comparatively few realize, however, that probably the greater part of the coal comes not from the Mammoth bed but from the thinner beds of the region.

This is due to the fact that over a large portion of the territory all the first mining in the Mammoth bed has been completed. In many places the second mining also has been performed. In places the wasteful methods of mining pursued in the past have prevented large areas of this bed from being recovered.

It is particularly true of the northern anthracite region that the thicker beds have been completely mined out, both stages of the work having been completed. Here the operators have been compelled to turn to thinner and thinner beds as the first mining was completed in those that were thicker.

At many operations it is not advisable or possible to complete the second mining, as buildings have been erected on the surface and coal has to be left for their support. In other places a thick bed of water-bearing glacial drift, such as the Buried Valley of the Wyoming field, makes second mining imprudent or impossible. Some workings also are under the Lackawanna or the Susquehanna River and other seams again cannot be entirely removed without disturbing the overlying thinner beds of coal. This has reduced the quantity of coal in the thicker beds that is available for immediate recovery.

For these and other reasons the attention of the operators has been drawn to the thinner beds, which only a few years ago were considered worthless. Only by accepting the inevitable could they keep their output up to a point consistent with economy. If production falls off only a little the overhead, which remains constant, greatly increases the cost of production. If, however, the production can be maintained by the mining of the thinner beds of coal, then the overhead, being spread over an equal tonnage, will remain constant.

This is a worth-while consideration even though the actual cost of mining these thinner beds is greater than it would be for those that are thicker. If, however, it is necessary to increase the overhead, then no profit would accrue to the coal company from this extra production. In time, however, a point will be reached when the production from the thicker beds will have decreased and the production from the thinner beds increased so that the balanced profit from the two classes of beds will reach a point at which there will be no profit, and the profit that the operation formerly showed will turn into a deficit.

Another factor to be taken into consideration is taxes. Speaking broadly, the coal companies are taxed for any coal that is more than 2 ft. thick, and as long as this coal remains in the ground this tax has to be paid. Consequently taxes on the property ought to decrease as the coal is removed. That, however, seems to be a pretty theory not realized in practice, for the general experience is that no matter how much the coal reserves are depleted, the assessed valuation of the property for taxation purposes nevertheless continually increases.

Throughout the anthracite region the chamber-and-pillar system, with its two mining operations, has been general. The first consists of the driving of gangways and chambers and the second of the reopening of these gangways and the removal of the coal left in the pillars. Often many years elapse between the two operations



LOW-VEIN COAL CUTTER AT WORK OF 18 IN. COAL

A narrow streak of this thickness can be mined when thicker coal of a profitable thickness can be reached. The coal in this bed ordinarily is 28 to 32 in. thick, but here a band was cut down so that the top of the machine is within 2 in. of the roof. This room is 60 ft. wide.

and the expense of reopening, therefore, is heavy and naturally reduces the margin of profit on coal from the second mining. But the thickness of the coal, the protection of the overlying measures and in certain cases the need for surface support has warranted such a dilatory procedure.

In thin-bed mining, however, such a method might be entirely too expensive and good judgment might require that all the coal be recovered in one operation or practically one. This is particularly true when there are no overlying beds to be protected or when the surface does not need support. If the bed of coal to be mined is thin and sufficient filling can be obtained, however, then it may be possible to remove all the coal and gradually drop the surface and overlying beds without disturbing them.

In the Ring Bed at the Forest City collieries the Hillside Coal & Iron Co. is mining this coal by several unusual methods, three of which will be described in this and later issues of Coal Age.

The Ring bed in the Forest City region is known also as the Upper, or First, Dunmore and the Top Red Ash. The coal at this point has an average thickness of 2.35 ft. and in some places is only 24 in. thick. In the particular place where the photograph was taken

*Anthracite Field Editor, *Coal Age*

From which Fig. 1 was prepared the coal was only 19 in. thick. This was due to a local roll, and the indications were at the time of taking the photograph that the coal would resume its normal thickness. It is impossible at the present time to work the seam successfully when less than 24 in. thick.

The coal is extracted by room-and-pillar methods, but the effect is really the same as if a short longwall face were used. Where the coal or the bed above the one being mined has been entirely removed, rooms 100 ft. wide have been driven. These rooms have three roadways, one along each of the ribs and one in the center of the room. As the coal lods in this region lie practically flat it is necessary to take the mine cars into the chambers or use some form of mechanical conveyor to transport the coal from the face to the gangway.

In this case the mine cars are taken into the rooms; therefore it is necessary to take down top to permit the mine cars to enter. Top is taken in preference to bottom, as mining machines are used to undercut the coal, and it is much more convenient to handle the mining machines in and out of the working places when the bottom is left intact. If bottom were taken the machines would have to be raised and lowered from the roadway up to the bottom of the coal bed.

The rock thus shot down is hand packed in the chambers between the roadways. Sufficient rock is thus obtained to pack solidly the entire space from which the coal has been removed. The roadways are about 10 ft. wide and enough rock is taken down to make a clear height of 5 ft. or more above the top of the rail.

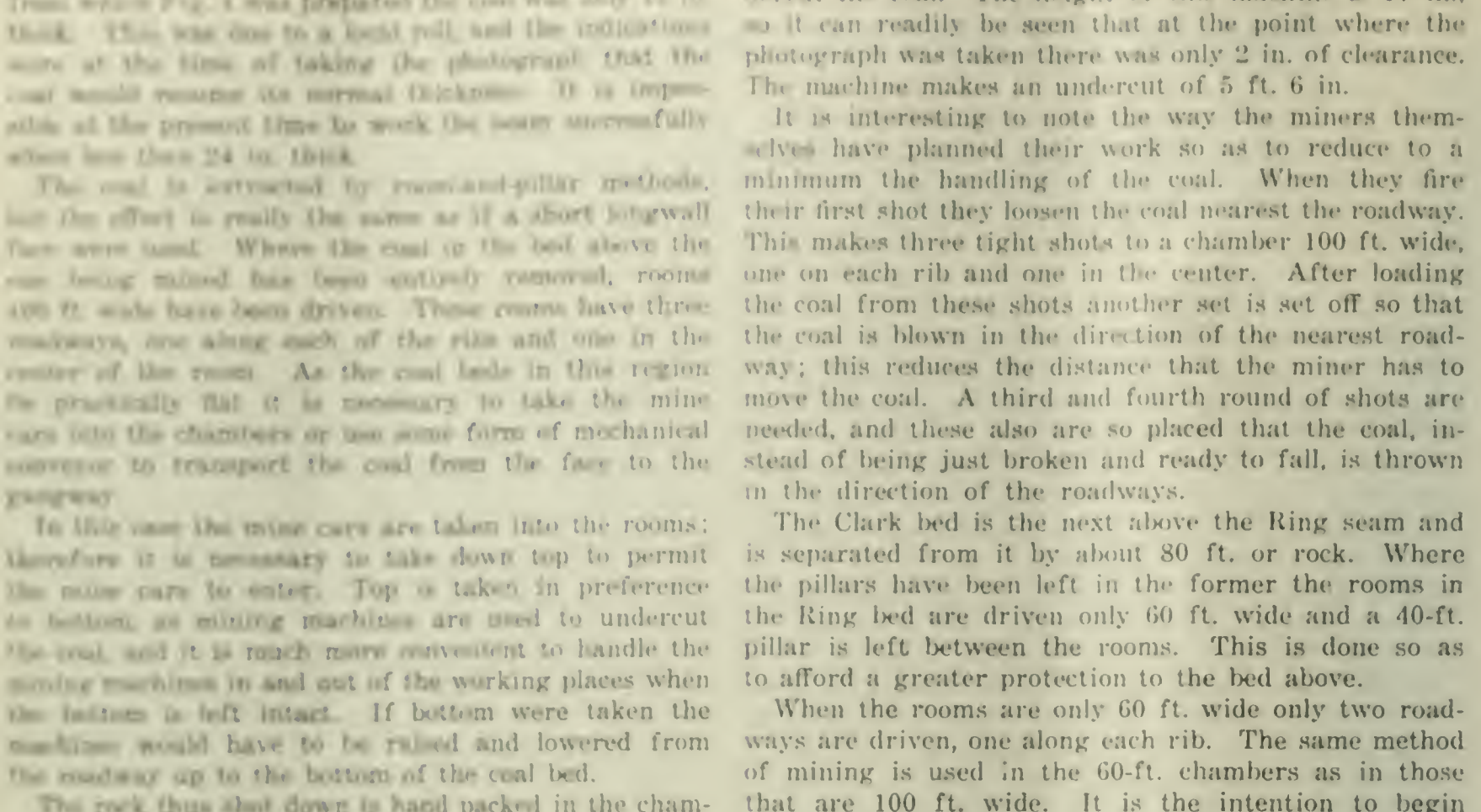
As soon as the roadways have been driven in far enough to insure a full 90-ft. neck they are connected, making a room of the required width. After the rooms are widened out to their maximum width, a Sullivan breasted low-vein undercutting machine is used to undercut the coal. The height of this machine is 17 in., so it can readily be seen that at the point where the photograph was taken there was only 2 in. of clearance. The machine makes an undercut of 5 ft. 6 in.

It is interesting to note the way the miners themselves have planned their work so as to reduce to a minimum the handling of the coal. When they fire their first shot they loosen the coal nearest the roadway. This makes three tight shots to a chamber 100 ft. wide, one on each rib and one in the center. After loading the coal from these shots another set is set off so that the coal is blown in the direction of the nearest roadway; this reduces the distance that the miner has to move the coal. A third and fourth round of shots are needed, and these also are so placed that the coal, instead of being just broken and ready to fall, is thrown in the direction of the roadways.

The Clark bed is the next above the Ring seam and is separated from it by about 80 ft. or rock. Where the pillars have been left in the former the rooms in the Ring bed are driven only 60 ft. wide and a 40-ft. pillar is left between the rooms. This is done so as to afford a greater protection to the bed above.

When the rooms are only 60 ft. wide only two roadways are driven, one along each rib. The same method of mining is used in the 60-ft. chambers as in those that are 100 ft. wide. It is the intention to begin second mining as soon as all the rooms on one gangway have been driven up. It is thought that by that time the rock pack will have taken some of the weight and when the pillars are removed the upper measures will be supported by the rock packing. Of course there will be some settlement, but it will be gradual, and the measures and surface above will be dropped so easily that no appreciable disturbance will be felt in the other beds of coal or on the surface.

Probably one of the most important factors determin-



ARRANGEMENT OF WORK AT NO. 5 SHAFT, HILLSIDE COAL & IRON CO.

ft. 4 in. thick, the top ripped to make a 5-ft. headroom in the roadways serves to pack the full width of the room from floor to roof.

ing whether any new application of a method of mining will be successful is the character of the roof immediately over the coal and also of the overlying measures. It should be stated, therefore, that on the top of this coal is 2 ft. 9 in. of fireclay, then 6 in. of coal. Over this thin seam is 40 ft. of sandstone. The accompanying legend from a borehole shows the character of the measures from the surface down:

CROSS-SECTION OF MEASURES IN BORE HOLE AT SHAFT

Surface, 10 ft.
Rock, 62 ft.
Grassy Island coal bed, 8 ft. 6 in.
Rock, 43 ft. 9 in.
New County coal bed 2 ft., Not worked.
Rock, 33 ft. 9 in.
Top Clark bed, 8 ft. First mining completed.
Rock, 30 ft.
Bottom Clark bed, 2 ft. First mining being performed.
Rock, 77 ft. 9 in.
First Dunmore bed 2 ft. 9 in. Mining described in article.
Rock, 100 ft.
Second Dunmore bed, 2 ft. 10 in. First mining being performed
Rock, 12 ft.
Third Dunmore bed, 4 ft. 8 in. Mining.

The distance from the surface to the top of the first Dunmore bed is 275.5 ft. Two mining machines are used and they can each cut three 60-ft. chambers in an eight-hour day. It is thought that they will be able to cut three of the 100-ft. chambers as soon as enough of these are started. The cars are transported to the shaft by trolley locomotives.

At present fifty-seven contract miners are employed in mining the coal and from them seventy cars of coal are obtained daily. However, a large portion of the coal comes from development or narrow work. Twelve 60-ft. chambers are being worked and two 100-ft. chambers have been started. Besides this, twelve narrow places or headings and airways are being driven. These do not include the narrow work in driving the roadways for the above mentioned two 100-ft. chambers. So out of fifty-seven men, twenty-four are doing narrow work and these do not include the men driving chamber necks.

An interesting feature in connection with the work is that when the small stringer of coal which lies above the fireclay roof reaches a thickness of 6-in. the miners try to shoot down the rock in such a way as to leave the thin coal undisturbed. After the rock is packed in the chambers they take down this coal and thus often gain a car of coal with a minimum of effort.



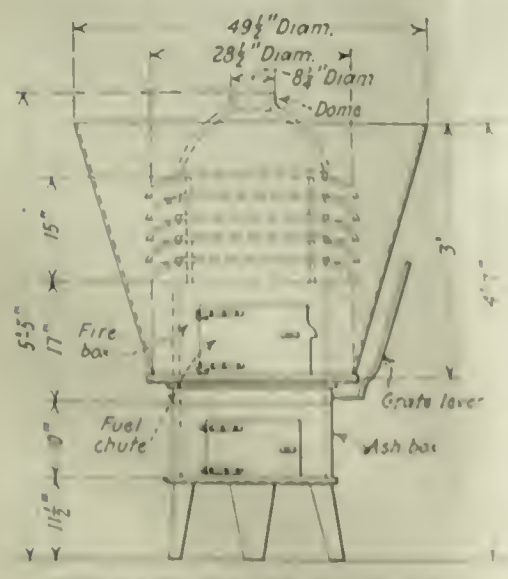
ONE OF THE ROADWAYS IN A 60-FT. CHAMBER

The road packing is shown along the left rib. A small coal stringer is shown above the rock. This is sometimes loaded out. The coal is about 25 in. thick at this point.

Sand Driers for Mine Locomotives

FOR the rapid drying of sand a petticoated furnace drier has been devised which brings almost every part of the sand in close contact with heated metal, reducing the distance through which the heat has to be conducted through the sand itself or convected among its interstices. Sand is a poor conductor of heat, cast iron a good conductor, and the series of "cones" or petticoats around the body of the stove carries the heat into the sand and gives increased capacity to the drier.

It is said that this stove will prepare for service one-half ton of sand in an hour. Smaller quantities, of course, can be dried with lower aggregate consumption of fuel and with less attendance than is needed where maximum output is sought. It is impossible to heat sand satisfactorily when it lies in a body 12 to 18 in. thick as it does in ordinary sand driers. This drier is made by the Roberts & Schaefer Co., Chicago, Ill., as is also the drier now to be described.

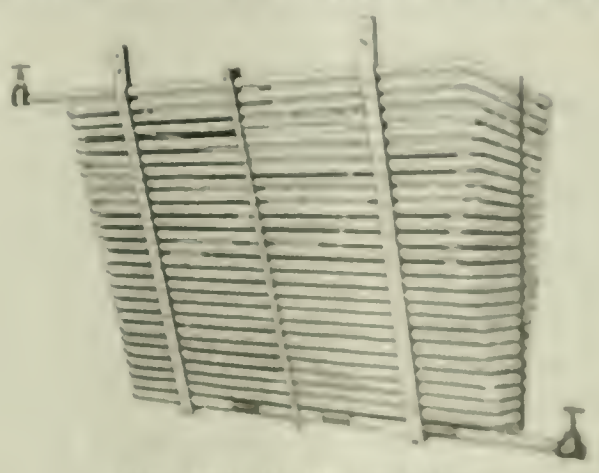


FURNACE DRIER WITH PROJECTING CONES

The petticoats or projections from the walls of the stove carry the heat to the sand and keep it in such condition that heat can pass through it

The Beamer steam sand drier is intended for wet sand. It does not work satisfactorily when relatively dry sand is fed to it. It consists of pipes bent to form the walls of a hopper. Through these steam is passed.

The moisture evaporated from the sand is allowed to escape directly into the atmosphere. This is said to prevent the pipes from rusting and the sand from forming into cakes. Where the moisture is held in a receptacle around the pipes they rust badly. This drier has a capacity of about one-third ton every hour.



HEATER MADE OF PIPE

What Can Be Done to Prevent Electrical Mine Fires

Charred Insulation Allows Current to Pass—Leakage vs. Short-Circuits as Sources of Ignition—How Motors May Cause Fires—Dangers from Exploding Oil-Immersed Switches—Need for Metallic Covering for Cable

By a British Correspondent

IT WAS recently stated in a paper by W. V. King, of the West Virginia Department of Mines, that electricity was credited in the United States with causing during 1916 (the last year for which statistics were compiled) 15,031 fires, entailing a loss of $20,780,307, and that destruction of property from this cause was increasing annually. Moreover, coal-mining plants were bearing their share of the burden, few standard electrical installations being found at collieries.

In view of these facts it seems possible that the development of the use of electricity in mines may later be retarded if means are not taken to effect a reduction in the number of such conflagrations. Of the two principal causes of electrical fires—leakage and overloading—the former undoubtedly is responsible for the greater number of these accidents. Of course, when one refers to leakage, the term may be taken to include short-circuits, although electricians generally differentiate between one and the other.

A short-circuit admittedly is a leakage, but it is an exceptionally heavy one, more or less completely localized and of short duration. On high-voltage systems it usually is attended by a report which in some cases might be termed an explosion, for it scatters red-hot metal and burning oil or insulation throughout its immediate vicinity. The redeeming feature of a short-circuit, however, is that it seldom occurs without attracting attention. Steps accordingly may be taken to cope with the fire that the short-circuit may occasion.

Leakage Is Real Danger

The greatest danger from fire is not from the short-circuits themselves but from the leakage that is likely to occur prior to its development into a short-circuit. Leakage cannot be entirely eliminated from any system, however efficient may be its insulation. Moreover, the larger the system, the greater the leakage, as additions to a network of cables increase the number of possible leakage paths and reduce the aggregate resistance offered to leakage. This form of current loss is objectionable only because of its importance economically. Seeing that it is distributed over a large surface, radiation is sufficient to prevent a dangerous heating.

It is obvious that the more localized a leak becomes, the closer it approximates to a short-circuit and to the point where sufficient energy passes to cause the insulation or other inflammable material to ignite, although an actual short-circuit may not develop for some time. It is under these conditions that unexpected fires occur which may attain appreciable proportions before being discovered.

Closely associated with leakage as a problem is the pressure, or voltage, of the leaking equipment. In a mine, or indeed in any kind of installation, it is false principles to install low-pressure equipment with the idea that thereby the dangers from fire will be largely eliminated. Of course, with a low-pressure system the insulation is more easily maintained in a condition that will prevent leakage than with a high-voltage system, but as a rule when low-pressure equipment is installed the insulation often is neglected, partly because the danger from shock is considered unimportant but chiefly because an idea prevails that any condition of insulation not actually permitting a short-circuit is all that is required.

Electrical apparatus employed in coal mines nearly always is exposed to dampness. Conditions vary widely in different parts of the same mine. In some places apparatus may be exposed to dripping water, and in others, such as return airways, it may be subject to the action of a moisture-laden atmosphere, which is peculiarly destructive to insulation and is responsible for much surface leakage. This latter usually leads to serious results. Insulation sometimes becomes charred and thus rendered more conductive, allowing a larger leakage current to pass.

Thus the ill effects are cumulative, and surface leakage caused by dampness is responsible for a large percentage of electrical fires. Furthermore, leakage may be caused by neglect to examine the equipment installed and to repair promptly any defects that may develop. In many mines also, electrical apparatus is subjected to serious overloading. This is especially true of haulage equipment. Damaged roads and derailed cars are the most fruitful causes of difficulties, but, in addition, the number of cars making up trips frequently is in excess of the normal capacity of the equipment. It is often difficult to prevent persons responsible from exceeding the stipulated number.

Adequate Supervision Necessary

The whole matter of eliminating fire risks, given suitably designed apparatus, hinges upon adequate supervision and the maintenance of all equipment in good repair. The purpose of this article, therefore, will be to give a few practical suggestions as to the manner in which electrical apparatus may be kept in such condition as to avoid fire risks. To enable the ground to be covered properly these remarks will be divided under four heads, namely: Electrical machinery, control apparatus, cables, and grounding.

Electrical windings of all kinds require systematic attention if they are to be kept in good condition and free from fire risk. Undoubtedly, the greatest danger occurs when a short-circuit takes place in the windings of a machine that has been neglected. The dirt that usually accumulates in such places will be found to contain a large percentage of fluff, which is highly inflammable. In that event a spark will be sufficient to cause it to ignite. With a high-speed machine, the draft created by the rotation of the armature will quickly start a fire. Moreover, smoldering fluff is so light that it is likely to be scattered onto inflammable material or the dust by which the machine is apt to be surrounded.

Of course, systematic cleaning is the remedy, and this should be effected by means of compressed air wherever it is available. It is questionable whether the usual form of blower sold for this purpose is as effective as it might be. The volume of air is ample, but the pressure is insufficient to dislodge dust and fluff that may be sticking to the windings. However, this may be partly overcome by keeping the surface of the windings as smooth as possible by applying insulating varnish liberally at regular intervals. This, of course, in addition to facilitating cleaning also renders the windings proof against dampness.

Brushes and brush-holders, slip-rings and commutators are fruitful sources of leakage. This is mainly on account of carbon and copper deposits from the brushes collecting current from various parts of the machine. If left without attention, a continuous path will soon be formed along brush spindles and arms, and surface leakage will be set up, often with disastrous effects upon insulation, brushes and sleeves. Motors of the slip-ring type working below ground should always have their slip-rings inclosed in flame-proof enclosures, but thereby heat-radiation from heavily loaded brushes and holders often is impeded. Thus it is not uncommon to find high temperatures existing under such conditions, especially where carbon brushes are employed.

Combination Brushes Give Best Results

Much better results may be obtained by substituting for pure-carbon brushes a combination of graphite and copper. This gives a contact of a high conductivity and at the same time limits the temperature rise in both sliprings and brush holders to a few degrees above that of the surrounding atmosphere. This suggestion, for obvious reasons, does not apply to commutator brushes and holders, but a commutator usually can be kept at a low operating temperature by a judicious selection of brushes.

Many breakdowns both on alternating- and direct-current machines are caused by oil that has leaked from ill-designed bearings. The oily surfaces, whether on brush gear or windings, readily collect dust which eventually clogs air ducts and may form conducting paths over which electrical leakage may occur. In addition to this, dust may cause bad contact on slip-rings and commutators, and expose the latter to short-circuits between bars, with consequent damage to windings.

Oil leakages should be stopped at all costs, and no machine should be accepted from the makers if it suffers from this defect. Oil throwing may be traced to a number of causes. In the case of high-speed machines it is often brought about by excessive axial draft, especially in self-ventilated semi-closed or totally enclosed motors. Worn bearings and too much end play in many instances are the cause of oil throwing. Many remedies suggest themselves, but designs vary so widely that the steps to be taken must always depend on local conditions.

Under the heading of control apparatus falls the ordinary type of open knife switch, with the usual fuses as well as with enclosed, and oil-immersed switches fitted with overload release. It hardly need be pointed out that any form of open-type switch is objectionable in a mine whether gas is or is not likely to exist. There is always the possibility that sparks will be thrown off when a switch is opened under heavy current. Moreover, contact parts of open switches become oxidized and heating often results. This heating is not always confined to the switch but finds its way to terminals, causes oxidation of the various connections and sets up serious overheating, which may result in the ignition of the cable insulation if this consist of inflammable material.

Then there is the possibility that sparks from a blowing fuse will start a fire. This is a real danger when short-circuits occur. To insure safety all open-type switches should be amply protected in order to prevent sparks being thrown onto surrounding material and also to prevent their falling from the coverings which should always be installed to protect operators from shock. Such coverings should be lined with asbestos, and if they are of metal they should be efficiently grounded.

The switch contacts should be frequently cleaned and smeared with just a little vaseline to prevent oxidation. Fuses ought always to be of a type that does not lend itself to replacement by pieces of wire, which in many cases are inserted indiscriminately by unauthorized persons and which afford little or no protection to apparatus in circuit. Furthermore, fuses, where used, should be totally inclosed in a metal case, though ample ventilation should be allowed, for all fuses, if designed to give protection worthy of any consideration, normally work at a fairly high temperature. If too confined the current will cause heating at terminals and contacts and often the melting of solder from cable lugs.

It is unnecessary to open fuse boxes for daily examination. Once the temperature of a box, when working under normal conditions, has been ascertained, any rise in temperature arising from hot contacts or connections immediately will be made apparent by merely placing the hand against the fuse-box cover. Inclosed oil-immersed circuit breakers as a rule are exceptionally safe pieces of apparatus, especially when fitted with proper inlet and outlet terminals. The temperature of switch tanks should be noted frequently by feeling them with the hand. If they are found warmer than is normal, the cause of the increase immediately should be ascertained.

Overheated Switches Are Dangerous

The oil of high-tension switches working in moisture-laden air may become overheated as a result of moisture penetrating the liquid and lowering its insulating properties. In spite of their reliability, overheated oil switches are dangerous because of the possibility that gases may accumulate in the air space above the oil and be ignited. An accident of this kind may cause a serious explosion, throwing hot and possibly burning oil in all directions. However, this may be minimized by the use of suitable safety valves on all switches. Among the precautions necessary to eliminate fire should be mentioned that of seeing that these valves are kept in proper condition as well as providing such valves where the makers of the apparatus have neglected to do so.

In this connection an improvement recently has been made. Instead of providing a safety valve in the cover of a switch or transformer, spring bolts are substituted, allowing the covers, under an internal pressure of a few pounds per square inch, to overcome the spring tension on the bolts and to rise about ¼ in. This will relieve any internal pressure caused by an ignition of gas within the apparatus. It is necessary, of course, that wide flanges be employed in order to provide a satis-

Fires may be caused by inefficient grounding. Where a motor or transformer is left ungrounded and is surrounded by metal floor plates in contact with the frame of the apparatus, not only is there a possibility of the frame becoming live but also the floor. Instances have been known where metal floors, more or less insulated but in contact with motor frames, have been charged to an extent enabling large flashes to occur between them and any grounded metal work such as steam or water pipes.

Should such arcing take place in the vicinity of inflammable material a fire may easily result. Furthermore on systems operating with a grounded neutral one advantage of having all framework also grounded is that circuit breakers and other forms of protective apparatus operate with certainty in case of an insulation breakdown to earth.

In connection with the operation of coal cutters efficient grounding is more important than any other detail of installation because of the possibility of gas ignition by sparking in unexpected quarters. For instance, a coal cutter partly or entirely ungrounded may develop a leak to its frame and current be conveyed along its hauling rope to a compressed-air or water pipe with which it may come in contact. Flashing thus may take place, and an explosion may occur at an appreciable distance from the coal cutter which is really the direct cause of the difficulty. Similarly leakage may find a path to an isolated section of rails at the face, with results similar to those already referred to. It seems highly possible that many colliery explosions have been caused by leakage finding its way to ground at some distance from the actual source.

Conduit Wiring Is Preferable

Finally there is the danger of fire from electric lighting above and below ground. Perhaps nothing electrical about a colliery suffers more abuse than the lighting system, especially if this be composed of old-fashioned open wiring that enables unauthorized persons to meddle with the conductors. It is well known that such systems soon fall into a state of disrepair, the wires eventually leave their insulators and are fastened in all sorts of ways, more often than not in contact with timbers laden with coal dust. This kind of wiring constitutes a danger that should be obvious to anyone in charge of a mine installation and responsible for its safety.

All wiring, whether above or below ground, should be run in conduit unless some form of armored cable is employed together with suitable fittings. Lamps should be provided with guards to prevent their coming in contact with inflammable material. Little danger of this kind exists with the modern metallic-filament lamps, but those with carbon filaments, of which large numbers are still in use, constitute a serious danger.

In one instance of this kind a 32-cp. carbon lamp came in contact with a scaffolding plank at a screen. The wiring had become deranged and the lamp was actually lying on the plank, which was covered with coal dust. When discovered, a hole had been burned through the plank and the wood surrounding the hole was smoldering. Exactly how long it took to burn this hole through a 2½-in. plank was not known, but this occurrence gives a fair indication of the heat generated by carbon lamps and serves as a warning to keep them out of the mine unless they are properly protected.



Coal Mining Institute of America's Biggest Session—I

One Brakeman Killed in Every Hundred and Twenty—New Constitution Adopted—Timber Preservation Makes Red Oak More Durable Than White—Staleness of Air Aids Breathing and Suggests Resuscitation Method

MUCH interest was occasioned at the meeting of the Coal Mining Institute of America held in the Chamber of Commerce Building, Pittsburgh, Pa., Dec. 13, 1922, in the powerful address of the President, Rush N. Hosler, and in his significant statements as to the dangers of mining. He prefaced these remarks with the maxim that "You must know the symptoms before you can diagnose and prescribe for the disease. In Pennsylvania we have gone further in analyzing coal-mining accidents than in any other state or county, as far as is known, with the result that we have been able to point out certain facts relative to accidents which, once known, should prove a stimulant to accident prevention in this state."

He then went on to say that "for every five employees in and around the mines in Pennsylvania one is injured every year severely enough to require medical attention, this injury being anything from a slight wound requiring a surgical dressing to the loss of a life.

"Another fact of special significance is that haulage operatives by actual count made in inspecting nearly 1,500 bituminous mines in Pennsylvania, though constituting only 10 per cent in round numbers of all employees at those mines, had in the six-year period, 1916 to 1921, 26.6 per cent of the accidents."

The author presents tables I and II, in which these accidents are tabulated in much detail. In fact Mr. Hosler gives here many details not available as regard the accidents in any other state and long sought by persons anxious to reduce haulage hazards.

TABLE I—CAUSES OF ORDINARY OUTSIDE FATALITIES ON MINE HAULAGE IN ALL BITUMINOUS MINES IN PENNSYLVANIA, 1916-1921

		Place of Fatality				
Cause of Fatality	All	Power Plant	Tipple	Haulage	Road	All Others
All	65	1	16	34	13	1
Wrecks	18		3	8	7	
Collisions	2		1	1		
Derailments	7		1	3	3	
Runaway trips	9		1	4	4	
Caus'd by cars—	37	1	10	18	7	1
Falling from	9			4	4	
Getting on or off	5		1	3	1	
Braking or spragging	4		2	2		
Coupling	3		1	2		
Throwing switch	2		1	1		
Pushing car	7		4	1	2	
Working on track	2				1	1
Walking on track	5	1	1	3		
Squeezed—Scant clearance	2		1	1		
Falling from—not rel'd to cars	3		1	1	1	
Pushing cars—Horses	2		1	1		
All others	1			1		

TABLE II—CAUSES OF ORDINARY OUTSIDE FATALITIES ON MINE HAULAGE IN ALL BITUMINOUS MINES IN PENNSYLVANIA, 1916-1921

		Place of Fatality				
Cause of Fatality	All	Slope	Entry	Room Work	Working Place, Entry	Working Place, Chamber
All	609	32	471	43	33	44
Wrecks	248	19	180	19	8	19
Collisions	50	3	43	1	1	2
Derailments	148	7	102	14	3	11
Knocking out trigger	30	1	17	5		6
While on motor or trip	81	4	63	4	3	7
Working on track	7		5			2
Walking on track	16	2	10	4		
Car running into working place	15			6	3	6
Struck by cars and wrecks	193	11	136	5	5	6
Falling from	53		50			3
Getting on or off	48	4	41			3
Braking or spragging	13	1	12			
Driving mule	4		3	1		
Coupling	34	1	32	1		
Throwing switch	6		6			
Opening door	7		7			
Pushing car	13		5	1	1	6
Working on track	4		4			
Walking on track	31	1	26	1		3
Cleaning mud pipes	2		1	1		
Stunned at landing	1				1	
Struck by cars and not by	122	1	86	11	3	21
Driving motor cars	29		17		3	9
Getting on or off	14		13	1		
Braking	13		9	1		3
Driving mule cars	14		12	2		
Coupling	11		10	1		
Throwing switch	4		4			
Opening door	5		5			
Pushing car	21		16	1	1	3
Working on track	5		3	1		1
Walking on track	17	1	13	1		2
All	81	1	66	1		13
Squeezed between trips and coal	6		5	1		
Struck by projecting cars	5	1	3			1
Clearance too small	5		4	1		
Caught between cars and coal	3		1	1		1
Tender pole	3		3			
Cars running away	3		2	1		
Cars running	3		2			1
Horses and mules on haulage	11		11			
All others	3		3			

"These figures are the more striking," said Mr. Hosler, "when it is stated that they show that one employee in every 250 engaged in haulage is killed each year and that annually one boatsman and [illegible] pilot

[illegible] Pennsylvania during the current year. The Coal Mining Institute of America at this [illegible] Pittsburgh, Dec. 13. About seventy-five members [illegible] which constitute the general session [illegible] papers for this half day's [illegible] mine foreman's examination [illegible] Coal Mining Institute [illegible] Pittsburgh [illegible] continued on

in every 120 engaged in that work (however is killed." Mr. Hosler concluded with a strong appeal that the owners of mines exhibit an increased sense of their obligation of affording safety to the men they employ.

Stating that the bank balance was $2,407.82, the expenses $2,005 and the net balance $402.82, excluding $1,000 in Liberty Bonds, the secretary-treasurer, H. D. Mason, Jr., declared that by inducing old members to renew their pledges a debt of $1,253 at the beginning of the year had been wiped out and replaced by a substantial balance.

Sixty-five per cent of the membership, or 1,323 members, were in full standing for 1922. There were 1,603 members at the beginning of the year and 2,033 at the close, that is 430 new members were received during the year. The secretary reported the deaths of E. A. Bailey, J. S. Caslin, E. H. Downey, Charles L. Fay, Samuel T. Oldham, F. S. Peabody, E. C. Northover, G. J. Salmon and J. G. Smythe.

Richard Maier Made Institute President

Richard Maier, mine inspector at Uniontown, was elected president. Nicholas Evans, mine inspector of Johnstown; R. N. Hosler, retiring president of the Institute of Harrisburg and W. E. Fohl, consulting engineer of Pittsburgh, were chosen vice-presidents.

The following additional executive committeemen were elected: A. R. Pollock, Curtisville, Pa.; Frank Hall, Harrisburg, Pa.; M. D. Cooper, Pittsburgh, Pa., and John I. Pratt, Pittsburgh, Pa. H. D. Mason was re-elected secretary-treasurer. The new constitution was adopted by a vote of 135 yeas to 6 nays.

Silas S. Riddle, chief of the bureau of rehabilitation, Department of Labor and Industry of Pennsylvania, read a paper on "The Rehabilitation of Injured Mine Employees" and urged that all coal companies try to find places for men who are injured. He pointed out that sometimes by shifting an injured man from one easy job to another it might be possible to find work for a man who could fit only a place where the work was exceptionally easy. Thus at one mine where the foreman believed that all the jobs for disabled men had been filled, a man with a wooden leg who had been bell ringing at the shaft was made a motor runner, and the bell ringing was handed over to a man who was ever less fitted for active work.

He said that his bureau was not equipped to give assistance wherever needed. In fact it had a total appropriation for all industries of only $50,000 a year and yet there were 140,000 injured annually in the industrial plants of the State of Pennsylvania. The bureau could not offer even to find mechanical limbs for the injured. Not only were there 140,000 injured a year but there were injuries of previous years, to say nothing of those that predated the establishment of the bureau.

W. L. Affolder said that the wish to employ injured men, especially those injured in other works, was halted by the fear that another injury might put the man into the totally incapacitated class and cause the company for whom he then was being employed to pay the large indemnity that goes with total incapacitation instead of the smaller sum that would be paid for the secondary injury if that were the only one sustained. For this reason many companies refuse to employ men who have been injured at the mines of other companies.

Mr. Riddle replied that when a man who has lost one eye is employed by a company and then in their employ loses the other eye he is compensated as if he had been possessed of two eyes and had lost but one. This causes the man to lose full compensation for his disablement, but it is thought better to do this than to bar the man from employment by establishing a principle that would be unfair to the employing company. New York State and Minnesota have special funds to take care of such cases.

In reply to Nicholas Evans he said that the 400 men who were aided by the rehabilitation bureau had expended on them an average of $195. The act did not limit the age of recipients. The requirements of the act forbade the giving of this class of help to aged, helpless, feeble-minded or epileptic persons. Their recourse was to the recognized provisions for assistance. Any man injured at work who can profit by rehabilitation is entitled to help if the bureau is financially able to afford it. The bureau is not a relief organization. Furthermore, it should not undertake to prepare for clerical jobs men whose education has been neglected in youth.

After the noon recess N. S. Greensfelder, of the Hercules Powder Co., showed pictures of strip-pit mining at the William Penn Colliery, of the Susquehanna Collieries Co. The cover at the point shown was about 15 ft. deep, but it was explained that it was deeper further in. It was stated that this was the reason why distant-removal stripping was used as against casting stripping, but one cannot help questioning why, where there is much stripping to be done, casting should not be adopted up to the point where the cover is 40 or 45 ft. deep and distant-removal stripping be used thereafter. Of course if the pit is short and the lightly covered material not wide the large shovel would prove uneconomical, as the cost of setting it up is considerable.

The illustrations showed the lacing in of Cordeau Bickford, the method of attaching side fuse lines to the main lines by simple cutting and wrapping and the exploding of the charges. It was explained that the cordeau has a speed of flame propagation of 17,500 ft. per second and so will explode several holes almost instantaneously. The dynamite is dropped in the holes and tamped with coal dust by a wood dolly. It is said that the cordeau is more rapidly connected than electric wiring, can be safely shipped by express and is economical of explosive.

Not Deep Cut But High Pile Is Troublesome

At the close of Mr. Greensfelder's remarks, S. A. Taylor delivered an address on bituminous strippings, saying that the operation of a casting stripping was limited not so much by the depth of cut as by the height of the dumped ground. A 40-ft. cut will make a 65-ft. fill, and it takes a big shovel to deliver material at such a great height above the ground.

Mr. Taylor remarked that alfalfa was now being planted on stripped areas and showed a picture exhibiting how luxuriant was the growth where this was being done. It was necessary to prepare the surface by the planting of clover. The fact that strippings thus can be utilized will do much to meet objections which farmers have advanced against this method of mining.

The question box was opened by Nicholas Evans in place of W. E. Fohl, who was unable to be present. F. W. Cunningham responded to Question 1, as to the most important point to be considered when entering a mine after an explosion. As might be expected, the query did not submit to any satisfactory answer. Mr. Cunningham said that after the fan had been started,

the party should go in as far as the first crosscut and then, before admitting the air any further, should explore thoroughly the area that the air would have to traverse to see whether any fire could be found therein. Some mines were known to be peculiarly subject to second explosions, but by care to explore all places before ventilating them this fatal defect might be avoided.

Richard Maize, Jr., stated that it was safe to go as far as the air already was circulating at the time the mine was entered, but any further progress must be made with care and as Mr. Cunningham had indicated. To Joseph Knapper the most important matter was to see that all the reliable men were not taken into the mine. He urged that the man who is left with the fan also must be reliable. At the Cherry disaster the man in charge of the fan reversed it and turned the bad air onto the explorers and thus asphyxiated them.

Question 2, as to the methods of stream pollution, was not discussed and question 3 brought some discussion from those who had mined coal and visited coal mines in the anthracite and western bituminous regions but nothing of any detailed character. It was obvious that mining men from the bituminous fields of Pennsylvania were not the most well-equipped men to discuss the mining of coal 30 ft. or more in thickness and on a grade of 30 deg.

N. S. Greensfelder, of Wilmington, Del., was called on to discuss the methods of electric shotfiring and presented the paper he had prepared for the American Institute of Mining and Metallurgical Engineers. J. S. Burton, of Clarksburg, W. Va., said that electrical methods of shotfiring were safer than those with the use of fuse but somewhat more expensive. With electrical caps there was greater certainty that the shot would go off and, moreover, it goes off promptly, saving for shoveling the time spent in waiting for the fuse to ignite the charge.

Avoid Danger of Synchronous Shots

M. D. Cooper related a case where two rooms were being driven up. Both were in about 50 ft. The men lighted shots with fuse at approximately the same time. Both men came out to the entry and awaited the result. A shot went off. Both of the men believed it was his shot and after a brief delay went in to see what had happened. One of the men whose shot had been delayed arrived just in time to receive the force of the blast, and a death resulted.

Mr. Cooper stated that this would not have occurred with electric shotfiring if only one battery had been provided. Mr. Maize added that even if each man had a battery and both fired at the same time, there could be no risk, for the men would disconnect their batteries before examining their places, and an explosion could not occur. Mr. Cooper urged that owing to strikes inexperienced men entered the mines and the safest method of operation was to employ shotfirers. If the law of Pennsylvania relative to that matter were lived up to there would be no accidents.

Mr. Maize said that electric shotfiring was the surest way of eliminating the short fuse and its dangers. The use of any fuse but electric is to be condemned. It was urged that the dry-cell battery be done away with. Mr. Greensfelder said that the battery approved by the U. S. Bureau of Mines cost $18, and Sim Reynolds said that the price was too high if every miner had to be provided with one.

W. C. Hoyt responded to the question as to the best practical method of preserving timber and said that the best of all equipment, the pressure chamber, was too expensive for a single mine. Large timbers could be brushed, and smaller material should be immersed. He showed lantern slides of this class of work.

W. L. Affelder said that when putting in a coke-loading machine he had given half the ties a brush coat of Carbolineum. After seven years, twelve ties were taken out. Six that had not been coated were "rotted to the last possible degree" whereas six which had been treated were in splendid condition. What was more the untreated ties were white oak and the treated ties red oak and hence in themselves less durable.

Treat Timber Where Long Life Is Sought

It was now the accepted practice of the Hillman Coal & Coke Co. to give protective treatment to all railroad ties and to all ties used in the mines except where they are employed in the rooms. All structural material hereafter will be treated with a preservative. It is the intention to brush coat the large and dip the small material.

Dr. Yandell Henderson then described his experiments into the effect of oxygen and carbon dioxide in resuscitation made possible by a grant from the American Gas Association. As a result of this investigation he had designed an inhalator which was equipped to administer oxygen to which 5 per cent of carbon dioxide has been added. Carbon monoxide has three hundred times as much affinity for the hemoglobin of the blood as oxygen, and when breathed in even small quantity will displace the oxygen in the circulatory system. Apparently carbon monoxide has no effect on the nervous system. Its action is secondary through asphyxiation or, as it might be termed, lack of oxygen.

A person supplied with pure oxygen does not show an ability to breathe it if his respiration has been impaired yet a man asphyxiated by carbon monoxide needs to breathe more heavily than another, for he must rid his blood of the poison. It is carbon dioxide and not oxygen, which stimulates breathing. It is only when we are in stale air or have stale air in our lungs that we are disposed to breathe.

In Dr. Henderson's experiments six dogs were asphyxiated with carbon monoxide. Three were given pure oxygen. Two of these were revived and one died. The recovery was slow, however, and uncertain in the case of those that were revived. Three were given oxygen mixed with 5 per cent of carbon dioxide. In two minutes the animals began to breathe rapidly.

After that Drs. Henderson and Haggard experimented on themselves and the two tests they made showed the excellent effects of the combined oxygen and carbon-dioxide treatment. Carbon-monoxide poisoning causes a severe headache, but with this treatment the pain is much reduced. The inhalator is arranged so that 6 or 7 liters of air is provided per minute at the start. As the patient becomes stimulated to deeper breathing the valve is opened till at last 30 liters of air is drawn in.

This is about the limit desirable. It is not well to allow the patient's breathing to be stimulated by too much carbon dioxide, as a valve is arranged to open and give him natural air, which relieves that stimulation and slackens the breathing. Dr. Henderson added that he had gone on the emergency ambulance to attend fifty or sixty cases of asphyxiation by artificial gas. Among these were at least a dozen that were badly gassed, yet all responded rapidly to the treatment.



Problems of Operating Men

Edited by James T. Beard



Humidifying Mines Operated on the Exhaust Principle of Ventilation

Use of Steam Not Confined to Blowing System of Ventilation—Mine Must Be Suitably Planned When Exhaust System Is Employed—Changes Required

REFERRING to the suggestions of James Ashworth, mining engineer, contained in his letter, *Coal Age*, Sept. 28, p. 487, in which he requests further information and data regarding the humidification of a mine, as described in my previous letter, I regret being unable to give the succinct figures he desires. What figures I have are disconnected and seldom bear any relation to each other.

In my study of the subject, what has interested me more has been the practical side of each separate case, rather than the theoretical aspect of the matter. The problem seldom required my rounding the notes taken longer than to complete the task in hand. To publish these rambling notes and figures would interest no one.

Although it might have been brought out more clearly, it is quite evident that my previous article had reference to the blowing system of ventilation. In one place, I stated that, in all cases where the fan is a blower, exhaust steam turned into the ventilating current will do all that its advocates claim. Also, the illustration given shows the fan installed exclusively as a blower.

Humidifying in Exhaust System

Although the question of humidifying a mine in the exhaust system of ventilation presents greater difficulty than in the blowing system, owing to the use of the intake roads for haulage and as travelingways, it must not be supposed that the use of steam for this purpose is confined to mines ventilated on the blowing system.

Many operators partial to the exhaust system, have arranged their ventilating apparatus so that the air currents can be reversed in the mine. As long as warm weather lasts the fans are run exhausting, but in the colder months, the circulation is changed to the blowing system, in order to permit the use of steam to humidify the intake air.

Even in all cases, it will generally be found possible to introduce the steam into the intake air in such a manner as not to interfere with the haulage of the coal or the use of travelingways by the men. In order to make this clear, I have introduced a plan of an old mine ventilated on the exhaust system, showing the changes that were made to enable the introduction of steam in the intake air, without materially interfering with the haulage requirements.

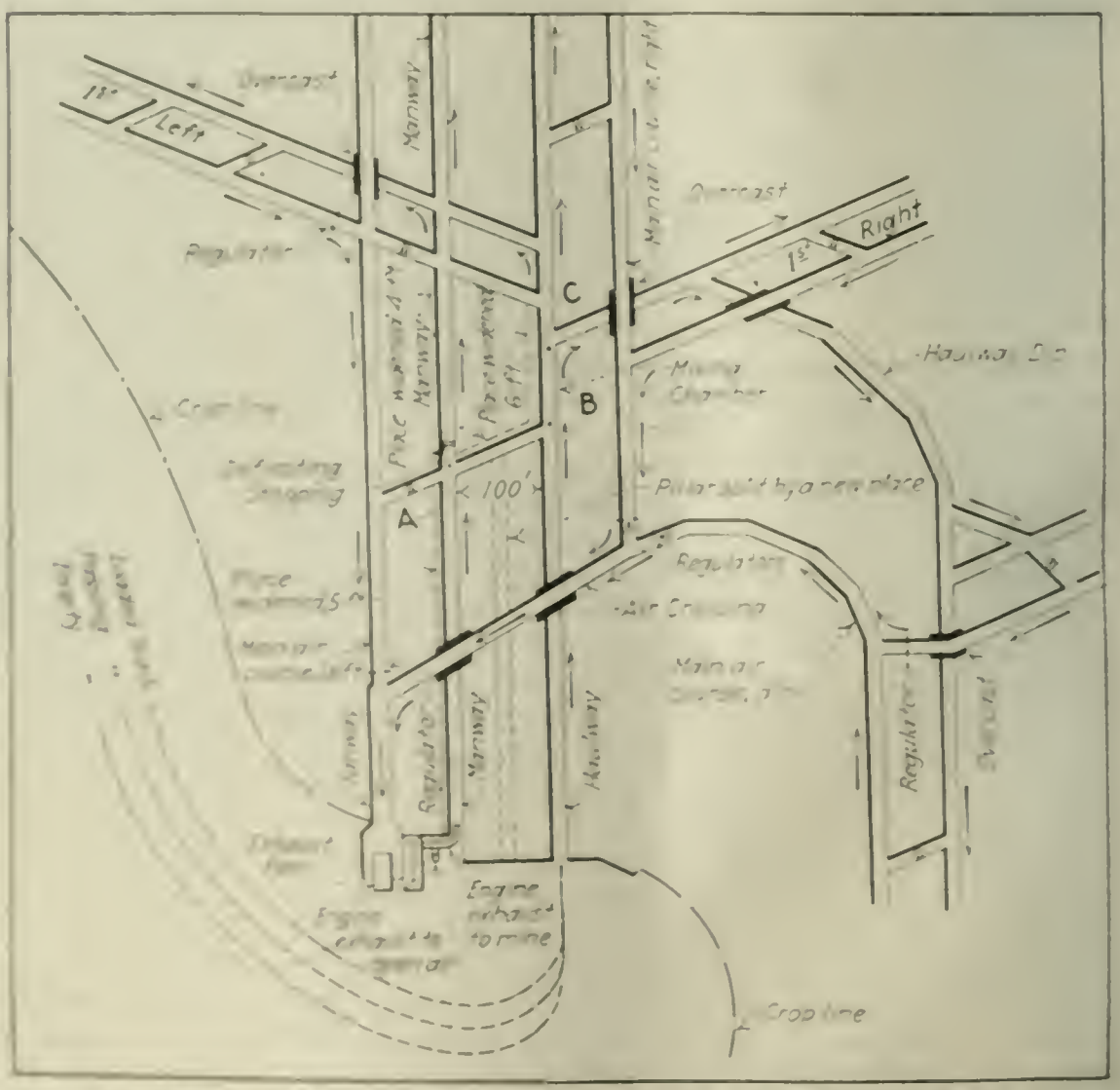
Present Arrangements in Mine

In this mine, the main headings were driven four abreast. The two center headings were used as a main haulage road and manway, respectively, while the two flank entries served as return air-courses for the two sides of the mine. In order to cut down the ever-mounting cost of ventilating the mine, it was finally decided to utilize the exhaust steam of the engine to moisten the mine air.

It was first thought to make arrangements that would enable the air current to be reversed at times when it was necessary to humidify the air. The estimated cost of making this change was so high, however, that the scheme was abandoned for the time. It was then determined to experiment by introducing the steam into the manway, which was temporarily abandoned as a travelingway.

Changes Made as Result of Experiments in Mine

A stopping was first built in the manway, 5 or 6 ft. inby of the point *A*. The air entering the manway was thus deflected through the crossover to the haulage road, at *B*. By this change, the total volume of air entering the mine was reduced from 119,800 cu.ft. per min., to 114,300 cu.ft. per min. Formerly, 47 per cent of the air traveled the manway, and 53 per cent, the haulage road. After building the stopping at *A*, only 44 per cent of the air entered the manway and 56 per cent traveled the haulage road. Practically, all of the loss thus occurred in the manway, and about the same volume of air entered the haulage road as before.



PROPOSED CHANGES REQUIRED TO HUMIDIFY EXHAUST MINE

The change made it a little breezy on the haulage road, from *B* to *C*, where the total volume of air was passing. However, the men soon learned not to light their lamps until after they had passed this portion of the road. Both the haulage road and the manway were electrically lighted, so that no individual lights were needed there.

Temporary piping was now installed to conduct the exhaust steam of the engine into the manway. When that was done, the men traveled the haulage road as far as to *C*. It had been feared that the moist air coming from the manway would make the haulage road, from *B* to *C*, too wet, hot and foggy, for comfort. There was no fog, however, and one could stay at that point, for an hour, without being wet. Indeed, one could travel the crossover, from *B* to within 15 or 20 ft. of *A*, proceeding against the steam-laden air without feeling discomfort.

Continuing the Experiment

The next step, by way of experiment, had for its object increasing the percentage of air traveling the manway, so as to secure a greater effect in the humidification of the workings. To that end, a wooden brattice was built at the entrance of the haulage road, so as to leave only sufficient room for the cars to pass and about a foot of headroom above the locomotive.

The effect of this obstruction on the haulage road reduced the total air volume entering the mine to 96,700 cu.ft. per min., of which 78 per cent, or 75,400 cu.ft. traveled the manway. It was then found possible to walk to a point 20 or 25 ft. outby from *A* and facing the steam-laden air current entering the manway.

Naturally, these changes increased the water gage at the fan, the increase being from 1.67 to 1.81 in. Contrary to expectation, the increased velocity of the air in the manway did not lengthen the distance required for the complete absorption of the steam by the air current. Instead, this distance was shortened by at least 50 feet.

Moreover, owing to the increased water gage, the work performed by the engine was increased and more steam was discharged into the manway and at a higher temperature. During a whole winter, the mine was operated on this plan with very satisfactory results in respect to the moistening of the dust. The total circulation, however, having been reduced from nearly 120,000 cu.ft. per min. to something less than 97,000 cu.ft. per min., caused a natural scarcity of air in the wet dip workings.

Restoring Loss in Circulation

Finally in order to restore this loss of volume and, at the same time, provide a new manway, so that the men would not be compelled to travel the haulage road, an entry was driven in the pillar, between the haulage road and the old manway, as indicated by the dotted lines in the accompanying figure. Also, as indicated by dotted lines, the old manway, the crossover and a portion of the main haulage road to the first left headings beyond *C* were all widened. These changes had the desired effect of increasing the total air volume to 121,700 cu.ft. per minute.

During the very cold winter of 1917-18, the engine, running at its normal cutoff, failed to supply sufficient steam to warm and moisten the air entering the mine. This difficulty was overcome by lengthening the cutoff to 85 per cent of the stroke, which made it necessary to fire the spare boiler and employ an extra stoker in the daytime. Even then, it was estimated that the cost was far less than by sprinkling.

New York City. F. C. Cornet.

Gas Menace in Mines

Seeking a reliable test for safety lamps —Disadvantage of the carbide test— Few collieries equipped for testing lamps—Bumps and gas.

When reading two recent letters in *Coal Age*, Nov. 9, p. 760, one by a fireboss, relating to the testing of safety lamps with a carbide lamp; and the other by a mine foreman, treating on the subject of bumps in coal mines, I was particularly impressed with the menace of the presence of gas, in the mining of coal.

In all matters pertaining to safe mining, nothing is more useful than the personal experience of men who are in constant daily touch with dangers that must be guarded against if they are to be avoided.

Explosive Mixture Must Surround Lamp as in the Mine

Probably the most important matter pertaining to safety in coal mining has to do with the presence of gas in mines. The seeking of a reliable test, to demonstrate that a safety lamp is in proper condition to be taken into a mine, is a matter that should interest all engaged in that industry.

The carbide test, described by the fireboss just mentioned, is doubtless a severe one if properly applied. However, at a large mine where there are, say a thousand lamps to be tested, it would be practically out of the question to attempt to follow such a plan with each lamp. Too much time would be required for making the test.

In my opinion, moreover, the explosion of the acetylene gas within the lamp would have to be very violent, in order to pass flame under a lamp washer beneath the glass of a Clanny lamp. The violence of the explosion would cause flame to pass through the wire gauze, before revealing the lamp washer under the glass.

What is needed is not such a violent explosion within the lamp, but rather a condition that corresponds more closely to what is attained in the mines where the lamp is liable to be exposed to an atmosphere of gas completely surrounding the lamp.

Desirable as it is to have a reliable test that will demonstrate the [illegible] of a safety lamp, before it is taken into the mine, I regret to say that few collieries are equipped for making such a test in a practical manner. For that purpose, the lamp should be immersed in an explosive mixture contained in a box or small chamber having a glass window to observe the effect of the gas on the lamp.

At one large, up-to-date colliery, I found such a testing chamber that had been arranged but failed to serve the purpose intended, as the lower air ring of a Wolf lamp placed in the box was not exposed to the gas. The gas for testing lamps was taken from the city gas mains.

Gas May Follow Bumps

Before closing allow me to refer to the second feature of the letter mentioned. Speaking of bumps occurring in mines, the mine foreman who wrote the letter makes no reference to the outbursts of gas that may accompany or follow the bumps.

While bumps in mines are dangerous, they are far less so than many outbursts of gas that have occurred. In some instances, the outburst has thrown down tons of coal and filled the mine passageways with gas and suffocating dust.

In addition to the useful information contained in that letter, it would be interesting to learn if the correspondent has ever experienced these serious bumps, in operating a mine worked on the longwall system. It would also be interesting to know if there were any faults in the immediate neighborhood of the mines where the bumps occurred.

In the same connection, let me suggest the practicability of stowing of waste in the worked-out portions of mines, by the hydraulic process, which some may style "flushing." Such a stowing of mine waste might prove an effective means of eliminating both bumps and such outbursts of gas as I have mentioned. M. E.

Alberta, Canada.

Investigation of Mine Explosion Criticised as Incomplete

Vancouver Island explosion killed eighteen men—Investigation by special commissioner—Report criticised as not being thorough—Cause of ignition unproved.

Careful study of the report of the fatal explosion that occurred in No. 4 mine of the Canadian Collieries (Dunsmuir), Ltd., at Cumberland, Vancouver Island, as given in Coal Age, Oct. 26, p. 660, appears to provide ample food for thought. The report was made by former Chief Inspector of Mines George Wilkinson, who was specially commissioned by the minister of mines to investigate and ascertain, if possible, the cause of the explosion and make any recommendations that he might deem advisable. Notwithstanding Mr. Wilkinson's previous acquaintance with the mine, his report as to the cause of the ignition does not appear to be convincing. In one of the concluding paragraphs, as

power wire caused an arc of sufficient intensity and duration to ignite a gaseous mixture, if such was present at the point where the break occurred. Unfortunately, the voltage of the current is not given. It might be assumed that the explosion of the shot disturbed the gas in the cavity of the roof and brought it down to where it was ignited by the supposed arcing of the wires broken when the shot was fired. However, all this must remain as pure assumption, since even the location of the socket where the wires were broken is not given, or its distance from the cavity where the gas was located.

All Contributing Factors Should Be Made Known

In an investigation of this kind, all the factors bearing on the occurrence, especially those on which the conclusions are based, should be clearly stated. In the same connection, it would be interesting to know what indications were found that warrant the conclusion that an arc occurred and that the gas was ignited by that means.

Speaking of monobel, it should be known that this is not wholly a flameless explosive. Is it not true that this explosive, though on the permitted list, has been the cause of previous mine disasters in British Columbia? Instances have been reported where shots of monobel, fired in mines of this province, have produced a windy shot, part of the charge having been thrown from the hole and burned in the open air, in the workings.

In the present instance, has it been established that the shot, fired beneath the cavity in the roof, where gas had accumulated, was not overcharged with the explosive; and, if that was the case, what might be expected to be the result of such an overcharge? What is the evidence that the shot was a good one, as stated in the report; and, on what ground is it stated, "the chances that any flame resulted are remote?"

Finally, the Coal Mines Regulation Act of British Columbia provides for the circulation of sufficient air to make the mine safe for work. In this regard, also, it would be interesting to know how much of the 22,000 cu.ft. of air, mentioned in the report, was passing under the cavity, in No. 4 level, and how far it had traversed the workings before reaching that point.

Inasmuch as gas was known to fill this cavity in the roof, why was not a hurdle brattice erected to clear the cavity of gas, before the shot was fired? I would suggest that the Mines Regulation Act regarding "adequate ventilation" and the permitted list of explosives might well receive careful revision.

MINING ENGINEER.

Livingstone, Alta., Canada.

Inquiries Of General Interest

Difficult Ventilation Question Asked in Mining Examination

Increase of Volume Due to Addition of Airway—Dispute as to Correct Solution—Tandem Circulation Through Shafts and Airways by Splitting

KINDLY permit me to submit a question said to have been asked at an examination of candidates for mine foremen's certificates of competency in one of the states. My copy of the question reads as follows:

QUESTION—*If an air volume of 10,000 cu.ft. per min. is passing through a mine in a single current, the resistance of the shafts at that time being equal to the resistance of the mine, what extra quantity of air will pass through the mine by adding another airway of the same length and area, the power remaining the same? Suppose each shaft is 6 x 6 ft. in area and 100 ft. deep and that they are connected at the bottom by an entry 6 x 6 ft. in area and 1,000 ft. long.*

This question has started a dispute, in our class, as to its correct solution. It is quite generally supposed that the addition of a second airway means the division of the circulation in the mine into two equal splits. But, even then, the results obtained range from 12,000 to 15,000 cu.ft. per min.

STUDENT.

Joffre, Pa.

The question is an interesting one but too difficult for submission to candidates in examination. The solution would be comparatively simple if it involved only the equal splitting of the air passing through the mine; but that is not the case. The same air volume must pass through the two shafts in a single current.

While there are other methods of solution, probably the simplest is by the potential. In that method, the first step is to calculate the relative mine potential, in each case, and the quantity of air passing, under a constant power, will then be proportional to the potential. In the first case, the total rubbing surface of the two shafts and one airway is $s = 2\ (6 + 6)\ 2{,}000 = 48{,}000$ sq.ft.

and the area $a = 6 \times 6 = 36$ sq.ft. The relative power potential is therefore

$$X_1 = \frac{a}{\sqrt[3]{s}} = \frac{36}{\sqrt[3]{48{,}000}} = 0.9906$$

When a second airway is added of the same size as the first, we assume the air is split at the bottom of the downcast shaft and passes through the mine in two equal splits, before reaching the upcast shaft. This makes a tandem circulation in which the total air volume passes, in turn, through the two shafts, and the two airways. For the two shafts, in series, the area is $a = 36$ sq.ft., and the rubbing surface, $s = 24{,}000$ sq.ft. For the two airways, in parallel, $a = 2 \times 36 = 72$ sq.ft.; and $s = 48{,}000$ sq.ft.

To find the general mine potential in tandem circulations, first find the reciprocal of the cube of each potential division; thus

$$\text{Two shafts, } \frac{1}{X^3} = \frac{s}{d^3} = \frac{24{,}000}{36^3} = 0.5144$$

$$\text{Two splits, } = \frac{48{,}000}{72^3} = 0.1286$$

Then, adding these reciprocal cubes, the reciprocal of the cube root of their sum will be the required general potential of the circulation; thus

$$X_2 = \frac{1}{\sqrt[3]{0.5144 + 0.1286}} = 1.1586$$

Finally, since the quantity of air in circulation, for a constant power, is proportional to the mine potential, and an air volume of 10,000 cu.ft. per min. is circulated against a potential of 0.9906, the volume (x) circulated by the same power against the potential 1.1586 is,

$$0.9906 : 1.1586 : 10{,}000 : x$$
$$= 11{,}696 \textit{ cu.ft. per min.}$$

Examination Questions Answered

Indiana Firebosses' Examination. Indianapolis, 1922

(Selected Questions)

QUESTION—(*a*) *Give a full description of a safety lamp.* (*b*) *What are its essential characteristics?* (*c*) *In What condition and under what circumstances may a safety lamp be unsafe?*

ANSWER—(a) A safety lamp, for general use in coal mining, consists of a brass or steel oil vessel surmounted by a chimney composed of a glass cylinder above which is a cylindrical wire gauze slightly tapered toward the top where it is reinforced by a gauze cap, that being the point most quickly heated and, therefore, more liable to pass flame than any other portion of the gauze. The entire chimney is held in position by upright standards firmly atttached to the oil vessel below and connected above by a brass ring or shield to which the handle of the lamp is attached. The burner is designed to hold a round or a flat wick, as desired. In most lamps, a steel rod is made to pass up through the oil vessel and serves as a pricker for raising or lowering the wick. It is also used to clean the wick of any crust that may be formed in burning. Some lamps, particularly those burning a light volatile oil giving a flame that is readily extinguished, are equipped with an igniter, or spark plug, for relighting the wick when extinguished.

(b) The essential characteristics of a safety lamp are, the isolation of the flame of the lamp from the atmosphere with which it is surrounded. The gauze forming the chimney and that protecting all openings for the admission of air to the lamp, while permitting the free passage of air and gas, prevents the passage of flame by the cooling effect of the wire gauze on the small streamlets of gas-charged air passing through the mesh.

(c) A safety lamp is never safe when handled by an incompetent or ignorant person, or when carelessly handled by another. The lamp is not safe when the gauze has been injured, or is otherwise defective by reason of grease or dirt, particularly dust; or when the gauze has become heated by too long exposure to gas; or when the lamp is improperly assembled or any part omitted.

QUESTION—(*a*) *Describe in full your whole procedure in the inspection of a gaseous mine.* (*b*) *What unsafe conditions would you observe other than the presence of firedamp?*

ANSWER—(a) Before entering the mine, the fireboss must have properly examined, prepared and lighted his lamp, which should then be tested by exposure to an explosive mixture of gas and air. This done, and having observed that the ventilating fan is working properly, the fireboss enters the mine by the intake opening, or proceeds at once to the foot of the downcast shaft in order to observe whether the usual amount of air is passing into the mine. Then, proceeding to the intake end of his section, he examines each place in order and marks the date to show that he has been there. Where gas or other danger is found, it must be removed at once, or all entrances to the placed barred by danger signals.

Having thus examined the working places, roads and travelingways in his section, the fireboss returns to the shaft bottom or mine entrance, and makes out a full report stating what dangers, if any, he has found. The miners' checks for all places where danger was found should then be held by the fireboss, to prevent those men from proceeding into the mine, until their places are made safe and have been examined and found fit for work. The fireboss must then report verbally to the mine foreman, before leaving the mine.

(b) It is the duty of the fireboss to examine for all dangers present in each working place and on all roads and travelingways in his section. He must look for any unsafe condition of the roof or coal, in a miner's place, and observe the need of setting any timbers that may have been dislodged by the firing of shots the night before, or extra timbers that may be required to support loose top. He must also see that what timber is needed is on hand, and note the condition of the place with respect to dust. With most of these conditions, however, a good fireboss becomes thoroughly familiar in making his second round.

QUESTION—*Why is a knowledge of the specific gravity of the common mine gases necessary to a fireboss?*

ANSWER—The specific gravity of a gas is an indication of its relative weight, with respect to air of the same temperature and pressure. This knowledge acquaints the fireboss with the individual tendencies of the several gases to accumulate in the rise or dip workings of the mine, having due regard as to where the gas is being generated and other conditions affecting its location in the mine. For example, methane or marsh gas, being slightly more than one-half as heavy as air of the same temperature and pressure, has a tendency to accumulate at the roof and on steep pitches. On the other hand, carbon dioxide, being more than half again as heavy as air of the same temperature and pressure, has a tendency to accumulate at the floor and in dip workings.

QUESTION—*How would you provide ventilation for a tunnel going off through gaseous coal?*

ANSWER—In case this is a blind heading or tunnel, the air current must be conducted to the face by means of a brattice carried along one rib of the tunnel, the air then returning along the roadway. Instead of building a brattice along the rib, one is often made of an air tube of canvas, say 12 or 10 in. in diameter. Such tubes are made of various lengths. The outlet end of the tube either terminates in the intake airway where the pressure is sufficient to force the required quantity of air through the tube, or that end of the tube is attached to a small blower stationed in the airway or at the entrance of the tunnel. The volume of air supplied at the face of the tunnel must be sufficient to dilute and render harmless the quantity of gas being generated.

Witnesses, Including Miners and Bondsmen, Identify Prisoners in Herrin Trial

By no means all the evidence produced in the first week of the Herrin massacre trial at Marion, Ill., can be said to favor the side of the defense. Lawyers for the United Mine Workers have not yet had a chance to get on their witnesses, but those already heard include union miners and a businessman for a group of the indicted miners, and, under questioning from the state's attorneys, they have identified all five of the prisoners charged with the murder of Howard Hoffman, an employee in the strip mine of the Southern Illinois Coal Co., who was one of 21 men killed June 22 by a mob. The Hoffman case, the first of the series to be tried, involves only five of the long list of men indicted for murder by the grand jury. The five are Otis Clark, Leva Mann, Peter Caringlo, Peter Hiller and Bert Grace.

The day before the trial opened, Frank Farrington, Illinois union president, in a speech at a miners' meeting in the courtroom at Marion declared: "We are going to defend these men and stay with them until they are definitely found guilty. We will not desert them even then unless we are unqualifiedly convinced that they are unworthy of the support of the union. And I think that time will never come."

On the 16th the trial started with Farrington on one side of the room with Attorney Angus Kerr heading the miners' union defense and State Attorney General Brundage on the other side. It was plain from the opening statements of the union lawyers that the issue of unionism was to be kept to the fore and that the defense was going to claim justifiable homicide as the only charge that should be brought against the prisoners, who are being tried for murder. The defense appears based upon the claim that the Southern Illinois Coal Co. not only violated a contract with the union but imported armed ruffians to do it and that the company deliberately invited and caused war in a peaceful community by mistreating peoples by at the Lester strip mine, by shooting union men, and finally by attempting to have the union forces slowly into the open by a fake truce so that the mine guards could shoot many of them.

Capital and Labor Issue Not Involved

The state called it plain murder and State's Attorney Lesle Dorr declared: "There is not a semblance of conflict in this case between capital and labor. I want to try these men under the laws of their country, fairly and honestly."

The state agreed with the defense that the Lester interests had made an agreement merely to recover and not to market the coal and that the company then proceeded to import armed guards and try to market it anyway. But in tracing the history of the case there were wide differences in statements as to just what happened after the mine force had surrendered and was marched along the road to Herrin, with desperate shooting on various brutal forms along the way. The defense sought to prove that the five men charged with the murder of Hoffman were not at the scene of slaughter at all but were from one to five or six miles away. The killers were strangers, it was asserted.

Dr. A. T. Black, head of the Herrin hospital, was the first witness, testifying to the nature of Hoffman's wounds. Coroner "Bill" McCann, one of the outstanding figures in the aftermath of the massacre, got considerably mixed up when he testified that Hoffman had died of gunshot wounds, but he could not describe the wounds. Charles F. Hoffman, white-haired father of the dead man, identified a photograph of his son. Those followed some identifying of prisoners. Lawrence Beers, a Herrin truckman, identified Peter Caringlo as one of the armed men he had seen leading the prisoners through Herrin the morning of June 22. E. F. Poole, real estate dealer, identified Leva Mann and Perry Hiller as not a defendant in the Hoffman murder. A. M. Tells, another realtor, identified Robert Walker. Then all told of scenes of horror they had witnessed in coal around the Herrin cemetery where a group of the prisoners were dragged, mutilated and killed.

George H. Harrison, farmer and banker, and one of the seventy-five Herrin men who gave bond for the indicted union men, and his son Fred Harrison were witnesses the second day of the trial. They told of the killing of several men near their farm, naming Bert Grace and Dallas McCree as killers they could positively identify. Donald Ewing, a Chicago newspaperman, testified vividly and with accuracy of detail many of the scenes he had witnessed, especially of the incident in which Bert Grace, with a revolver, prevented Ewing from giving water to the dying Hoffman. William Goodman, miner and farmer, identified Otis Clark as being one of the armed mob which marched prisoners past his house. Henry Graves, miner and farmer, also testified that he recognized the prisoners in the mob.

Thus all five of the prisoners indicted for the murder of Hoffman were identified in the testimony already given.

Smokeless Operators Meet and Name Officers

That millions of tons of smokeless coal are available at the mines in the smokeless coal districts of West Virginia waiting for the necessary railroad equipment to be shipped to northern points where the coal shortage is acute, was a statement made by T. A. Farrell, chairman of the Transportation Committee, at a meeting of the Smokeless Operators' Association of West Virginia held Dec. 14 at the Waldorf-Astoria, New York City.

In the knowledge that considerable suffering has resulted through lack of fuel in New York, Mr. Farrell has taken the matter up with the Interstate Commerce Commission and has been assured of adequate transportation facilities for the near future. George Wolfe, of Berkley, W. Va., acting secretary of the association, pointed out that the smokeless coal district contributed 4,000,000 tons of coal every month during the strike, and when the strike was brought to an end, the railroad lines leading from the coal districts were almost paralyzed by the large increase of production. Since the end of the strike, he said, smokeless operators were able to ship only half of their normal production to parts of the country where it was needed most.

The blame for the inadequate transportation facilities was placed on legislation during the past few years, which makes it extremely difficult for the railroads to finance such development of their lines as is necessary to meet exigencies like the present coal shortage. Smokeless coal is suitable for both household and commercial purposes, Mr. Wolfe stated. He said that, given the necessary railroad equipment, the smokeless fields alone could bring considerable relief in the present crisis.

At a luncheon held after the business meeting in the morning the election of the following new officers was announced: President, R. H. Gross of Boston, president of the New River Coal Co.; First Vice-President, O. M. Doyerle of Bluefield, W. Va., president of the Flat Top Pocahontas Sales Agency; Second Vice-President, Kooper Hood, of Cincinnati, general sales manager of the Houston Coal Co.; Treasurer, George R. Collins, of the Smokeless Fuel Co., Charleston, W. Va.

Illinois Operators Join Assigned-Car Fight

Illinois operators have joined with the National Coal Association in the support of its effort to effect the abolition of assigned cars. The railroads presented their rebuttal last week, and an effort was made to establish that the claims of the operators that an adequate and regular supply of railroad fuel could be obtained without assigned cars were unsound. Testimony was presented by representatives of the Public Service Corporation of New Jersey and by the Cambria Steel Co. to the effect that a preferential car supply is necessary.

The Interstate Commerce Commission has decided to handle the assigned-car matter separately from the other features of mine rating and car distribution. Separate dates will be assigned for the oral argument of these divisions of the case. Since it is believed that many of the differences of opinion with regard to rules can be threshed out by mutual agreement, a joint conference of representatives of industry and of the carriers probably will be held in the near future.

Commerce Commission Decides Against Joint Mines, Limiting Car Supply to 100 Per Cent

In dismissing complaints of irregularity in car distribution in the case of the Bell & Zoller Coal Co. et al. vs. the Baltimore & Ohio Southwestern Railroad Co. et al. the Interstate Commerce Commission on Dec. 11 delivered a decision of far-reaching importance. As similar issues were involved, the commission's report also embraced the following cases: Fairmont & Cleveland Coal Co. vs. Baltimore & Ohio R.R. Co., 62 I.C.C. 269; No. 12399, Vigo Mining Co. et al. vs. Pittsburgh, Cincinnati & St. Louis R.R. Co. et al.; No. 12081, Fairmont & Cleveland Coal Co. vs. Baltimore & Ohio R.R. Co.; No. 12082, Fairmont & Cleveland Coal Co. vs. Monongahela R.R. Co.; No. 12083, New River Co. et al. vs. Virginian Ry. Co., and No. 12084, New River Co. et al. vs. Chesapeake & Ohio Ry. Co. upon reargument.

The Fairmont & Cleveland Coal Co. vs. B. & O. R.R. Co., 62 I.C.C., 269, termed the Fairmont Cases, related to rule 4 of Car Service Circular CS-31, Revised, which was found to be unreasonable and unduly prejudicial to joint mines and unduly preferential of local mines, to the extent that it limited the aggregate orders for cars of the joint mine to 100 per cent of its gross daily rating. It was also found that for the future, during periods of car shortage, defendants should distribute cars to the joint mines on their lines on the basis outlined in In Re Irregularities in Mine Ratings, 25 I.C.C., 286, called the Illinois Case. In effect, that rule provided that on days when the joint mine orders cars from only one carrier it shall be furnished cars based on its full rating from that carrier, and on days on which it orders cars from both carriers its rating on each of such carriers for the purpose of ordering cars should be 75 per cent of its full rating, subject to the limitation that on no day shall it be furnished with cars in excess of its maximum rating. No order was entered. Upon petition of intervening local mine operators, those cases were reopened for further argument and consolidated with Nos. 12362 and 12399. These cases were submitted together.

The complainants operate joint mines in West Virginia, Illinois and Indiana, as well as local mines in Illinois, served by two or more carriers. All the complaints substantially allege that defendants' rules, regulations, and practices governing the distribution of coal cars to complainants' mines served jointly by two or more railroads have resulted in the distribution, during car shortage periods since October, 1918, of a smaller share of empty coal cars to complainants' mines than is distributed to and received by mines in the same territory which are served by one defendant carrier only; and have been and are unreasonable, unduly preferential of complainants' competitors, and unduly prejudicial to complainants, in violation of sections 1 and 3 of the interstate commerce act. The commission is asked to prescribe just, reasonable, and nondiscriminatory rules, regulations, and practices to govern the distribution of coal cars to mines served by more than one carrier.

Various operators and committees intervened in opposition to the complaints in Nos. 12362 and 12399. The Union Colliery Co. was the only intervener in whose behalf evidence was offered. Various intervening petitions were filed in Nos. 12081, 12082, 12083, and 12084. The defendants assume a neutral position and are merely concerned with the establishment of a rule that will be fair and reasonable to all parties concerned, and which will be workable.

"The complaints herein are directed against the last sentence of rule 4 of Circular CS 31, Revised," says the commission's report, "which limits the joint mine orders for cars from all the carriers to the gross daily rating of the mine. The whole subject of the ratings of coal mines, other than anthracite, and the distribution of cars between them in times of short car supply, is pending before us in another proceeding. While there may be local variations in method of application, the general basis of ratings may be stated in substance.

"The rating of a local mine is determined by taking the total tonnage shipped by the mine during the preceding month over the carrier serving the mine, dividing it by the number of hours worked in producing it, and multiplying the quotient by the number of hours in the recognized work-day (not more than 10 hours) of the individual mine. A rating so determined is called the daily rating, as distinguished from the gross daily rating which applies to a joint mine, and which is determined in a similar manner, but by taking the total tonnage shipped over the lines of all the carriers serving the mine.

"Complainants urge that under rule 4, here attacked, the natural advantages of the joint mine are not recognized in the distribution of cars. They say that the rule does not give the joint mine any advantage in this respect which due to the development of its markets and the contracts which it has assumed, it must, of necessity, skip over cars other than the one having the greater car supply. Under the present rules a joint mine can receive as great a number of cars as the local mine located on the line having the greater car supply by confining its orders exclusively to that line. Complainants contend that rule 4 has had the effect, therefore, of limiting their distribution to markets on one railroad only.

Commission Not in Agreement with Complainants

"With this contention we are unable fully to agree. Whenever the joint mine orders cars from the different carriers serving it, it is doubtless due to other compensating advantages, which outweigh those of a temporary greater car supply, and such election is the supreme choice of the shipper. . . .

"Interveners contend that unless an order for cars for the transportation of coal is accompanied by a bona fide tender or setting aside of the coal to be transported it is not a reasonable request for transportation within the meaning of paragraph (4) of section 1 of the interstate commerce act.

"Interveners further contend that the first sentence of paragraph (12) of section 1 requires every carrier, during periods of car surplus, to make a just and reasonable distribution of cars among the mines served by it as customarily dependent upon it for car supply and leaves the question of what is a just and reasonable distribution of cars to the discretion of the carrier or to an open complaint and after full hearing, while the second sentence of paragraph (12) specifies the particular manner in which the cars are to be distributed during periods of car shortage and leaves nothing regarding the distribution to the discretion of either the carrier or to us. This sentence does not use the term 'distribution,' but interveners argue that to maintain and apply just and reasonable ratings and to count each and every car furnished to or used by any coal mine for transportation of coal against the mine is a mandatory rule of law requiring an equal per cent distribution of cars in accordance with the prescribed ratings, whether the mine be served by one or more carriers.

"In view of our conclusions herein and because the interpretation of paragraph (12) is before us in another proceeding now pending, we will not pass upon that contention here.

"The present facts considered, we do not conclude upon these records that the rule attacked, Rule 4 of Circular CS-31, Revised, is in principle unreasonable or unduly prejudicial. Our former conclusions in the Fairmont Cases, based upon a mistaken adherence to and extension of the decision in the Illinois Case, are reversed. The present decision is of course without prejudice to such determination of the questions before us in the general proceeding indicated as involving the ultimate rating and car-distribution rules as the record may there permit. The complaints herein will be dismissed, and we will enter an order to that effect."

Suggests That Government Buy Cars and Rent or Lend Them to the Railroads

Purchase of cars by the federal government, to be loaned or rented to railroads requiring additional rolling stock in emergency, is the suggestion made by F. B. Nigh, secretary of the Michigan-Ohio-Indiana Coal Association, as a solution of the difficulties in which the coal industry and its indispensable adjunct, the railroads, find themselves. Mr. Nigh's proposal was made in the form of a reply to a letter of inquiry from John Hays Hammond, chairman of the U. S. Coal Commission.

The letter is of unusual interest in that it attempts to provide an answer to an economic problem in a way that will not only increase production of coal and lubricate and relieve the transportation system but will redound to the benefit of the coal-consuming public and ease the burden of high prices and mental anxiety now resting upon it.

"All that is required to guarantee to the entire coal-consuming public its fuel in sufficient quantities and at reasonable prices at all times is uninterrupted production and an adequate car supply, and with this guarantee we have every reason to believe that the economic principle of supply and demand will guarantee to the public coal at a satisfactory price. Time and time again it has been proved that the law of supply and demand is an effectual answer to price-fixing proposals," says Mr. Nigh.

Commerce Commission Rules Against Roads On Coal Rates to Hagerstown District

The Interstate Commerce Commission has decided for the Hagerstown Chamber of Commerce in Case No. 12726. This involved rates charged by the Western Maryland Railroad Co., the B. & O., the Great Haven & Bruceton R.R. Co., and others on applicable rates on bituminous coal from the Cumberland-Piedmont, Meyersdale, West Virginia and Pittsburgh-Youghiogheny coal districts to Hagerstown, the Commerce body charging them to be unreasonable and unduly prejudicial to its members and unduly preferential to consumers at Martinsburg, W. Va., and Harrisburg, Pa.

The railroads argued that a reduction in the rates to Hagerstown would seriously affect rates to destinations beyond that city and Harrisburg, particularly with respect to the Pennsylvania if that carrier decides to meet the reduced rates at Hagerstown. The I. C. C. found the rates unreasonable to the extent that over the B. & O. and Western Maryland via Cherry Run, W. Va., and over the Western Maryland direct they exceed or may exceed the rates contemporaneously maintained over those lines from the points of origin considered to Martinsburg and Harrisburg.

That rates charged on coal from Melcroft on the Indian Creek Valley R.R. to Baltimore, Philadelphia and other Eastern destinations on the B. & O. are unduly prejudicial to the extent that they exceed the rates on coal to the same destinations from mines served by the B. & O. in the Meyersdale region, is the conclusion of a tentative decision made by the Interstate Commerce Commission examiner who investigated the case brought by the Melcroft Coal Co.

Class 1 Railroads Consume 7,833,000 Tons Of Coal in September

Class 1 railroads consumed 7,833,000 net tons of coal during September, 1922, as charged to account 394, compared with 7,293,000 tons in September last year, according to a report of the Bureau of Statistics of the Interstate Commerce Commission covering 170 steam roads. For the first nine months of 1922 these roads consumed 66,750,000 tons as compared with 57,195,000 tons during the same period in 1921.

The delivered cost per ton in September was $4.85, or $1.04 above that for September, 1921. The per-ton cost for the year to September 30, however, was only $4.94, as compared with $4.85 during the corresponding period of 1921.

Fuel oil consumption continues to gain. During September 138,054,000 gallons was used, as compared with 116,059,000 gallons in September, 1921. The figures for the first nine months of 1922 and of 1921 were 1,097,282,000 and 1,042,939,000 gallons respectively.

Presents Amendment to Coal-Commission Act in Senate; Early Enactment Expected

Crowded committee and legislative calendars have delayed the expected early consideration by Congress of the bill to amend the act creating the U. S. Coal Commission, but as no signs of marked opposition have appeared it is expected that this measure will be enacted into law soon.

The bill introduced in the House by Representative Winslow previously was presented in the Senate last week by Senator Borah in identical terms, and was referred to the Committee on Education and Labor, of which its sponsor is chairman. There is no indication of material opposition in this committee or in the House Committee on Interstate Commerce, to which the Winslow bill was referred. The prospects are that any opposition which may appear on the floor will be outvoted easily.

The principal point in the bill is to authorize the fact-finding commission to gather information by sworn questionnaires, with penalties for failure to answer and for false statements.

Lehigh Valley and Glen Alden Companies Will Settle for Mine-Cave Damages

Officials of the Lehigh Valley and Glen Alden coal companies, two of the largest in the anthracite fie'd, have made known their willingness to recompense owners for property damaged by mine caves, the announcement coming after the U. S. Supreme Court declared unconstitutional the Kohler mine-cave law, which forbade mining in any district where surface property and human lives might be endangered.

Advocates of surface protection will offer a new measure to the next Pennsylvania Legislature demanding 100 per cent restitution for all damage brought by caves.

Indiana Operators Surrender; Avoid Strike

The operators of Indiana did not relish the idea of a strike in that state just now with the markets of the West at last calling for coal. Anyway they concluded that they were standing on a technicality when they said Dec. 4 that they were going to refuse at the mid-month pay to check off an additional union assessment for the national organization of the United Mine Workers. In session Dec. 13, four days before the deadline set by John Hessler, president of District 11, they concluded the legal basis for their refusal on contract ground was hazy. So they surrendered. The check-off of $4 for the national union organization is new being made in Indiana.

Coal Consumption by Utilities Made Big Gain in October

Electric public-utility plants consumed 3,247,020 net tons of coal during October, according to a recent report of the Geological Survey. This compares with 2,899,074 tons in September.

The average daily production of electricity by public-utility power plants in October, as was predicted last month, broke all records of output, making the fourth time that a record has been established since May. The daily production of electricity in October was 139,100,000 kw.-hr.—a little more than 3 per cent greater than the September record. The total output for the period January to October, inclusive, was 38,653,000,000 kw.-hr., an increase of more than 15 per cent over the same period for 1921.

The use of fuel oil and gas in the production of electricity by public-utility power plants evidently reached a maximum in September, as the daily consumption of these two fuels in October decreased from the September figures.

Charging Oppression, Miners' Union Asks Federal Coal Commission to Probe Conditions in Logan County

The United Mine Workers on Dec. 13, 1922, called the attention of the U. S. Coal Commission to conditions that exist in certain sections of the coal-mining fields of West Virginia and suggested "that the commission make a full investigation to ascertain the facts and to estimate the effect of these conditions upon the coal-mining industry in general. The commission will find in these conditions some of the very influential causes of the demoralization of the industry. While similar conditions exist in other parts of the State of West Virginia, we desire to call special attention to Logan County because it is typical of others and a glaring example of the manner in which brutality and oppression against union coal miners is practiced by coal operators and coal companies.

"Logan is the second largest coal-producing county in West Virginia.

"Union miners, members of the United Mine Workers of America, are denied by these coal companies the rights that belong to every American citizen. If a miner joins the union he is at once made the victim of discrimination in employment. The right to organize does not exist in non-union Logan County.

"Miners who join the union are driven from the county.

"A miner loses his job if he talks in favor of the union.

"Union organizers are not permitted to enter Logan County, if the fact becomes known to the coal operators.

"Representatives of the union are not permitted to hold meetings in Logan County for the purpose of inducing miners by peaceable and orderly methods to join the union.

"Coal companies maintain an army of armed guards in the Logan County fields whose principal business it is to keep the union out by whatever means they may choose to employ. It is a common practice for these armed guards to assault, beat up, shoot and otherwise mistreat union members and men who wish to join the union. In other words, it is the business of these guards, armed with high-powered rifles, revolvers and blackjacks, to 'eliminate' union men. And for many years past this process of 'elimination' has left a bloody trail all over Logan County.

Right of Free Speech, Union Says, Is Withheld

"The constitutional right of free speech and free assembly does not exist in Logan County where these armed thugs hold sway.

"None of these armed guards are ever punished under the law for the crimes they commit against coal miners and members of their families, because coal companies dominate the courts, elect and control public officers, run the elections and do as they please.

"Deputy sheriffs in Logan County are not paid out of county funds but they are paid with money donated to the sheriff by coal companies and coal operators. In 1920 these coal operators furnished the sheriff of Logan County $46,630 for the payment of deputy sheriffs and in 1921 it was $61,517.

"Coal companies do not hire armed guards for the protection of company property but for the 'elimination' of union miners and union organizers.

"Armed guards and deputy sheriffs arrest union members with or without reason or cause and throw them in jail at Logan, where many of them have been brutally mistreated. Union men have even been killed while thus held prisoners in the jail. Men are arrested and jailed for no reason except that they are union members or are found giving encouragement to the union.

"The relation of miners to their employers has by judicial decision or interpretation been established as that of servant to master, and under such decisions miners and their families have been evicted from their homes without notice and without any consideration of mercy or decency.

"The miners in a large part of the non-union section are coerced by the use of anti-union contracts known as 'yellow-dog contracts.'

"These are but some of the outrages that are committed in Logan County as a means of keeping the miners' union from obtaining a foothold in that field. The list could be lengthened by the recital of almost unbelievable atrocities, but we do not feel that it is necessary to do more than call the attention of the commission to the situation and that the commission itself will realize that something must be done in Logan County and certain other counties in West Virginia if the coal industry is to be stabilized and placed on the level where it should be.

"Obviously, such conditions as exist in Logan County and certain other sections of the West Virginia coal-mining fields contribute to the general discontent and unrest that is evident today. It is equally apparent that the influence of these conditions cannot be hemmed in by the boundary lines of the State of West Virginia. The situation in West Virginia is notorious throughout the United States. It is well known to miners everywhere, and they naturally resent such treatment of their fellow workers of that state. It is a condition provocative of indignation and strife. It should not be allowed to continue. We believe this commission should find out just how the Logan County and West Virginia situation affects the coal-mining industry for, if the commission can find a way to put a stop to the practices that prevail in that field, it will take a long step toward the establishment of industrial peace on a permanent basis.

Suggests Calling of Informed Witnesses

"We suggest that the commission examine those parts of the testimony bearing on this subject which was taken by the Senate Committee on Education and Labor in the fall of 1921 at hearings upon Senate Resolution No. 80, and read also the divided report of the committee. We suggest, further, that the commission call as witnesses such persons in West Virginia and elsewhere as are acquainted with the conditions mentioned. We shall be pleased to furnish the commission a list of names of such persons if the commission so desires. In the list will be the names of numerous persons who have been victims of the Logan County system who can give direct, first-hand evidence. We also offer to the commission any other assistance that may aid the commission in ascertaining the facts.

"We do not believe the commission can gain a comprehensive vision of the evils of the coal industry without going to the bottom of the Logan County situation. Such procedure on the part of the commission will, we believe, greatly encourage a feeling among the coal miners of the country that at least there is a governmental agency that proposes actually to do something to establish permanent peace in the coal industry.

"After having made an investigation and study of conditions in the West Virginia coal fields by means of hearings and a personal visit to those fields, Senator Kenyon, on Jan. 25, 1922, made a report as chairman of the Senate Committee on Education and Labor to the Senate on Senate Resolution No. 80," which the statement quotes at length.

"The United Mine Workers of America hold firmly to the well-established principle of the right of workers to organize and deal collectively with their employers. The right of workers to organize is fundamental. It has been proclaimed and affirmed by the government, the Congress, the courts, by state legislatures, by the press, the pulpit, by civic bodies everywhere and by the public. Yet it does not exist in Logan County.

"The right of workers to organize was declared emphatically by President Harding in his inaugural address.

"When he was President, Woodrow Wilson on many occasions laid down and adhered to the principle that workers had the lawful and moral right to organize and bargain collectively with their employers.

"Theodore Roosevelt, while President of the United States in 1902, said: 'I believe emphatically in organized labor. I believe in organizations of wage workers. Organ-

[illegible] nation is one of the sources of our social and economic development at this time."

"Chief Justice Taft, before his election to the Presidency, said: 'What the capitalist who is the employer of labor must face is that the organization of labor—the labor union—is a permanent condition in the industrial world. It has come to stay. If the employer would consult his own interest he must admit this and act on it. Under existing conditions the fairest course that an employer of labor can pursue is to deal with the labor unions as the controlling force in the labor market and to insist upon dealing only with his particular employees. Time and again one has heard the indignant expression of a manager of some great industrial enterprise that he did not propose to have the labor union run his business; that he would deal with his own men and not with outsiders. The time has passed in which that attitude can be assumed with any hope of successfully maintaining it.' During the war emergency, Mr. Taft served as joint chairman of the War Labor Board, and it is interesting to note that after his experience in that work he said on Aug. 9, 1919: 'Labor unions have been necessary to secure to the individual workingman an opportunity to deal with his employer on an equality and free from the duress of the immediate want of a daily wage to demand what he regards as an adequate and just return for his labor, or to withdraw from employment.'

"And this from Charles Evans Hughes, now Secretary of State, in an address at Columbia University on Nov. 30, 1918: 'I trust there will be no more struggle in futile opposition to the right of collective bargaining on the part of employees. The recognition of the right of representation and the prompt hearing of grievances provides the open door to reasonable and just settlements. And in returning to peace conditions there should be the utmost care to preserve every possible means which has been found helpful during the war for the investigation of the complaints of labor and for the adjustment of demands.'

RIGHT OF WORKERS TO ORGANIZE CONCEDED

"Employers of importance and vision concede the right of the workers to organize. Thus John D. Rockefeller, Jr., said in the Annals of the American Academy of Political and Social Science, January, 1919: 'As regards the organization of labor, it is just as proper and advantageous for labor to associate itself into organized groups for the advancement of its legitimate interests as for capital to combine for the same objects.'

"The United States Chamber of Commerce, in its referendum No. 27, on a report on principles of industrial relations, declared: 'The right of workers to organize is as clearly recognized as that of any other element or part of the community.'

"J. S. Tittemore, a member of the employers' group in the President's first Industrial Conference, October, 1919, said: 'So far as I am concerned, I am committed in my mind and in my vote and in opinion as it is expressed by the administrative family of the American Federation of Labor, and in saying that, my friends, I do not sanction yellow-dogism.'

"Harry A. Wheeler, former president of the United States Chamber of Commerce and another member of the employers' group in the first Industrial Conference, said: 'We freely accord the place of the trade and labor unions in those organizations which the men have a right to join.'

"Harry M. Daugherty, present Attorney-General of the United States and a spokesman for the administration, declared in a speech at Canton, Ohio, on Oct. 29, 1922: 'I am not, nor have I ever been, an opponent of honestly conducted labor organizations and trade unionism. If I were a skilled worker in mill, factory or mine, I would join a union, but I would never affiliate with a union that sets its will and its constitution above the laws and Constitution of my country. In a great industrial nation such as ours, labor organizations are necessary, but they must be the right kind of unions under the right kind of leadership.'

"The labor provisions of the peace treaty affirm 'the right of association for all lawful purposes by the employed, as well as the employer.'

"Twenty-six states have enacted laws specifically legalizing trade unions and prohibiting discharge on grounds of membership therein. They are Colorado, Connecticut, Illinois, Iowa, Kansas, Louisiana, Maine, Michigan, Minnesota, Massachusetts, Montana, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Ohio, Oregon, Pennsylvania, South Carolina, Texas, Utah, Virginia, Washington, Wisconsin and Wyoming.

"In the principles and policies of the War Labor Board the right to organize was enunciated in detail. This declaration, worked out in conference between representatives of employers and employees and given the force of law for the war emergency by Presidential proclamation, was as follows: 'The right of workers to organize in trade unions and to bargain collectively through chosen representatives is recognized and affirmed. This right shall not be denied, abridged or interfered with by the employers in any manner whatsoever.'

"Against all of these authorities and in opposition to the enlightened thought and sense of justice of the entire nation, the coal operators of Logan County arrogantly declare that their employees shall not exercise their right to organize."

Study of Waste in Mining by C. A. Allen Elicits Widespread Interest

One of the phases of the fact-finding being done by the President's Coal Commission which is exciting wide interest is that pertaining to waste in the mining of coal. This study is under the immediate charge of Carl A. Allen.

Mr. Allen was born in Colorado Springs and was educated at the Colorado School of Mines. Following his graduation he worked for four years as a mining superintendent and as a mining engineer in gold and copper properties in Colorado, New Mexico, Arizona and in the states



Harris & Ewing

CARL A. ALLEN

of Sinaloa and Chihuahua in Mexico. For a number of years thereafter he engaged in consulting work including problems of coal-mine engineering, with offices in Denver.

From 1911 to 1913 Mr. Allen was assistant professor of mining at the Colorado School of Mines, where he established a coal-mining course. In 1916 he joined the staff of the U. S. Bureau of Mines and spent a year and a half in charge of one of its mine-rescue cars, operating in the Montana and Wyoming district. In 1918 he was sent to Utah to direct the Bureau investigations in Utah, Wyoming and Idaho. An arrangement was made whereby he was engaged on a part-time basis to serve as the chief mine inspector for the State of Utah. That arrangement still is in effect. His work with the Coal Commission is being done under a leave of absence from his regular duties. Since the passage of the general leasing act Mr. Allen has directed leasing work in Utah, Wyoming and Idaho.

Coal Wholesalers Submit Detailed Reply to Nineteen Questions of U. S. Coal Commission

At a conference of the American Wholesale Coal Association with the United States Coal Commission Dec. 15 the association submitted a formal statement of its views in connection with the nineteen topics suggested by the commission. The report was prepared and presented by the executive committee and senior council of the American Wholesale Coal Association speaking for the association and for a number of coal wholesalers not members of the association, the whole constituting a large majority of the coal wholesalers of the United States. This committee estimated that there are 2,000 wholesalers in the United States with an investment of $200,000,000 employing 20,000 persons, and distributing 450,000,000 tons of bituminous coal and coke and 60,000,000 tons of anthracite coal annually. In answer to the question of profits of other persons or corporations having to do with production, distribution or sale of coal, they said "we regret that there are no extensive accurate statistics available to show the cost of wholesale distribution of coal, nor the profits realized. This condition is due in large measure to lack of uniform accounting methods, to natural reluctance to disclose details of private business, and to fear of breach of laws prohibiting restraint of trade or competition.

"From such data as are available and from general knowledge we conclude that the return on the capital involved and compensation for the risks and services performed are and have generally been reasonable. An interrogatory addressed to all in the coal trade asking, by months for the current year, and by years over the last ten years, for the gross volume and cost for the period, the gross realization and the cost of doing the mercantile end of the business, will give to the commission an absolute national answer in such shape as can be readily analyzed."

Irregular Production Laid to Three Causes

The report assigned three principal causes for irregular production:

"(1) Labor losses due to local and national strikes. This will be eliminated when labor organizations are made subject to the same laws as govern business and perhaps some considerable improvement will obtain when immigration laws are more carefully studied and intelligently applied.

"(2) Lack of demand for long-continued periods of industrial depression. Continued education through the publication of statistical reports on production, stocks and consumption will be of assistance. The wholesaler with his year-round sales and technical force is one of the most potent factors in reducing this irregularity of production.

"(3) Car shortage or transportation disability. It is a fact well known to your honorable commission that transportation disabilities in the past have been the greatest cause for lost tonnage in time of stress. To this cause also may be attributed almost entirely the instability of the market. This condition we believe is in no wise due to the faults of corporate management but is the natural result of government operation during the war period and after. We suggest that some interesting facts may be developed if the commission will inquire into:

"(a) The seasonal fluctuations of movement of all commodities and the causes therefor, including coal

"(b) The evils incident to the assigned-car practice,

"(c) The differentiation between coal and other bulk commodities in the car-distribution rules and transportation practices.

"We deal exclusively with coal after it has been mined and becomes an article of commerce," the report states. "Waste prevention is one of our chief functions. We seek at all times to educate the consumer to use the coal most adaptable to his peculiar requirements. We also endeavor to persuade the consumer to equip himself to use the coal most accessible. Among other sources of waste it is suggested that the commission inquire as to losses by: (a) Improperly loaded cars, (b) Use of defective and unfit equipment, (c) Loss in transit by pilferage, (d) Losses by rough handling of trains, (e) Loss by degradation, (f) Theoretical losses by inaccurate weighing.

Continued education of the consumer that he may know the coal best suited to his needs, having due regard to transportation conditions and freight rates was urged. Transportation losses can be reduced by:

(a) Proper loading of railroad cars, (b) Policing in transit, (c) Improved care in train operation, (d) Proper preparation of coal at the mines, (e) Frequent scale inspection and adjustment, (f) Uniform and prompt disposition of claims arising against the carriers.

"The present situation is, in our judgment, due to the unnatural conditions that prevailed during and since the Great War; inadequate transportation, strikes, and government regulations. The remedy is:

(a) A return to conditions prevailing for many years prior to the War and,

(b) Free operation of the law of supply and demand.

(c) The financing of railroads to enable them to properly equip themselves,

(d) The doing away with preferential distribution and movement of private and assigned cars;

(e) Stabilization of mine labor and readjustments of labor costs;

(f) Restoration of fluidity of car movement by removal of unnecessary reconsignment restrictions and permitting one free reconsignment to any destination as formerly allowed;

(g) Encouragement of storage by consumers, and

(h) The elimination of discriminatory freight rates where they exist.

"We believe that under these conditions competition would restore normal supply and price."

Coal Industry to Hold General Meeting in Washington Late in January

A general meeting of the coal industry will be held in Washington late in January. The decision to call such a conference was reached during the course of the meetings in Washington in which the special committee of bituminous operators, the local coal association secretaries and the government relations committee of the National Coal Association participated. The meeting will not be confined to operators maintaining membership in the National Coal Association.

During the sessions which were held Dec. 14, 15 and 16 it was emphasized that wholehearted cooperation should be given the Coal Commission. When complaints were voiced as to the intricate character of the questionnaires that the U. S. Coal Commission is sending out, they were silenced by emphatic statements from J. C. Bryden to the effect that the questionnaires had been considered carefully by the special committee of bituminous operators at a meeting with the members of the Coal Commission, at which time certain simplification was accomplished, and that further simplification cannot be undertaken. It also was revealed that there is no disposition on the part of the operators to oppose anything that the commission is doing or to interfere with the prompt enactment of the amendments which the commission has asked. It was decided that each local association would brief its own case so far as it may be necessary to explain situations peculiar to each particular district.

Farrington Re-elected Illinois President

Frank Farrington, president of the United Mine Workers in District 12, the State of Illinois, was reelected by an overwhelming majority last week. His opponent was John Hoffmaier, of Riverton, Ill., who received most support in and around Springfield and scattered votes elsewhere.

Coal Commission Will Confine Efforts to Submitting To Congress Facts and Conclusions

By Paul Wooton
Washington Correspondent of *Coal Age*

With [illegible] hangs over the President's Coal Commission like the sword of Damocles. It is believed that enough data can be analyzed to permit of a preliminary report that will have weight with the industry as well as with the public. Machinery such as the commission must set up is cumbrous. It takes a long time to get it in working order, but once in operation, a great deal can be accomplished in a short time. Chairman Hammond, of the commission, illustrates the situation by stating that the commission now is getting the "miners' eye," referring to the fact that some time must be spent underground before the human eye adjusts itself to the darkness of a mine. Then, too, the efficiency of the commission, he admitted, has been improved since the members, latterly, have provided themselves with gas masks.

Chairman Hammond states most emphatically that the commission's report will not be a "wishy-washy affair." It will contain some rather drastic suggestions, as it is believed that bold surgery is necessary if the sources of the ills of the coal industry are to be reached.

It was emphasized by Mr. Hammond and by Dr. Smith, in verbal statements to the Washington correspondents on Dec. 16, that the commission will not undertake anything that can be interpreted as mediation in wage scales. That is the responsibility of the operators and the mine workers, it was said, and while the commission will use its moral influence to induce them to get together and will emphasize to both operators and mine workers the far-reaching consequences likely to follow another strike, the commission will do nothing more than to submit to Congress facts and conclusions.

Too Many Wholesalers and Retailers

Overexpansion in the coal industry, Mr. Hammond stated, is not confined to the producers. Both wholesalers and retailers, he declared, complain because there are too many persons engaged in the wholesaling and retailing of coal. This condition adds very greatly to the burden which the consumer must bear, he said. Since the large number of organizations engaged in jobbing and retailing coal results in much duplication and the aggregate of needless overhead is large, it is not a difficult task to point out superfluous additions to the selling price, but it is difficult to suggest means whereby the eliminations can be made so that the wholesalers and retailers may be reduced in number.

John L. Lewis was before the commission for an entire day last week and conferences were had with a number of operators with regard to the wage-scale matter. As discussion of these conferences could accomplish no good purpose at this time, the commission has declined to give out any facts with regard to what was said. The operators who were called to Washington to discuss the wage-scale situation were W. K. Field, Michael Gallagher, E. M. Fenton, C. G. Hall, H. C. Adams and H. N. Taylor.

While the subpoenaing of Washington retailers in connection with a local advance of 50c. a ton in their prices for anthracite resulted in columns of publicity in the newspapers of the capital it developed nothing of material significance. Nothing which developed at the hearing indicated that there had been any profiteering on the part of the Washington dealers, although it is apparent that there is a difference of opinion as to what constitutes a fair margin for the retailer.

The dealers who were subpoenaed by the commission were the Allegheny Coal Co., Black Brothers, J. Maury Dove Co., W. W. Griffith, William King & Son, L. E. White Coal Co., Frazier & Co., Charles F. Miller Coal Co. and T. W. Perry Coal Co. The representatives of these companies were not at all reticent in their replies to the questions propounded by the commission, although it was apparent that they resented the fact that they were legally subpoenaed when, it is said, they would have been willing to come voluntarily.

A large delegation representing the executive committee and the senior council of the American Wholesale Coal Association appeared before the commission on Dec. 15 to submit their reply to the 19 questions asked by the commission. There was some discussion of these replies but no matters of particular significance developed. The replies submitted by the wholesalers appear elsewhere in this issue.

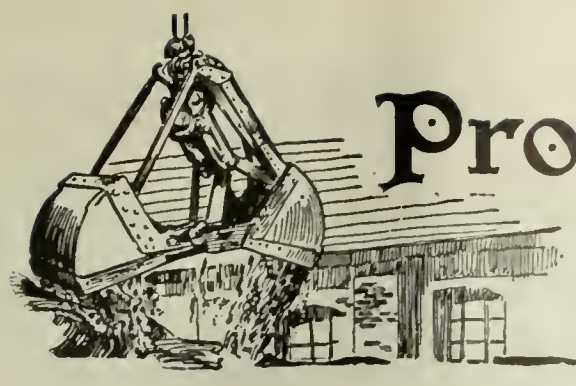
Those who represented the associtaion on this occasion were Seth W. Morton, president, Albany, N. Y.; J. W. Johns, vice-presdient, Pittsburgh; G. H. Merriweather, secretary and treasurer, Chicago; E. M. Platt, Chicago; George N. Dexter, New York; N. H. Swayne, Philadelphia; W. R. Coyle, Bethlehem, Pa.; R. S. Bain, Cleveland; R. K. Pratt, Boston; C. A. Owen, New York; C. F. Dunn, Detroit; Charles L. Dering, Chicago; H. J. Heywood, Toledo; C. C. McGill, Toronto, Ontario, and I. C. Cochran, Washington representative.

Would Have Railroads Operate Mines

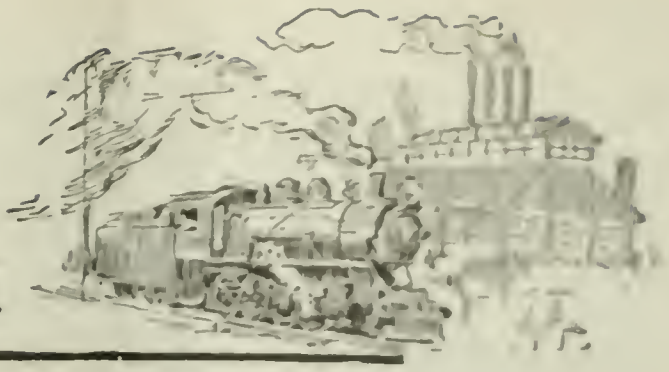
One of the most reactionary suggestions made to the commission has come from a prominent source generally regarded as being radical. The suggestion is that the coal mines be turned over to the railroads to operate. The opinion is expressed that as the railroads use 30 per cent of the coal, as it constitutes 40 per cent of the total tonnage they haul, and as transporttaion is the most important single element entering into the instability of the coal industry, the railroads could operate the mines more effectively than could the government or individual operators.

Returns from the cost questionnaires are coming in with gratifying promptness. While the great bulk of the returns received thus far are from operators conducting properties of small output, some of the larger producers have made their returns with surprising promptness. It is pointed out at the commission that it is not necessary to hold up the entire questionnaire until the information has been gathered for the whole series of twenty-one months. The statisticians welcome partial returns, as it enables them to get started on their work.

The working committee designated by the American Railroad Association to co-operate with the Coal Commission is composed of the following: G. Metzman, assistant to the president, New York Central; C. M. Shaeffer, chief of transportation, Pennsylvania; J. R. Kearney, assistant to the vice-president, Baltimore & Ohio; A. T. Owen, superintendent of transportation, Philidelphia & Reading; W. L. Booth, superintendent of transportation, Chesapeake & Ohio; D. E. Spangler, general superintendent of transportation, Norfolk & Western; W. S. Andrews, assistant to the vice-president, Southern Ry.; G. E. Evans, vice-president in charge of operation, Louisville & Nashville; G. H. Kummer, assistant freight agent, Chicago & Eastern Illinois; W. L. Barnes, general superintendent of transportation, Chicago, Burlington & Quincy; J. O. Halliday, superintendent of transportation, New York, New Haven & Hartford; C. M. Booth, freight traffic manager, Pere Marquette; C. R. Moore, general superintendent of car service, Grand Trunk; J. E. Roberts, superintendent of transportation, Delaware & Hudson; L. W. Baldwin, vice-president in charge of operation, Illinois Central; B. J. Rowe, coal traffic manager, Illinois Central; W. A. Northcutt, general solicitor, Louisville & Nashville; W. S. Bronson, general attorney, Chesapeake & Ohio; R. V. Fletcher, general solicitor, Illinois Central; M. J. Gormley, chairman, Car Service Division, and J. H. Parmelee, director, Bureau of Railway Economies. Mr. Roberts has been designated as chairman of the committee.



Production and the Market



Weekly Review

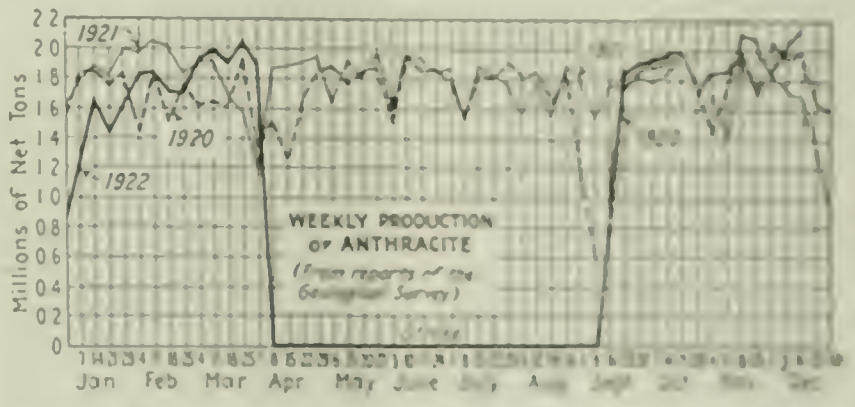
Weather conditions dominated the coal market last week. Opening with mild weather, domestic coal held firm, but the steam sizes slipped steadily downward. Near-zero temperatures came to the rescue before the week closed and caused the first definite stiffening in demand that has occurred in the last thirty days. "No-markets" quickly disappeared, car shortage became apparent at once and prices rallied from their recent slump. *Coal Age* Index of spot bituminous coal prices rose to 336 on Dec. 18, as compared with 325 on Dec. 11; the average price at the mine as represented by the index number was $4.07, an increase of 14c. over the week preceding.

Industrials Delay Orders for Market Bottom

Industrial consumers have been laying low, waiting for the bottom of the market to be reached before entering orders. At the first sign of stiffening the railroads increased their stocking movement and industries became insistent on quick deliveries of outstanding orders. There was no rush to cover by the general run of steam users—stocks are too ample for that—but there was enough increase in the call to take up the free coal that has been cluttering railroad yards, and selling conditions immediately reflected this. It is unlikely that coal will find a livelier market, however, until after Jan. 1, as inventory time presents a strong argument against heavy replenishment of reserves.

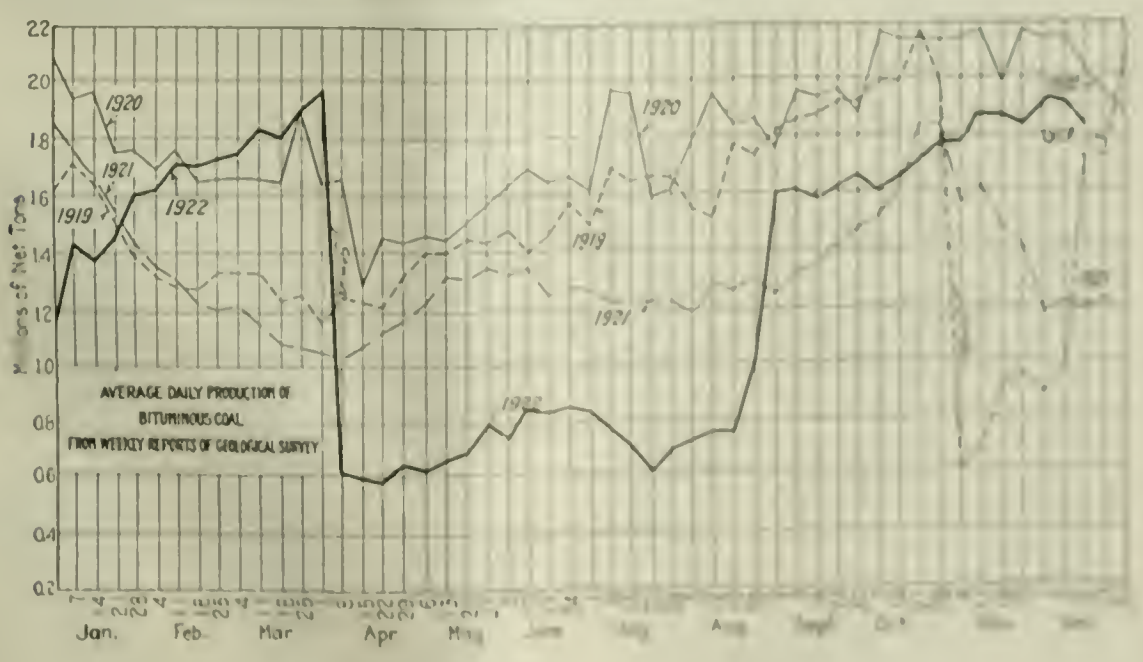
Snow and cold weather uncovered sufficient demand in the Middle West to discount the effect of the Indiana strike blow-up. Its subsidence is not now noticed in the general market awakening, although the fear of it had caused better takings of steam tonnage during the past two or three weeks. A pronounced buying of car numbers by industries, better takings by railroads and a growing call for domestic quickly placed mines in a comfortable position for the balance of the year. The same conditions exist but in a lesser degree in the Eastern Inland and Cincinnati Gateway markets, where the absorption of former Lake tonnage had been accomplished with but little price softening. A growing demand for domestic was the best feature, of course, but the steam coals also strengthened with the better buying by railroads and general consumers.

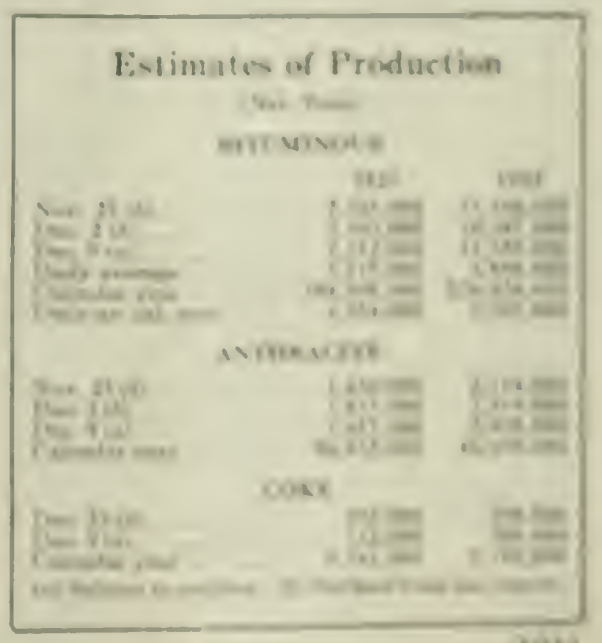
The most active market, however, is in the North Atlantic section. Cars are no more plentiful and a foretaste of crippling weather for the railroads has caused a heavy demand. Best coals are practically unobtainable and pool classifications of the lower grades have been disregarded in the buying movement that has come in on the cold wave. As usual, the light supply has released orders which have long been held in abeyance in the hope of lower prices. An important



feature in this territory is the increasing use of steel bituminous as a substitute for anthracite. The domestic market is now an attractive one for those producers who are prepared to screen their coal, and shippers are alert to the possibilities of a permanent market in these centers.

Retail supplies of anthracite have reached bottom. The trade is swamped with orders but receipts are discouragingly inadequate. In New York the edict of





the Coal Fuel Administrator reporting 61 per cent degree of consumer fuel with domestic sized has increased prices on coke and some bituminous mails. Independent roads are finding an attractive market in Canada and the regrets are commingled with those Northern buyers who offer still premiums for prompt shipment. Lackawanna has learned with the cold-weather demand and consumers, unable to obtain family sizes, are taking this as a substitute.

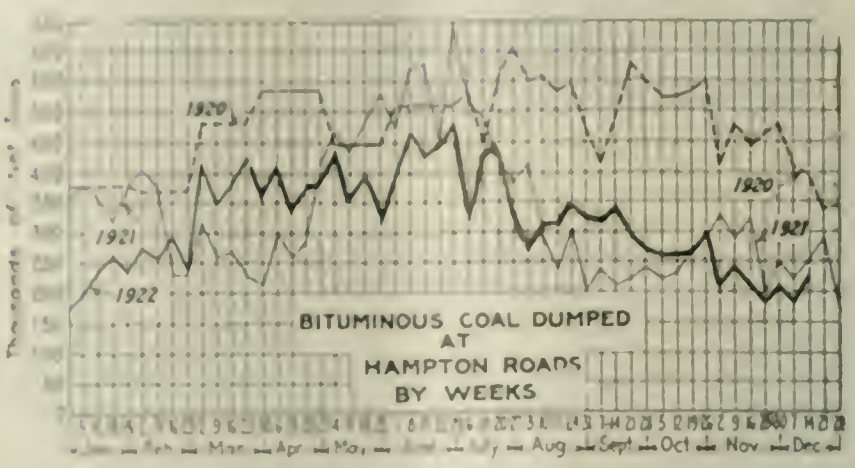
BITUMINOUS

Production of soft coal continues at a daily rate of approximately 1,000,000 tons. Output during the week ended Dec. 7 is estimated at 11,000,000 tons, including lignite, coal coked, mine fuel and local sales, according to the report of the Geological Survey.

Preliminary reports of cars loaded during the first four days of last week (Dec. 11-14) indicate a small decline on account of lay off in some union districts on Tuesday, miners' election day. It is expected that the total output probably will be between 10,000,000 and 11,000,000 tons.

The all-rail movement to New England declined to 2,872 cars during the week ended Dec. 9, as compared with 3,055 cars in the week preceding. That market is in fairly comfortable position as regards stocks and the recent jump in central Pennsylvania prices finds New England buyers more unresponsive.

Hampton Roads dumpings for all accounts were 257,326 tons during the week ended Dec. 11, as compared with



220,221 tons in the preceding week. Supplies at the piers are running down and shippers lack stocks to meet prompt orders.

Final reports show that tidewater business improved

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

	Market Quoted	Nov 20, 1922	Dec. 4, 1922	Dec 11, 1922	Dec 18† 1922
Pitts. No. 8 mine run	Cleveland	$3 60	$3 20	$3 10	**$3 15@$3 25**
Pitts. No. 8 screenings	Cleveland	3 31	2 85	2.85	**3.00@ 3 10**
Midwest					
Franklin, Ill. lump	Chicago	5 25	5 00	5.25	5 00@ 5 50
Franklin, Ill. mine run	Chicago	4 10	4 10	4.10	4 00@ 4 25
Franklin, Ill. screenings	Chicago	2 60	2 50	2.35	**2 50@ 2 90**
Central, Ill. lump	Chicago	4 50	4 25	4 25	4 00@ 4 50
Central, Ill. mine run	Chicago	3 10	3.10	3.10	3 00@ 3 25
Central, Ill. screenings	Chicago	1 80	1 65	1 65	**1 75@ 2 25**
Ind. 4th Vein lump	Chicago	5 10	5 10	5 10	5 00@ 5 25
Ind. 4th Vein mine run	Chicago	3 85	3 85	3 85	3 75@ 4 00
Ind. 4th Vein screenings	Chicago	2 05	2 25	2 25	2 15@ 2 40
Ind. 5th Vein lump	Chicago	4 75	4 75	4 75	4 50@ 5 00
Ind. 5th Vein mine run	Chicago	3 60	3 60	3 60	3.50@ 3.75
Ind. 5th Vein screenings	Chicago	1 85	2 00	2 00	*1.90@ 2 00*
Standard lump	St. Louis	3 75	4 25	4 25	*3.75@ 4 50*
Standard mine run	St. Louis	2 50	2 60	2 25	*2 00@ 2 25*
Standard screenings	St. Louis	1 35	1 35	1 35	1.35@ 1 40
West Ky. lump	Louisville	4 35	3 75	3 75	**3 75@ 4 00**
West Ky. mine run	Louisville	2 50	2 25	2 25	2 00@ 2 50
West Ky. screenings	Louisville	1 50	1 50	1 50	**1 65@ 2 00**
West Ky. lump	Chicago	4 10	3 85	3 85	3 75@ 4 00
West Ky. mine run	Chicago	2 85	2 60	2 60	2 50@ 2 75
South and Southwest					
Big Seam lump	Birmingham	3 95	3 95	3.95	3 45@ 4 45
Big Seam mine run	Birmingham	2 35	2 35	2 35	2.25@ 2 50
Big Seam (washed)	Birmingham	2 60	2 60	2 60	2 50@ 2.75
S. E. Ky. lump	Chicago	6 10	6.10	6 25	6.00@ 6.50
S. E. Ky. mine run	Chicago	4 25	4 25	4 25	*3 75@ 4.00*
S. E. Ky. lump	Louisville	6 50	6.50	6 35	6 00@ 6.75
S. E. Ky. mine run	Louisville	4 00	3 40	3.35	3.00@ 3.75
S. E. Ky. screenings	Louisville	4 00	3 25	3.25	3 00@ 3.50
S. E. Ky. lump	Cincinnati	6 50	6 50	5 85	5 25@ 6.25
S. E. Ky. mine run	Cincinnati	3 75	3 35	3 35	*3 00@ 3 35*
S. E. Ky. screenings	Cincinnati	3 25	3 00	2 80	*2 50@ 3.00*
Kansas lump	Kansas City	5 75	5 00	5 00	**5.00@ 5 50**
Kansas mine run	Kansas City	3 75	3 50	3 50	**3 50@ 3 75**
Kansas screenings	Kansas City	2 50	2 50	2 50	2 50

* Gross tons, f.o.b. vessel, Hampton Roads
† Advances over previous week shown in heavy type, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Company	Dec. 11, 1922 — Independent	Dec. 11, 1922 — Company	Dec. 18, 1922† — Independent	Dec. 18, 1922† — Company
		$7 75@$7 75	$9 00	$7 75@$8 15	$9 00	**$7 75@$8 25**
		7 75@ 7 85		7 90@ 8 10		7 90@ 8 10
		7 75@ 7 85	9 25@ 10 50	8 00@ 8 35	9 25@ 10 50	8 00@ 8 35
		7 75	9 25@ 11 00	8 10@ 8 35	9 25@ 11 00	8 10@ 8 35
			12 50@ 13 00	7 20@ 8 25	12 50@ 13 00	7 20@ 8 25
		7 40	9 25@ 10 50	8 00@ 8 15	9 25@ 10 50	8 00@ 8 35
		7 40	9 25@ 11 00	8 15@ 8 35	9 25@ 11 00	8 15@ 8 35
		7 75	12 50@ 13 00	7 35@ 8 25	12 50@ 13 00	7 35@ 8 25
		7 75	9 25@ 10 50	8 00@ 8 15	9 25@ 10 50	8 00@ 8 35
		7 75	9 25@ 11 00	8 15@ 8 35	9 25@ 11 00	8 15@ 8 35
		7 75	12 50@ 13 00	7 35@ 8 35	12 50@ 13 00	7 35@ 8 35
				8 15		**8 25**
		8 45	7 00@ 10 00	6 15@ 6 30	7 00@ 10 00	6 15@ 6 30
		8 25	7 00@ 8 00	6 15@ 6 20	7 00@ 8 00	6 15@ 6 20
		8 10	7 00@ 8 00	5 40@ 6 03	7 00@ 8 00	5 40@ 6 03
			3 50@ 4 50	3 50@ 4 25	**3 75@ 4 75**	**4 00@ 4 10**
			4 00	4 00	4 00	4 00
			2 50@ 3 20	2 50@ 3 00		
			2 50@ 2 75	2 75@ 3 00	2 25@ 2 75	2 75@ 3 00
			1 50@ 2 25	1 50@ 2 00	1 75@ 2 25	1 50@ 2 00
			1 75@ 1 75	2 00	1 00@ 1 75	2 00
				2 25		*2 10*

* Gross tons, f.o.b. vessel, Hampton Roads † Advances over previous week shown in heavy type, declines in *italics*.

slightly during November, and that a total of 2,318,000 net tons of bituminous coal was dumped over the piers at the five Atlantic coal ports. In comparison with October this was an increase of 88,000 tons. The improvement was due principally to increased dumpings for bunkers, points inside the capes, and other tonnage, which were 363,000, 357,000 and 708,000 tons respectively. Shipments consigned to New England and exports declined slightly. Cumulative dumpings in 1922 to the end of November stood at 25,760,000 tons against 34,878,000 tons in 1921.

TIDEWATER SHIPMENTS FOR NOVEMBER 1922
(In net tons)

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total
Coastwise to New England	108,000	33,000	136,000	530,000	10,000	817,000
Exports		21,000	10,000	29,000	13,000	73,000
Bunker	180,000	25,000	17,000	136,000	5,000	363,000
Inside capes		183,000	135,000	39,000		357,000
Other tonnage	516,000		1,000	183,000	8,000	708,000
Total	804,000	262,000	299,000	917,000	36,000	2,318,000

ANTHRACITE

Production of anthracite during the week ended Dec. 9 was 2,038,000 net tons, as compared with 1,819,000 tons in the previous week. Preliminary reports for last week indicate an output of approximately 2,200,000 tons.

November production was 8,385,000 tons, exceeding the output for the corresponding month of 1920 and 1921 by 11 per cent and 18 per cent respectively. Cumulative production for the calendar year is 44,055,000 tons as compared with 84,270,000 tons in 1921 and 81,195,000 tons in 1920.

COKE

Production of beehive coke was 289,000 net tons during the week ended Dec. 9, as compared with 298,000 tons in the previous week. The decrease was principally in the Pennsylvania-Ohio region, although the Connellsville section recorded an increase.

The chief feature in the production of coke in November was an improvement of nearly 30 per cent in the output of beehive coke, which increased from 878,000 to 1,139,000 net tons. The production of byproduct coke continued to increase and reached a total of 2,908,000 tons. This was an increase of 3.6 per cent over the October record and was higher than the monthly average for any of the five years preceding.

MONTHLY OUTPUT OF BYPRODUCT AND BEEHIVE COKE IN THE UNITED STATES (a)
(Net tons)

	Byproduct Coke	Beehive Coke	Total
1917 Monthly average	1,870,000	2,764,000	4,634,000
1918 Monthly average	2,166,000	2,540,000	4,706,000
1919 Monthly average	2,095,000	1,638,000	3,733,000
1920 Monthly average	2,565,000	1,748,000	4,313,000
1921 Monthly average	1,646,000	462,000	2,108,000
Sept., 1922	2,244,000	606,000	2,850,000
Oct., 1922	2,806,000	878,000	3,684,000
Nov., 1922	2,908,000	1,139,000	4,047,000

(a) Excludes screenings and breeze.

ESTIMATED MONTHLY CONSUMPTION OF COAL FOR MANUFACTURE OF COKE
(Net tons)

	Consumed in Byproduct Ovens	Consumed in Beehive Ovens	Total Coal Consumed
1917 Monthly average	2,625,000	4,134,000	6,974,000
1918 Monthly average	3,072,000	4,014,000	7,086,000
1919 Monthly average	2,988,000	2,478,000	5,466,000
1920 Monthly average	3,684,000	2,665,000	6,349,000
1921 Monthly average	2,401,000	706,000	3,107,000
September, 1922	3,223,000 (a)	956,000 (a)	4,179,000
October, 1922	4,032,000 (a)	1,384,000 (a)	5,416,000
November, 1922	4,179,000 (a)	1,797,000 (a)	5,976,000

(a) Assuming a yield in merchantable coke of 69.6 per cent of the coal charged in byproduct ovens, and 63.4 per cent in beehive ovens.

Car Loadings, Surplusages and Shortages

	All Cars	Coal Cars	Car Surplus	Car Shortage
Week ended Dec. 2, 1922	845,218	436,158		
Previous week	911,435	502,972		
Same week in 1921	741,849	136,364		
Nov. 30, 1922	5,593		133,788	42,848
Nov. 23, 1922	5,306		152,572	45,843
Same date in 1921	283,000	113,000		



Coal Age Index 346 Week of Dec. 18, 1922. Average spot price for same period $4.07. This diagram shows the trend and the actual prices on fourteen coals representative of nearly 40 per cent of the bituminous output of the U. S. Prices in actual sales first with respect to the proportions each of mine, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the years months ended June 1914 as 100 after the process adopted in the report on "Prices of Coal and Coke 1913-1918" published by the Geological Survey and the War Industrial Board.

How the Coal Fields Are Working

Percentages of full-time operation of mines and cars on lines, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 Inclusive	May 1 to Dec. 1, 1922 Inclusive	Week Ended Dec. 1, 1922
U. S. Total	43.8	58.1		
Alabama	45.5	66.4	84.1	
Somerset County	53.5	74.4	93.2	93.8
Panhandle, W. Va.	53.1	73.9	92.1	98.1
Westmoreland	54.8	74.6	89.1	97.1
Virginia	54.8	73.3	92.4	94.1
Hocking	58.5	78.8	97.1	97.8
Hazard	51.2	70.4	94.2	94.1
Pocahontas	69.8	84.3	97.0	94.1
Tug River	48.1	81.3	97.0	93.1
Logan	61.8	84.1	97.0	94.1
Cumberland-Piedmont	46.5	73.3	94.8	94.1
Winding Gulf	61.1	84.0	97.1	94.1
Kenova-Thacker	58.1	79.4	94.1	94.1
N. E. Kentucky	52.1	81.1	97.0	94.1
New River	53.1	77.1	97.0	94.1
Oklahoma	53.1	72.1	84.1	94.1
Iowa	53.1	72.1	84.1	94.1
Colo.-Wyo.	53.1	80.1	97.1	94.1
Missouri	53.1	77.1	84.1	94.1
Illinois	60.1	84.1	97.1	94.1
Kansas	47.1	74.1	84.1	94.1
Indiana	61.1	77.1	84.1	94.1
Pennsylvania	61.1	84.1	84.1	94.1
Central Pennsylvania	53.1	74.1	84.1	94.1
Pittsburgh	58.1	77.1	84.1	94.1
Western Kentucky	53.1	74.1	84.1	94.1
Pennsylvania*	53.1	74.1	84.1	94.1
Kanawha	53.1	74.1	84.1	94.1
Ohio, northern	53.1	74.1	84.1	94.1

* Anthracite and bituminous combined.
† Not given.
‡ No report.

Foreign Market And Export News

British Market Retains Activity Despite Record-Breaking Production

Production of coal in Great Britain set a new high mark for the year during the week ended Dec. 2, when 5,474,000 gross tons were mined, according to a cable to Coal Age. The output during the preceding week was 5,472,000 tons. Despite the heavy production the better kinds are scarce and the market is strong.

The approach of Christmas and a slight improvement in the European exchanges has led to better foreign buying in the Welsh market. The rather depressed state at Cardiff during previous weeks was largely due to foreign holding-off in anticipation of lower prices and better exchanges.

Some alarms are difficult to secure, namely, Durham gas and coking coals which are heavily booked. While steam coals are well booked up, smalls are still rather plentiful and weak. Owing to stormy weather there has been some delay in shipping arrivals, but as there is abundant tonnage waiting the collieries have not suffered and shipments have been well up to recent average.

Business continues to follow satisfactory lines in the Scotch coal trade, the turnover being good and prices well maintained at recent weeks' level. The foreign market is steady. There is a rather better demand in evidence for supplies to home consumers.

Export Clearances, Week Ended Dec. 9, 1922

FROM HAMPTON ROADS

For Cuba		Tons
Less 66 Tons for Trimming, for Total		2,191
For all Ports for Bunkers		1,891
FROM CHARLESTON		
For Cuba		
Less 66 Tons for Trimming, for Total		2,191

Demand More Brisk and Prices Jump at Hampton Roads

Demand was more brisk at Hampton Roads, but supplies continued to diminish, and prices took a jump. Shippers were preparing for the usual holiday slump in the movement of coal while a dull tone prevaded the market. Though the demand was livelier, shippers did not have stocks to supply it.

One cargo for South America, the first in many months, added a new angle to the trade. It was regarded, however, as simply a sporadic movement on the part of a ship which preferred this cargo going to South America light.

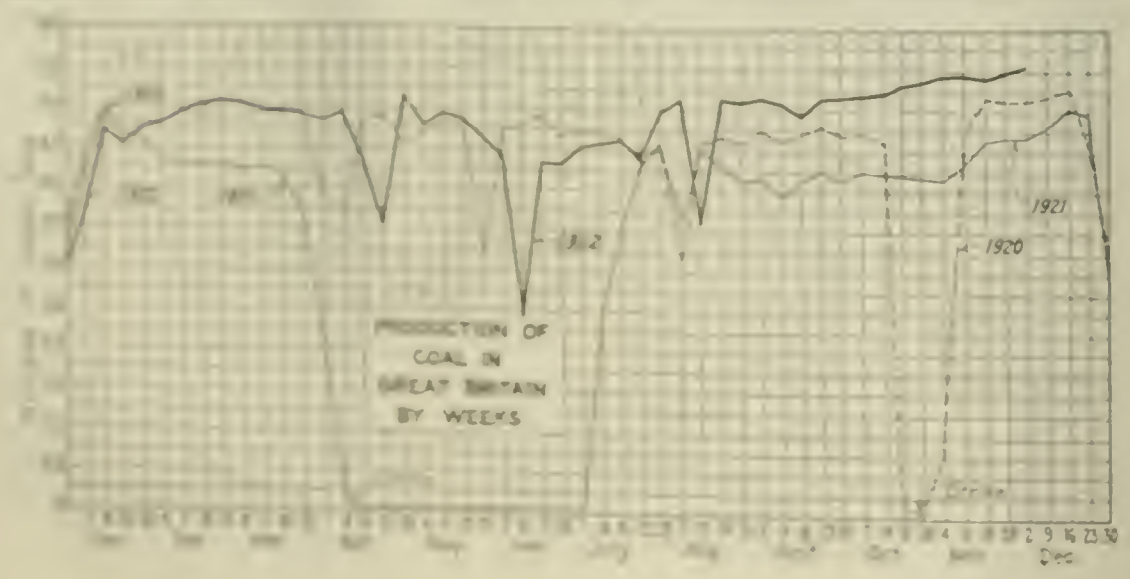
United States October Coal Exports By Customs Districts

(In Gross Tons)

	Bitumi-nous	Anthra-cite	Coke
Maine and New Hampshire	62	34	113
Vermont	791	732	1,128
Massachusetts		2	
St. Lawrence	82,369	102,905	515
Rochester	101,561	80,641	
Buffalo	284,352	198,096	20,802
New York	556	17,066	628
Philadelphia	14,037	4,217	1,031
Maryland	4,566	..	..
Virginia	47,376	..	..
South Carolina	10,283	..	..
Florida	5	..	40
Mobile	268	..	..
New Orleans	995	24	1,479
Galveston	10	..	..
Corpus Christi	180	..	8
San Antonio	86	..	..
El Paso	1,647	121	1,033
San Diego	12	1	..
Arizona	1,961	25	4,472
San Francisco	100	..	12
Washington	1,881	1	..
Alaska	4	..	..
Dakota	705	..	234
Duluth and superior	2,279	56	104
Minnesota	124,332	64	5,904
Ohio	1,048,704	1,014	1,110
Total	1,729,425	404,999	38,613

Hampton Roads Pier Situation

N & W Piers, Loaders to Pt	Week Ended Dec. 7	Week Ended Dec. 14
Cars on hand	701	529
Tons on hand	49,953	35,071
Tons dumped for week	77,788	107,367
Tonnage waiting	8,100	10,350
Virginian Ry. piers, Newport News Pt.		
Cars on hand	902	928
Tons on hand	50,400	50,950
Tons dumped for week	82,821	77,571
Tonnage waiting	14,638	14,800
C & O piers, Newport News		
Cars on hand	506	479
Tons on hand	25,800	23,950
Tons dumped for week	36,017	44,818
Tonnage waiting	325	16,493



Coal Paragraphs from Foreign Lands

INDIA—The market, though dull, is steady. There is no inquiry from mills and railway companies. Stocks are sufficient. The latest quotationss are: Bengal first, Rs.25; Bengal good second, Rs.26@Rs.27; English, Rs.38; and African, Rs.27½.

September Consumption in France

	Metric Tons	
Coal	Sept., 1922	1st 9 mos. of 1922
Production	2,719,722	23,470,367
Plus imports	1,691,574	16,424,694
	4,411,296	39,895,051
Less exports	425,972	1,564,473
Consumption	3,985,324	38,330,578
Coke		
Production (at collieries)	80,151	717,424
Plus imports	420,921	3,721,301
	501,072	4,438,729
Less exports	46,960	337,257
Consumption	454,112	4,101,472
Briquets		
Productions (at collieries)	241,147	1,996,821
Plus imports	117,002	1,048,711
	358,149	3,045,532
Less exports	7,805	68,730
	350,341	2,976,802

The importance of French coal exports in September—524,972 tons, of which 208,430 tons went to Spain and 103,755 tons to Belgium—is a consequence of the diversion to North America of a substantial tonnage of British coals.

Pier and Bunker Prices, Gross Tons

PIERS

	Dec. 9	Dec. 16†
Pool 9, New York	$7 75@$8 00	**$8 00@$8 25**
Pool 10, New York	7 25@7.50	**7 40@7 75**
Pool 11, New York	6 25@6.50	**6 75@7 25**
Pool, 9, Philadelphia	7.55@7 90	**7 80@8 10**
Pool 10, Philadelphia	7 00@7.25	**7 30@7 50**
Pool 11, Philadelphia	6 60@6 80	**6 65@6 85**
Pool 1, Hamp. Roads	7 65@7 75	**7 75@8 00**
Pools 5-6-7 Hamp. Rds.	7 65	**7 75**
Pool 2, Hamp. Rds.	7 75@8.00	**7 75@8 00**

BUNKERS

Pool 9, New York	$8 15@$8 40	**$8 40@$8 70**
Pool 10, New York	7 65@7 90	**7 80@8 15**
Pool 11, New York	6 65@6 90	**7 15@7 70**
Pool 9, Philadelphia	7 90@8 20	**8 15@8 35**
Pool 10, Philadelphia	7 35@7 50	**7 65@8 05**
Pool 11, Philadelphia	6.80@7.10	**6 85@7 15**
Pool 1, Hamp. Rds.	7.75	**7 75@8 00**
Pool 2, Hamp. Rds.	7 75@8.00	**7 75@8 00**
Welsh, Gibraltar	38s. f.o.b.	38s. f.o.b.
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	50s. f.o.b.	50s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	42s. t.i.b.
Welsh, Algiers	38s. f.o.b.	38s. f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b.	65s. f.o.b.
Welsh, Madeira	40s. 6d. f.a.s.	40s. 6d. f.a.s.
Welsh, Teneriffe	38s. 6d. f.a.s.	38s. 6d. f.a.s.
Welsh, Malta	41s. f.o.b.	41s. f.o.b.
Welsh, Las Palmas	38s. 6d. f.a.s.	38s. 6d. f.a.s.
Welsh, Naples	39s. 3d. f.o.b.	39s. 3d. f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore	50s. t.i.b.	50s. t.i.b.
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Welsh, St. Michaels	50s. t.i.b.	50s. t.i.b.
Welsh, Port Said	49s. f.o.b.	49s. f.o.b.
Welsh, Oran	38s. f.o.b.	38s. f.o.b.
Welsh, Fayal	50s. t.i.b.	50s. t.i.b.
Welsh, Dakar	42s. 6d. f.o.b.	42s. 6d. f.o.b.
Welsh, St. Vincent	42s. f.a.s.	42s. f.a.s.
Welsh, Montevideo	50s. f.o.b.	50s. f.o.b.
Welsh, Alexandria	42s. f.o.b.	43s. f.o.b.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to *Coal Age*

Cardiff:	Dec. 9	Dec. 16†
Admiralty, large	28s 6d@29s 6d	*28s@28s 9d*
Steam, smalls	17s@18s.	16s. 6d.@18s. 6d
Newcastle:		
Best steams	25s 6d.	**25s 6d.@26s**
Best gas	24s.@24s. 6d	**24s.@25s.**
Best bunkers	23s 6d.	*22s 6d.@23s 6d*

† Advances over previous week shown in heavy type; declines in *italics*.

North Atlantic

Demand Increases Daily; Urgent Buying Boosts Prices

Tight Market Brings Orders Awaiting Bottom Prices—Better Grades Scarce —Car Shortage Blasts Low-Price Hopes—More Transit Troubles Not Unlikely.

Demand is growing day by day and urgent purchasing at increased prices is in evidence on every hand. As usual, tight market conditions have released orders held against the time when the bottom should have been reached. Better grades are almost out of the market. Another drain on the supply has been the call for domestic coal in the East to be used as a substitute for anthracite.

Poor car supply is playing havoc with consumers' hopes of lower prices. A foretaste of wintry weather has made it apparent that additional transportation difficulties are not unlikely and buyers are seeking to cover their requirements for the next few weeks.

BALTIMORE

The market has tightened more rapidly during the past ten days than in any similar period for several months past. The demand has been growing day by day and urgent purchasing at increasing costs is in evidence on every hand.

Car supply, or rather lack of it, is playing a decided part in the situation. From the mines come reports that particular sections have been running as low as 15 per cent supply on many days, and some operations have fallen below this. At the same time both large and small consumers are on the market in increasing number and are taking up coal in many cases without regard to quality.

At this writing there are quotations from the fields for Pool 71 as high as $6. Pool 9 is bringing $5 readily and has run above that mark in several sales. The average quotation on Pool 10 is around $4.50 and on Pool 11, $4@$4.25. Unclassified coals are selling generally up to $3.75@$4. Gas lump is in demand around $4.50 and run of mine, $3.75@$4.

NEW YORK

A gradual betterment has taken place in the local market. Quotations have advanced, following an increased demand and although car supply is about as bad as it can possibly get, there is no shortage of coal, except in the better grades.

Bituminous is now being burned successfully by many persons thanks to the orders of the State Fuel Administration, who heretofore have shunned it, and it is believed will continue to be used by many, especially if it can be purchased at a lower cost than the hard coals. Quotations for the screened coals range $6@$6.75, and take the Pittsburgh or Westmoreland freight rate. This phase of the market is getting to be an important feature.

Consumers who neglected to stock up when advised to do so are now rushing into the market, only to find that the better grades are taken up.

British coals are coming forward but in small volume. Custom House reports showed that during the first five days of last week two cargoes of approximately 7,600 tons consigned to a well-known wholesale coal house reached this port. Southern coals are stronger both in prices and demand. There is a good volume moving.

Coke is steady. One house quoted domestic coke—egg and stove sizes—around $10.50 at mine, and chestnut size around $10, run of oven coke, $7.25, and foundry, $7.50. Other quotations heard included low sulphur gas coal, mine run, $4@$4.50; three-quarter, $4.50@$5; high-volatile steam grades, run of mine, $3.25@$3.75 and slack, $3 @$3.50. Other coals are quoted in the Weekly Review.

UPPER POTOMAC

Shortage of empties has affected Upper Potomac territory more than the Georges Creek district. Still, output is averaging more than in 1921. Georges Creek companies are making a little headway in speeding up production but intimidation is more or less prevalent in some sections owing to the passive attitude of authorities. Though there is not a particularly strong demand, transportation difficulties prevent prompt movement to customers.

PHILADELPHIA

There is the strongest kind of a demand, with the shipper unable to get cars fast enough to meet it, and practically all of them are back on their orders. High-grade coals grow scarcer, and pool numbers are at times lost sight of in the consumers' demand for good steam coal.

The purchaser is now quite insistent for prompt delivery and is inclined to grow impatient, especially since so many of them had expected prices to take a drop, and now that they have risen they feel they should have coal immediately. The railroads continue to absorb much of the production.

Another drain on the supply of bituminous coal has been the call for domestic in the Eastern market. Producers in position to size their output find a ready market with the anthracite retailers, getting $7@$9 a ton for the large sizes. Coke is also in strong demand. Quite a few bituminous producers are going after domestic bituminous trade with the idea of making a permanent market for their fuels, giving printed instructions as to the use of it in homes.

Prices for spot coals have materially stiffened, and under present conditions it does not seem as though the end of the upward movement is in sight.

FAIRMONT

Most mines in the northern part of the state have had to put up with a 50-per cent car supply. Operations loading railroad fuel had about all the empties they needed, mines on the Morgantown & Wheeling on some days loading nothing but railroad fuel, which constitutes the bulk of the business in northern West Virginia at present.

CENTRAL PENNSYLVANIA

Car shortage is acute and operators declare their experience is the worst known from that standpoint. One hundred and twenty-five operators attended a meeting of the Central Pennsylvania Producer's Association in Altoona on Dec. 13 to take cognizance of the situation. The preparation of the district's case to present to the fact-finding commission was left in the hands of the officers of the association.

With the exception of such operations that get the benefit of assigned cars, the mines in the district are getting only an average of one and one-half day's work a week. Operators generally, have all the orders they can fill to Jan. 1, in view of the difficulty in getting cars.

Prices range a little higher. Pool 9, $5@$5.25; Pool 1, $5.50@$6; Pool 10, $4.25@$4.50; Pool 11, $3.75@$4.25; Pool 71, $5.25@$5.50.

West

KANSAS CITY

An advance of 50c on Kansas lump and nut and of 25c on mine run was announced by several dealers on Kansas City, Dec. 14. The announcement followed three days of temperatures ranging from 5 to 20 deg. above zero, with a forecast of continued cold—the first promise of protracted freezing weather this winter.

When the drop of $1 a ton on Kansas nut and lump was announced, Nov. 22, this advance was predicted, but during the weeks the lower prices were in effect there was only a slight increase in demand. All dealers have not posted the advance.

SALT LAKE CITY

Business is quiet. Small arms are a drug on the market and many cars may be found on the side tracks. Labor is plentiful and men are almost begging for work, according to one operator.

Production for November shows up well. The figures are 880,000 tons compared with 816,750 tons for November of last year. In 1920, 936,000 tons were mined. The total production for the first eleven months of the year is 4,373,470 tons. In 1921 the total for the year was 4,606,204 tons.

DENVER

A snow storm on the western slope of the Rockies blocked traffic shutting off cars from the coal districts. Practically all mines in Colorado including the Crested Butte mines of the Colorado Fuel & Iron Co. are shut down. As a result the freight car situation is more than 50 per cent improved in both bituminous and anthracite fields of the state. The anthracite mines are still inactive on account of car shortage.

Anthracite

Deluge of Retail Orders Comes with Wintry Weather

Dealers Unable to Meet Demand—Domestic Receipts Gaining—New York Fuel Edict Boosts Buckwheat Sales, Firming Up Smaller Steam Sizes.

Cold weather has deluged retailers with orders. Dealers are unable to cope with the demand and while domestic shipments are being received in larger volume the use of substitutes is increasing. The edict of the New York State Fuel Administrator requiring 25 per cent substitute coal with each domestic order is boosting the sale of buckwheat and has about cleaned up all available tonnage. This also has firmed up the smaller steam sizes.

Independent coals are not being bought heavily by retailers in the Eastern section because of the high quotations. Canadian buyers, however, are offering fancy figures for prompt shipment.

BUFFALO

[illegible] increasing if fuel [illegible] increasing before the order came to cut it off so that New York City's poor would not suffer. But the natural gas supply is good yet; if it lasts there will be no real difficulty.

Buyers profess a degree of indifference because so many consumers refuse to buy substitutes.

The price of independent anthracite is going up. It has always been $12 or more at the mines, but is now in some instances bringing $14. Jobbers who are in that trade say that even at that price it is next to impossible to get any coal unless a buyer goes to the mining office and insists on car content.

The Lake trade is practically at an end. The sudden cold weather, followed by storm, has about closed the interlake passages. The last eight vessels, [illegible] tons, all cleared for Milwaukee, making 117,700 tons in December, a season total of [illegible] tons, as against 3,316,312 tons in 1921.

BALTIMORE

The situation as to hard coal is rapidly [illegible]. While November showed a decline in the number of cars shipped in Baltimore as compared with the movement in October, the premium was taken by dealers here that December would see an increase. The first half of the month has been the exact reverse and the indication now is that the December movement will fall below that of November.

With more severe weather and seasonal [illegible] the increase of shipments [illegible] for dealers to handle as usual. The chances to take care against the situation practically will be [illegible] and in many cases [illegible] meeting that consumers with hot water and steam plants use bituminous coal as a substitute. The dealers are not at all impressed in many cases with the public appeal to the gallery of a representative of the Maryland Fuel Distribution Committee who has given out interviews to the papers, stating that he would "demand 100 per cent co-operation on the part of the dealers, or know the reason why." It has been mildly suggested by some of the hard coal merchants here that the gentleman could profit better devote his energies to the purpose for which the commission was largely created, namely securing shipments from the mines to those dealers here who are without coal or who have but little.

BOSTON

Most of the retailers are dragging along on the bottom, so far as supply is concerned, and if there be further bad weather the situation will be serious. Tows have been unmercifully delayed along the coast and every shipper is far behind program. To add to the difficulties the movement from the mines to tidewater is very slow and the volume available for distribution is disappointingly small.

All-rail shipments also are discouraging. The Massachusetts Emergency Fuel Administrator has seen fit to attack in the press the management of the railroad that has made by far the best showing in New England, both rail and water routes considered, and the trade is disturbed over what it considers to be unfair criticism.

NEW YORK

Orders of the State Fuel Administrator requiring consumers to take 25 per cent substitutes with orders for domestic coals has tended to reduce the supply of buckwheat at the terminals as well as in the retail dealers yards and to tighten up considerably the supply of rice and barley. Rice is now the long size of the steam coals.

A few days of cold weather and a slight snow storm caused an increased demand for domestic coals which dealers were unable to meet. Domestic sizes are coming forward in larger volume, however, and with the increased shipments expected because of the disappearance of Lake shipments the Metropolitan area is due to receive considerable more coal.

Many dealers are not buying any more independent coals than necessary because of the high quotations. No yard has yet more than a week's supply on hand and it was the opinion of some coal men that if shipments of all kinds of fuel should be tied up by a storm or otherwise there would not be more than four days' supply on hand in the city.

The yards are being [illegible] for coal. It was said that buyers representing Canadian dealers were at the mines offering $14@$15 for domestic coals. The larger independents are holding close to the $10.50-market.

The good grades of buckwheat are bringing better prices than company circular and some were being offered it was said at about $7.75 alongside.

PHILADELPHIA

An event in the market this week was the sudden demand for buckwheat as a domestic fuel, which about cleaned up all available tonnage. For several weeks past, after having been laggard since summer, this size began to improve in demand, but the climax was just reached this week. Independent coal quickly went to $4 and over, quotations as high as $4.75 being heard. Companies have no more room for new business. The sudden demand has been due to the winter weather, as when the dealers could no longer supply larger sizes the public simply took what was to be had.

There has also been a strong domestic movement of all kinds of fuels, including mine run and sized bituminous, and various kinds of coke, all of which have been finding a ready market. Retail prices on bituminous coal run $9 @$16 a ton, as some of the sized bituminous is just as costly as anthracite.

If anything there has been a slight improvement in anthracite shipments, but it is too early yet to note the effect on the market. In the steam sizes rice and barley have of course showed additional strength, due to the run on buckwheat, and most shippers are able to move heavier tonnages at company prices.

South

BIRMINGHAM

Demand was a little better within the last week, railroads buying some tonnage in the spot market for stocking to carry them through the holidays, and a little improvement also was reported in the general demand from industrial sources. Current orders together with contracts are sufficient to move all the coal being mined at this time. Activity in the domestic market is more marked with a recurrence of cooler weather, the demand for household fuel being regulated pretty much by the thermometer readings. Regardless of the fact that yards are yet without stocks of consequence there seems to be little uneasiness due to this condition.

Buying has not been stimulated sufficiently to affect prices and quotations are the same as a week ago.

Car supply continues bad, averaging from 50 to 60 per cent of equipment ordered by the mines. Production is at the rate of about 345,000 tons per week, which has been the basis of operation for several weeks past. Indications point to steady work through the holidays, with the loss of only Saturday preceding Christmas and Christmas Day.

VIRGINIA

Production in southwest Virginia decreased steadily during the first part of December, due to failure of the railroads to supply enough empties, which has reduced production to approximately 130,000 tons a week, or about 46 per cent of possible production. A number of mines have increased their coke output in order to curtail idleness.

Chicago and Midwest

Real Winter Wakens Whole Coal Market

Brisk Demand for Steam and Domestic Is Held Down by Shortage of Cars—Prices Strengthen Some—Blow-Up of Indiana Strike Is Noted Widely.

General market improvement was noticeable throughout the Midwest during the past week. The real winter which has clinched into the countryside is having its effect on almost all coals from big lump and anthracite down to slack. The ever-present affliction just now is a short car supply. In Illinois, Indiana and Kentucky, most railroads have given less than 35 per cent service during the last ten days and this limits output to a point where even the lowest grade coal is in some demand at slightly ascending prices.

A pronounced movement to stock by railroads and industrials takes all the steam coal there is. This, plus comparatively light production, is the reason why the price of screenings is following domestic sizes on the upward trend. The flattening of the threatened strike in Indiana had not had time by the end of the week, to have its full effect. There is no doubt that a general rush to buy was started two weeks ago in the Indiana market territory. Its subsidence now probably is absorbed in the general awakening of trade.

CHICAGO

The market on all coals picked up noticeably during the past week here. Domestic trade was lively all through the week because of the wind and cold, thus giving the producers of second grades of domestic sizes a chance to stiffen up their prices and collect. Prices on best southern Illinois stayed at $5.50 for lump while central Illinois got strong at $4@$4.50 and pushed hard for a rise to $5. Indiana domestic coals sold as fast as they could be produced. The threatened strike in that state did not develop but there was no sinking of the market as a result of this blow-up.

Steam demand freshened along with domestic. Southern Illinois screenings rose to an average close to $2.75 and showed signs of going higher. The steam sizes from other fields displayed the same tendency, though Standard district and Fifth Vein Indiana screenings remained under $2. A little stocking is going on now.

There has been no marked car or railroad power improvement in any of the fields tributary to this market so that supply has hardly kept up to demand. The stocks of coal on hand in industrial storage yards as well as dealers' bins are small. Thus the countryside has nothing upon which to fall back if a heavy snowstorm were to hit this section tying up traffic.

WESTERN KENTUCKY

Car supply in Western Kentucky has slumped, and reports through Dec. 11 show an average for the month of 30 per cent on the Illinois Central, 19 per cent on the Henderson and 26 per cent on the O. & N., divisions of the L. & N.

Short car supply along with cold weather has resulted in prices quoted being a bit higher, as a result of increased demand of utilities, industrials and retailers. Retailers are meeting with the best business of the year, and are ordering freely. Quotations reported from some operators are considerably higher than the general market, and are perhaps shaded a bit in acceptance of business, as open market quotations are not so much higher than those of last week, screenings showing decided improvement, with lump 25c. a ton higher than the low of last week, while mine run is unchanged.

Present quotations show screenings $1.65@$2, as against $1.25@$1.75 last week; mine run, $2@$2.50, unchanged; lump, $3.75@$4, as against $3.50@$4 last week. Some 6-in. block is quoted at $4.50.

ST. LOUIS

Domestic showed a little activity the past week on account of colder weather, but this was only temporary and the call was for cheaper grades of coal. Dealers still have their bins full, principally of high grade coal for which there is little or no demand. During the past week between 25 and 50 cars of anthracite and a few cars of smokeless moved in and is in good demand. Smokeless retails at $14.50@$15, and anthracite, all sizes, $16.25.

Locally coke is scarce, but a good tonnage of Alabama byproduct is moving through this gateway, principally chestnut for base burners for country dealers. Country demand for domestic is light on account of a feeling that prices will come down.

Some railroads are anticipating storage, principally the Frisco. It is understood the Missouri Pacific has about 84 days coal ahead. The Mobile & Ohio has acquired a good storage pile at various points. Shipments for Northern roads are noted passing through the gateway indicating fairly good storage supplies going to other lines.

Retail prices are: Carterville, $2.50; Mt. Olive, $7.50; Standard, $6@$6.75. Coke is $12.50 for byproduct and $12 for gas house.

LOUISVILLE

The coldest weather of the year settled over Kentucky on Dec. 14, when the thermometer dropped steadily, to a temperature lower than ten degrees above zero that night. Retailers on Monday reported good demand, while on Tuesday morning they had so many orders that by 10 o'clock they were taking orders for Wednesday alone. This indicates small stocks in hands of consumers, and leads to the belief that there will be a good domestic business all winter.

There has also been better steam plant demand, while utility, railroad and general industrial buying has been a shade better, as a result of improvement in consumption. The western Kentucky market was nervous the early part of the week over a threatened Indiana strike. Unless the supply improves it is believed that heavy demand and short supply will force a stiffer market soon.

Prices quoted in this market, mine eastern Kentucky prepared at $4@$7.50 a ton, according to size and quality; mine run, $3@$3.50 according to size or steam and general quality, and screenings, $2@$2.50. Western Kentucky lump is $3.75@$4, mine run, $2@$2.50 and screenings, $1.75@$2.

It is reported that slightly better shipments of river coal are in prospect, while tonnage moving by barge from Kentucky River mines, to Louisville, a new development in this field, is picking up steadily.

INDIANAPOLIS

Weather hovering slightly above the zero mark tumbled the domestic consumer into the lap of the retail trade last week. Coal bins which never had more than a ton in them during the past few months suddenly went empty and for 48 hours after the blizzard struck the dealers were kept busy supplying the demand. There was a noticeable tendency on the part of the consumers to buy in two- and three-ton lots, something that has not been noticed much this winter thus far. Even with the increased buying there appeared to be no strengthening in prices.

SOUTHERN ILLINOIS

Cold weather the past week has caused an improvement in the movement of domestic sizes. The steam advanced 25c. per ton. Generally, however, winter has not been severe enough yet to bring the market up to normal. The association operators still maintain their price of $4.50 for domestic sizes, whereas the independents are still down to $3 for nut and $3.50 to $4 for lump and egg, and screenings $2.75@$3.25.

Railroad tonnage the past week was usually good. Just as soon as locomotive coal the car shortage began to loom up and the demand the previous week was caused chiefly on account of no cars, whereas a week ago it was no bids. The Illinois Central has averaged but 20 per cent supply lately. The B. & O. and L. & N. are little better.

Similar conditions exist in the Jackson County and Duquoin fields. A fairly good tonnage of domestic coal is moving out of the Mt. Olive field to St. Louis, Chicago and the Northwest. Steam coals are in good demand, with 3-in. and 6-in. screenings $4 and the mine-run $3.50@$4 (the exception of lump, which is a little heavy).

The Standard situation showed no improvement. Mines still have a surplus of coal on hand, some mines being down as much as three days a week for want of cars. Two-inch lump coal, the leading size, is $3.50 mined, but $3.75 and screenings mined up from $1.75@$2 to $2.25@$2.50. Railroad tonnage out of this district has been fair the past week but car shortage is getting serious.

Eastern Inland

Boreas Stimulates Market; Unfilled Orders Increase

Steam Market Steadies, Spot Offerings Absorbed—Railroad, Industrial and Domestic Buying Heavier—Car Shortage Acute, with Little Improvement in Sight.

The steam market steadied last week, and spot offerings, troublesome a few days ago, have been largely absorbed. Railroads have increased their purchases and large industrials followed their lead. Colder weather has stimulated the domestic market and unfilled orders are increasing.

Cars are very scarce and there is little chance of immediate improvement. Snowfall and lower temperatures have further affected transportation conditions and several of the lines serving the fields supplying this territory have become badly clogged with loads.

CLEVELAND

Domestic coal consumers are preparing to substitute bituminous coal for anthracite this winter, but they are holding back in laying in stocks now in the hope that more anthracite and Pocahontas will be available later.

Industrial plants are buying for immediate requirements only and most of the manufacturing concerns are fairly well supplied. The hand-to-mouth buying of industrial steam coal is tending to limit market activities and to cause some price recession. More steam coal is being used by the railroads than by any other class of customers, with public utilities also taking a fair amount.

Colder weather is causing dealers to stock more freely. The recent heavy snowfall brought a flood of inquiries from consumers who decided against holding out longer for anthracite supplies. Shortage of gas in the last few days has driven many domestic users to order coal. As this is a fuel-coal state, most domestic users are equipped to utilize bituminous to supplement the fading gas supply in cold-weather periods.

Retail dealers are beginning to receive Pocahontas from the mines which had been ordered six to eight weeks ago. They are obtaining Pocahontas mine run at $5.50@$6, and lump at $6@$6.50. Because of freight rates and delivery charges Pocahontas shoveled coal is still quoted at $13.50@$14.

BUFFALO

Trade is very quiet, with prices unchanged. Any Allegheny Valley mine owner states that he is selling his output at exactly the same price as a month ago, but there has been marked weakness in some districts. Pittsburgh shippers complain that the Allegheny Valley mines have been undselling other districts, but the latter hold that Pittsburgh has been asking excessive prices.

A number of sales in large blocks have been reported lately. One shipper sold 100 cars to a single consumer, at a margin of only 15c. in the gross. This ought to help a shipper materially, yet experienced jobbers, working for permanency, prefer the course that will make the consumer a regular customer.

Bituminous prices remain somewhat unsteady at $4.75@$5 for Youghiogheny gas lump, $4.75@$4.25 for Pittsburgh and No. 8 steam lump, $3.25@$3.50 for mine run and $2.75@$3.25 for slack, with slack not as strong as sizes, adding $2.09 to Allegheny Valley and $2.24 to other coals for freight.

PITTSBURGH

Free steam coal, which had a tendency to press on the market a week or ten days ago, has been largely absorbed by some good-sized railroad purchases and the steam coal market is distinctly steadier, though prices are not quotably changed.

Gas coal is easier in tone, on the whole, being bought without difficulty, more frequently at $3 than at $3.25. Some operators, however, will not touch these figures, having $3.75 in mind as their minimum, preferring to confine their production to contract shipments. Few if any monthly adjustment contracts were fixed at less than $3.75 for December.

There is scarcely any demand in the open market for byproduct coal, consumers being taken care of by contract shipments. Contracts involving a monthly adjustment have been adjusted at $3.50@$3.75 for December.

Demand for domestic lump continues very heavy and scarcely a day passes without considerable unplaced tonnage being carried over. Prices up to $5.50 are still being secured sometimes, but in general prices are lower, at $5 or less. Producers with regular customers are obtaining somewhat less, on an average. The Pittsburgh Coal Co. has adhered to $4.50 as its price right along, despite higher prices obtainable, and it is reported now that the company contemplates reducing its price to $4 shortly.

EASTERN OHIO

The visitation of heavy snowfall and lowering temperatures have stimulated considerably the demand for coal. Likewise, car supply and transportation conditions have been adversely affected. Several of the lines serving Eastern Ohio are pretty well clogged with loads.

The district produced during the week ended Dec. 9, 341,000 tons or approximately 55 per cent of rated capacity. This tonnage is about the same as that for the preceding 5-day week but is 41,000 tons above the output for the corresponding week last year.

At the current rate of production over 40 per cent of output is going to the railroads for fuel, not only to take care of their present increased needs but for storage purposes to safeguard against winter emergencies.

Considerable optimism prevailed a few weeks ago that with the closing of Lake navigation car supply at the mines would show immediate improvement. On the contrary, cars are apparently being loaded to destinations farther away from home, and instead of the car supply situation showing improvement, it is, if anything, growing worse.

Cleveland industries and retail yards received a greater quantity of coal during the week ended Dec. 9 than during any week on record, total receipts being 3,028 cars. Of this, 2,160 cars were consigned to industries and 868 cars to retail yards.

DETROIT

With the season of Lake navigation at an end, a freer movement of bituminous coal to all-rail markets is expected. The increase in supply, so far, has not materialized to any noticeable extent.

Detroit is now receiving a fair amount of bituminous, though shipments are not as great as in recent previous years. A heavy snowfall Dec. 13 exerted a retarding influence on the movement, while lower temperatures imparted a short-lived stimulus to buying, particularly by household consumers. There is virtually no free coal on tracks around town.

Ohio mines are supplying the greater part of the bituminous coal sent to Detroit, although some improvement is apparent in the movement from West Virginia and Kentucky. Smokeless continues in short supply. Hocking lump is offered at $5.50, with egg at $5; mine run, $3.50, and nut, pea and slack, $2.75.

COLUMBUS

Colder weather has stimulated domestic demand but the steam business is somewhat indifferent. Buyers are not showing any particular uneasiness and many people are waiting for lower prices before placing heavy business.

Retail stocks are not large as a rule, but in Columbus and vicinity they are sufficient. Retailers have been doing a much better business with the lower temperatures and buying to replenish is the rule. Prices are steady at former levels with no increase following the dissolution of the fuel administration.

Reports show steam reserves of from 30 to 45 days and this is the reason for slowness in buying. Assigned cars for railroad fuel are still a large item in the commercial field and about 15 to 20 per cent of the total output goes to the carriers.

Little Pocahontas or other smokeless coal is finding its way in. Car supply is short in those fields and the usual amount of free coal for the Western market is lacking. As a result dealers are depending more and more on Ohio and the product of the nearby mining sections of Kentucky and West Virginia.

NORTHERN PANHANDLE

Car shortage is restricting output to less than half of possible production. Though the demand is not so strong, yet market conditions have not materially tended to retard production especially where mines have railroad fuel contracts, which business constitutes the bulk of the business of many northern Panhandle mines.

Northwest

Coal Shipping Season Limps to a Slow Close

Time Extension Is Cut Short by Rough Weather, Spite of Premium Freight Rates — Northwest Relies on Rails Now For Hard Coal Balance.

The shipping season to Northwest docks is practically ended. Rough weather wound it up several days before the expiration of the extension granted in order to get in more of the reluctant anthracite. Only a dozen or so cargoes were still on the way at the end of the week and the allotment of hard coal remained far from filled. Premium rates had been offered to get more shipped. Only 550,000 of the 700,000 tons promised have been received at the Head-of-the-Lakes. Much hope is placed in the railroads to bring in more.

The bituminous situation is better. Cold weather has stimulated the demand for all domestic sizes and has affected the steam market favorably too. Coal is moving out as fast as it has been coming in because dock arrivals have been disappointing all through December.

DULUTH

The last cargoes of coal arrived here early this week, and navigation closed, nearly a week before the extension time allowance on insurance expired. The reason for the early close is three fold. The weather has been most inclement, and boats have taken as much as four days from the Sault. Owners are unwilling to pay high insurance rates and it is reported that there has been a scarcity of coal at lower docks.

It is estimated that 5,800,000 tons of coal arrived here since shipments started after the coal strike terminated. About 5,250 000 tons were of soft coal and only 550,000 tons hard coal. To these figures must be added 416,000 tons of hard coal and 3,500,000 tons of soft which were on the docks at the opening of navigation.

The truest picture of conditions may be obtained more from a statement of stocks on hand Dec. 1 than by shipment figures. On that date there were 2,765,924 tons of bituminous and 145,092 tons of anthracite on the docks. None of the anthracite was strictly speaking "free coal." All is spoken for but it is doubtful where the fuel administrator will order it shipped. Last year on Dec. 1 there were 5,663,477 tons of soft and 871,196 tons of hard coal on the docks. There is more bituminous coal on hand now than was used last winter but only about one-fourth as much anthracite.

Arrivals since Dec. 1 have been small —20 cargoes of bituminous and 10 of anthracite in the last week. Coal is leaving almost as fast as it arrives. It has been stated that docks could ship out all the stocks of hard coal in three days. A meeting in St. Paul with the fuel administrator will decide the fate of the hard coal on docks here.

MILWAUKEE

The last cargoes of the season, mainly anthracite, are on the way to Milwaukee, and the record of receipts by Lake will soon be closed. Dock companies have made every effort to increase their stocks of hard coal and paid as high as $1.10 per ton as a "wild" freight rate to induce steamers to make the late run. The supply of soft coal is sufficient to tide over the winter with reasonable receipts by rail.

Prepared or screened Pocahontas, which has been very scarce, is now coming by rail. It costs the jobber about $12 per ton on track at Milwaukee, which almost puts it in the class with hard coal. Illinois and Indiana screenings have also stiffened in price about 25c., but the added costs of these two grades of coal have not been passed along to the consumer as yet.

Milwaukee will undoubtedly receive an unusual amount of coal by rail during the coming winter. Dealers report a very active demand for all kinds of coal with the advent of low temperatures. The anthracite shortage in Wisconsin is greater than was anticipated, and the state coal commissioner cautions dealers to discourage the use of chestnut size by furnace consumers, as all of that grade of coal will be needed by people using base-burning stoves.

MINNEAPOLIS

Winter weather has struck the Northwest at last hampering coal transportation. Consumption leaps materially. Yet it has shown but moderate effect upon the wholesale market. Screenings, which have been in desperate shape, have braced to some extent. A continuation of zero weather will certainly help the market for regular sizes. The better grades of soft coal have been going nominally at $7.50 mine price, but with concessions.

The conclusion of the season of navigation has brought but little additional coal for the Northwest. It had been hoped that there would be a rush of hard coal for the last few days, but there was none. There is a total of around 575,000 tons of hard coal of all kinds received on the Duluth-Superior docks for the season, against the allotment of over 700,000 tons, leaving a shortage of something under 150,000 tons. The allotment was assumed to be the absolute minimum for the Northwest.

It is proposed to get enough hard coal by rail to place out. However, there is no fear of a surplus. Not a single promise, allotment or plan for coal for the Northwest has been fulfilled this year. Hence the all-rail tonnage of hard coal may be cut to a third and the period of shipments made not to exceed thirty days.

New England

Market Appreciably Firmer, Prices Up on All Grades

Operators Recently Seeking Orders Now Stick to Business in Hand—Upward Swing May Last Through January—Equipment Shortage Disturbs.

On all sides the situation is decidedly firmer. Operators who a fortnight ago were soliciting orders are now declining to make commitments until progress is made on business already in hand. The Southern smokeless grades also are in better position than a week ago, small accumulations having dwindled until several of the agencies are pressed to clear waiting bottoms. Apparently there is to be a pronounced upward swing that may or may not last through January.

Shortage of motive power is causing grave apprehension in trade circles. On the New England roads the lack of engines is not so noticeable as on the originating lines, but it is all serious enough, and is a most disturbing factor.

At Norfolk and Newport News spot coal has tightened to a marked degree. Thus far there has been nothing like comprehensive inquiry for contract shipment, current demand being confined to the several agencies themselves. Reserves here are in reasonably good shape, and even the railroads are not likely to dip into the spot market during December. A few of the water plants made purchases, especially of rail coal, before prices advanced, and naturally they are counting on deliveries being made as stipulated. In other words, it will take a pronounced falling off in rail supply to induce anything approaching a broad market.

At Hampton Roads spot coal at Navy standard is quoted at $6, with the expectation it will go to $6.75 within a few days. There continues active demand at the West for prepared sizes, and shortage of cars is a factor in reducing shipments to the piers. Practically all the low-volatile grades in central Pennsylvania have been marked up in price during the current week. The more favorably known Cambria coals have already sold up to $6 per ton at the mines and some medium to low-averages Cambria have brought $5.50 for prompt shipment. In every direction quotations are consistently on a higher level than was the case a week ago. Other spot prices are shown in the Weekly Survey.

Cincinnati Gateway

Cold Weather Helps Trade With a Freer Car Movement

Domestic Sizes and Smokeless Holding Up in Price—Softness Develops in Steam and Byproduct Sales — Car Movement Better to Southeastern Kentucky Fields.

Domestic business crowded most of the other trading to the sidelines during the past week, due to the fact that the first signs of continued cold weather arrived opportunely. The market was rapidly growing stale under increasing movement of coals to points that this gateway either serves or is in competition with. Even the flurry over in Indiana with strike clouds in the offing did not have much of an effect and what upward movement there was in price was but momentary.

Early in the month buying by the steel plants had not been of the volume that many were led to expect, so that this force has been latent in so far as bolstering declines is concerned. Firmer prices East probably had the most beneficial effect. River business continues good with heavy tonnages arriving.

CINCINNATI

The smokeless situation has scarcely lodged toward weakness, while other lines have been affected. Mine-run and prepared are still commanding the $6 price that they have for months. This is due to the small amount that is coming in over the N. & W. and the heavy shipments east from New River. What little there is for spot sale is coming from the latter fields and the brokers who can get it are asking $7@$8 for it.

Efforts made by the traffic committee of the Hazard Coal Operators' Association has shown in a better car supply to the Hazard and Harlan fields and though this has increased proportionately the output of domestic coal there has been but little tendency to drop the price. Some egg has been selling down to $5.50 but in offering sizings is the only sign of weakness. Because of slower movement West Virginia coals for the week have held about 50c. above the northeastern Kentucky or all coals of the retailer.

There has been no change in the labor situation. The loss of 11 days a day accordingly having no effect on the prices that were established in late October and have relatively since been

LOW-VOLATILE FIELDS

New River and the Gulf

Production in the New River territory is still averaging as much as 50 per cent of capacity because of poor car supply by the C. & O. Output is two days [illegible] a week, which is insufficient for contract requirements. Demand is fairly brisk at tidewater. Dumps not as large as usual. More coal also could be marketed in the West.

Increased motive power on the Virginian is enabling that road to handle more coal loads and provide more empties, which is reflected in increased tidewater dumpings as well as in slightly increased production by Gulf mines. Scarcely any coal is moving Westward from this region. For all the spot coal possible demand.

Pocahontas and Tug River

Although Pocahontas mines are producing on a little larger scale than mines in other low-volatile districts, the car supply is keeping output at most mines at not more than a 40 per cent supply. A larger movement to tidewater than to western markets is possible owing to the prompter return of empties from the piers and owing to the fact that cars remain on the line of the home road.

Poor car supply on the Norfolk & Western, which holds Tug River production at 40 per cent of capacity, is keeping many mines in idleness part of the time. Operations have not been impeded by market developments; mines are unable to obtain enough cars to insure a satisfactory movement to Western markets or to meet the demand in the West to which much coal is usually consigned on contract. Prices do not differ materially from those of other smokeless regions.

HIGH-VOLATILE FIELDS

Kanawha

Output is so curtailed by car shortage that there is hardly enough spot coal available to make any difference regardless of market quotations. Car shortage still eclipses the market situation in interest. It is difficult for many companies to keep pace with contract orders, partly because the C. & O. is not permitting the use of its larger cars for western movement.

Logan and Thacker

The C. & O. having failed to increase car supply in the Logan district, mines are forced to operate at irregular intervals, few shipping more than two days a week. Where operations are on any larger scale, coal is stored so that there may be no delay when empties are available. It is difficult to make prompt shipment on contracts, especially in the West, since only certain classes of equipment can be used. Few companies have any free coal.

Mines in the Williamson field also are producing on a 40 per cent basis. With open tops scarce the average mine is not running over two or three days a week, forcing up production costs even in the face of lower prices. Nearly all the output of the region now available is being utilized in filling standing orders, principally for Western delivery. Where coal is sold on a spot basis the price range, for steam mine-run at least is [illegible]. It is not an easy matter, however, to get coal through to Western customers.

Northeastern Kentucky

Prices are holding up, considering general market conditions. One factor is a shortage of empties, and another is irregular operation growing out of the scarcity of empties and other transportation disabilities. Quotations on mine-run range $3@$3.50 and on lump $6@$7.

Coke

UNIONTOWN

Cold weather has not materially strengthened the coal market. The number of sales, however, has been increased substantially. The size of some of the coal orders placed this week seems to indicate that those industrial consumers are taking a lesson from past experiences and are buying more than immediate needs.

There is no general inclination on the part of consumers to anticipate railroad difficulties by laying in a surplus stock at the present market but sales for the past two months have run so greatly to the hand-to-mouth variety that the fact that one or two consumers have shifted to a preparedness fuel policy may be considered significant.

The coke market shows no change, with the exception of a strong demand from the East where heating coke is being used as a substitute for anthracite. Quotations prevailing practically all week are: Steam coal, $2.25@$2.75; byproduct, $3@$3.50; furnace coke, $6.25@$6.75, and foundry, $7@$7.50.

CONNELLSVILLE

The coke market has softened slightly. Furnace is easily available at not over $6.50, against a range of $6.50@$7 a week ago, while foundry has declined 50c. to a range of $7@$7.50.

In the past two or three days a demand has suddenly arisen from the East for coke of almost any description for domestic use. There have been relatively large inquiries in the market and off-coke has been taken freely at the various prices asked. Predictions are being made that high prices will be developed in a few days as a result of this Eastern buying. The blast furnaces are not in the market to any extent for spot or prompt coke. As to the first quarter, they have steadfastly refused to negotiate, expecting lower prices. Valley furnaces have sold foundry iron at $25, furnace, for first quarter as a backlog and it is doubtful whether $7 coke would let them out whole on such sales.

The *Courier* reports production during the week ended Dec. 9 at 127,600 tons by the furnace ovens and 75,210 tons by the merchant ovens, a total of 202,810 tons, an increase of 9,040 tons.

BUFFALO

The coke trade is a trifle firmer, but sellers think the strength will not last. Domestic sizes are hard to get. Local byproduct ovens have none to sell to jobbers, except now and then; furnaces take it all. Quotations: $7.50@$8 for Connellsville foundry, $6.25@$6.75 for furnace and $9.50@$10 for chestnut to families, adding $3.28 to cover freight.

News Items From Field and Trade

CONNECTICUT

The F. A. & D. R. Alling Co., New Haven, wholesale and retail coal dealers, recently increased their capital stock from $65,000 to $150,000.

ILLINOIS

The Carterville Coal & Mining Co., with mines in southern Illinois, Kentucky and Alabama, has opened an office at Cairo.

The Union mine of the LaSalle County Coal Co. opened Nov. 20. This mine has been closed for almost a year following a fire which burned for weeks in the underground workings. The fire defied all efforts to check its progress for many days. Finally, the fire zone was walled off and a new entry was driven around it.

The Sharon Coal Mining Co., of Georgetown, has been incorporated with a capital stock of $200,000. The incorporators are Seymour A. Rhode, Louis Clements, Robert Pettigrew and John Donaldson.

The Lake & Export Coal Sales Corporation of Illinois has taken over the output of two additional mines in Williamson County. This brings the total daily production of the company to 12,000 tons. The sales organization of the company had a meeting in Chicago recently which was followed by a dinner and theater party. Those in attendance included D. S. Gent, president; W. L. Walton, vice-president; G. H. Bridges, sales manager; T. F. Gough, city sales manager; P. C. Joquel, of St. Louis, southwestern manager; R. L. Mackay, G. E. Miller, A. D. Williams, R. E. Morris and L. J. Mellick, salesmen.

The Black Servant Coal Co. of Harrisburg, a new concern, has completed plans for the opening of a **new strip mine** on a 1,000 acre tract of land near that city. The company will install approximately $200,000 worth of new machinery and equipment. The vein is said to be 8-ft. thick and from 10 to 30 ft. underground.

Approximately $300,000 has been paid farmers in the vicinity of Hamel, Madison County, **for coal rights to a new 15,000 acre tract** which has all been tested and according to indications is to soon be the site of a large mine. While all operations during the tests on the tract were made secretly, it is thought that the work is being backed by the **Mt. Olive & Staunton Coal Co.**, which has extensive operations to the north of the site.

Fire at the Consolidated Coal Co. mine No. 8 near Herrin, recently destroyed the coal washer and other top buildings causing a loss of $50,000. The fire will cause the mine to be idle for an indefinite period during which machinery and equipment will have to be replaced.

A creditor's petition in bankruptcy has been filed in the United States District Court against the Conway Coal & Coke Co. by the Flanigan Coal Sales Co., a Delaware corporation; the Black Gem Coal & Coke Co., of Illinois, and the S. & S. Fuel Co., of Illinois. The amount involved is not stipulated. The three petitioners merely declared there is over $500 due them from the Conway Coal & Coke Co., as provided by law.

The Bituminelte Coal Co. of Chicago has options on property at Mt. Vernon, for its first big plant. Bituminelte is a substitute for hard coal made by a process using bituminous. The first unit of the proposed plant will have a 500-tons daily capacity. Machine shops for the manufacture of machines used in the process will be made there for other plants to be located throughout the country as the business is built up. Mt. Vernon was selected because of its proximity to the coal fields and railroads. It has favorable rates from 10 producing counties in Illinois as well as from mines in Indiana and West Kentucky.

A certified check for $15,000 has been handed to **John M. Brichler**, Belleville, in full settlement out of court of the claim against the St. Clair Coal and Mining Co. of St. Louis, of which he was secretary, for a share of profits which he alleged was due him. The payment was made by **Fred W. Kleine**, president of the company who also paid the City of St. Louis $7,000 in settlement of a $9,000 claim made by the city for coal alleged to have been sold by the company short weight to the city water works.

The Coffeen mine of the Coffeen Coal Mining Co. at Coffeen, Ill., **has been sold to Cosgrove and Co.** This company will operate it hereafter. It is said that the purchaser will spend at least $250,000 in improvements and within a very short time 100 men will be employed. **Ralph Mitchell**, president of the Cosgrove and Co. states that the capacity of the mine will be increased to between 2,500 and 3,000 tons a day. The new management has leases on 1,400 acres in the outer St. Louis suburban belt. The mine is served by the Toledo, St. Louis and Western (Clover Leaf) railroad. J. N. Greene will be superintendent and Harry H. Hickman assistant superintendent.

The Maplewood Coal Co., Farmington, has erected 10 houses in Covingville, Ill., for homes for miners. It will erect 10 more soon.

John S. Rogers, formerly in the claim department of the Old Ben Coal Corporation at Christopher, has accepted a position in the mine offices at Dowell, of the Union Colliery Co. of St. Louis.

The Gus Blair Coal Co. at Murphysboro, with a branch office at St. Louis, has just been formed by the man whose name the company bears. Mr. Blair has long been identified with the coal business in Jackson County and served two terms as postmaster at Murphysboro.

A new slope mine is to be sunk soon in the vicinity of Marion by **The Bradbury-Scullin Coal Mining Co.** of Marion, a new concern. While nothing definite has been announced about starting operations it is thought the mine will be in operation by late next spring at least. The company is composed of the following: William Christian, John M. Reid, Harry Bradbury and R. P. Scullin, of Marion, and Joseph Stone, of Royalton. Mr. Reid is attorney for the company at Marion.

T. S. Cousins, general superintendent of three mines of the Equitable Coal & Coke Co. at Johnson City, Herrin and Duquoin, is again able to be at his offices after being confined to a St. Louis hospital for some time.

A force of men is laying 8,580 feet of track to connect the **new mine near Alpha** with the tracks of the Burlington railroad. Four loading tracks at the mine and one track for switching purposes will be built. The capacity of the new mine will be 25 cars a day eventually. Three shifts of men are now finishing the bottom and low seams. Production is expected to start about Jan. 1.

Charges that the Superior Mining Co. of St. Louis, which dissolved June 5, 1922, **wrongfully mined and appropriated coal** owned by the Southern Coal Coke and Mining Co. are contained in a bill in chancery filed by the latter corporation in circuit court at Belleville, Ill. The amount taken is estimated at [illegible] tons, worth $200,000 underground. The bill sets forth that the Superior Mining Co. operating the Superior mine had gone further than the boundaries of their coal properties and had filed for record fraudulent maps of its operations.

INDIANA

Coal lands near Terre Haute have been acquired by the Central Indiana Power Co. and Sloan & Webster, Inc., of Marion, have been retained to design and construct a power plant at the same county.

The Jasonville Fourth Vein Coal & Mining Co. of Jasonville, has been incorporated with capital of [illegible]. The directors are Samuel Bradshaw, Delbert Hill, Ora Ellsworth and Charles E. Thomas.

The Monroe-Edwards Co. of Peru has been incorporated. The company has a capital of $10,000 and will deal in coal and other fuels. Directors are John J. Monroe, Mary M. Munro and James D. Edwards.

IOWA

The board of education of Davenport will be supplied with Pocahontas, Kanawha and Tazewell county coal for the next four months at $6.21 and $6.26 a ton, a saving said to be lower than that secured by [illegible] the city of Davenport or [illegible]

KENTUCKY

N. M. Argabrite, vice-president and general manager of the Kentucky and West Virginia Power Co., was in the field recently inspecting the progress being made on the installation of [illegible] power. At [illegible] Big Sandy has [illegible] kilowatts. A number of [illegible] are now operating on commercial power. The opening of this new [illegible] tion is believed will result in [illegible] within the next year.

S. S. Stone, of Charleston, was in Ashland recently calling upon the coal trade in the interest of the West Virginia and Kentucky coal [illegible] being organized for the purpose of exploiting the coal products of that section known as the Southern Appalachian area.

MICHIGAN

The P. Koenig Coal Co. of Detroit, was indicted by a federal grand jury [illegible] charges of getting preference shipments of coal alleged to be the [illegible] the company is said to have sold to the regular customers. [illegible] the indictment, each charging a separate offense and the penalty for each is a fine not to exceed $2,000. The specific charge is violation of the Lever act, as amended, intended to put teeth in the functioning of the Interstate Commerce Commission.

MISSOURI

The Curran Coal Co. has been incorporated at St. Louis with a capital stock of $1[illegible] and will mine and deal in coal and other fuel products at [illegible] The incorporators are C. H. Curran, W. H. Hulett and E. A. Hayden.

The Mitchell-Lovell Coal Co. has been formed at Kansas City with a capital stock of $[illegible] and will develop coal properties. The incorporators are W. A. Mitchell, A. D. Lovell, E. E. Lovell and M. C. Mitchell.

Gose & Austin, who have been operating north of Rockford, have installed a plant of coal of good quality. A shaft will be put down at once and coal prepared for commercial purposes. It is believed that a much larger vein of coal is under that [illegible] section. The [illegible] together with others, have formed a corporation with David Gose, Cora Gose, L. A. Austin and Miss Lyon Austin as stockholders.

The Otterville Mining Co., which has [illegible] at Otterville for the past [illegible] prepared for coal mining on [illegible] and after going to the [illegible] and discharged all [illegible] and abandoned [illegible] This [illegible] to operate [illegible] coal [illegible] this section.

The Parral Coal Mining Co. has been organized at Joplin with a [illegible] of $25,000. The company will mine and sell coal at wholesale and retail and also will mine and manufacture [illegible] gravel. The incorporators are [illegible] Hulett and E. A. Hayden.

Dickinson Brothers, of Kansas City, who [illegible] mine coal on the Ed Reed farm, near [illegible] have sold a commercial vein [illegible] of the coal used in that section. [illegible] Kansas City [illegible] reports that [illegible] to expand its [illegible] [illegible] Chamber of Commerce [illegible] [illegible] a [illegible] [illegible] [illegible]

The Ingersoll-Rand Company and the S. R. Dresser Steam Pump Works have opened a branch office at 514 Interstate Building, Buffalo, where the usual service may be obtained by customers of these companies.

OHIO

Visitors to the Cincinnati market recently were J. W. Dorville, sales manager for the Stonega Coal & Coke Co., Pittsburgh; Ernest W. Longstreth, of the Fayette Coke Co., Masontown, Pa.; John Greenish, of the Federal Coal Co., at Williamson, W. Va.; W. Riddle, of the State Coal Co., at Cincinnati, Ohio, and P. T. Johnson, of the Johnson Coal Co., at Shawnee, Ky. Mr. Johnson brought his annual carload of coals for the miners and their families which his company gives away at Christmas.

The Monarch Coal Mining Co. has been chartered with a capital of $50,000 to mine coal and coal near Robbins. Incorporators are Oliver Monarch, Lawrence D. Monarch, Fannie Monarch, Ethel Monarch and Frances Monarch.

The Hydro Products Engineering Co., of Cincinnati, has been incorporated with a capital of $10,000 by H. M. Cohen, Philip Greenberg, John B. Schneider, I. D. Hoffman and Thomas B. Ford.

The Tyn Coal Co., which has offices in Lincoln Inn Court, Cincinnati, was recently incorporated under the Ohio laws and sold to M. Shoemaker of the Ludlow Bank.

A branch of the J. F. Barton Coal Co., of Cincinnati, is in the First National Bank building, Cincinnati, with R. D. Quarkel in charge.

The Pittsburgh & Ohio Coal Co. has taken quarters in the Union Central building, Cincinnati.

William Howells, of the St. Paul Coal Co., Kanawha County, W. Va., and Bert Peterson, of the Kanawha Coal Co., Alderson, W. Va., were recent visitors to the Cincinnati market. H. H. Chambers, president of the Chesapeake & Virginia Coal Co., Lynchburg, Va., was a visitor recently to the branch office here.

Incorporation of a plant at Fremont, in the Sandusky County field of Ohio, by the Diamond & Western Coal Co. will provide means for the storage of 1,000,000 tons of coal a year. The plant, which will be one of the largest and finest of its kind in the world, is expected to be ready for operation next summer. Four openings are being driven and when finished will have a capacity of 2,000 tons each daily. Trackage will be provided for 1,000 cars. The plant will have a long waterfront. The coal will come down to the docks from the mines in Perry County, Ohio, and Kanawha County, W. Va.

Judge A. D. Hughes of Perry County, Ohio, recently granted an agreed order in Muskingum County, Ohio, awarding the Spring Lumber Co. judgments aggregating $18,000 in its suit against the Adamson Star Coal Co. and other defendants. The original indebtedness was for lumber sold to the principal company for the Adamson Star Coal Co. near Thornville. Liens having been given in payment for the coal shipped, referred to the corporation and a question of personal liability. When the Adamson Star Coal Co. went into the hands of receivers the property brought enough under the judgments.

PENNSYLVANIA

A quota of 700 cars is believed to have been allotted for loading anthracite during the week of Dec. 10 at the Philadelphia & Reading Railway Co.'s coal piers at Port Richmond, Philadelphia, and Greenwich Point, Philadelphia. Three cargoes were cleared by the Reading Company for Boston during the week ended Dec. 8. Two of these cargoes were brought to the piers from Delaware River points, the third was coal that had been previously stored at the piers. The cargoes cleared were 2,500 tons each.

Bituminous and anthracite coal miners will be active in the Republican ballot in Susquehanna County. There were over 600 names of miners on the petitions filed with the County Commissioners last autumn. A campaign of the miners and their friends will be conducted by cards with the Congressional ballot and Pennsylvania Reading to be used. As a result four representatives of the Commonwealth Labor Party were elected to the county board. The miners are confident of electing a majority of the county officers this year.

A further slip having occurred in the roof of the Consolidated Coal Co.'s Wilkes-Barre colliery at Port Blanchard, Pa., which closed the mine, the Pennsylvania Coal Co. has completed a new slope connecting with the Consolidated workings. The new slope is expected to be in operation by Dec. 15. The Consolidated Coal Co. has been operating its mine for the past 18 months under a lease from the Pennsylvania Coal Co. The lease has expired and the mine will be worked by the Pennsylvania Coal Co. hereafter.

The Hudson Coal Co. has completed the sinking of a new slope at Plymouth, Pa., which will be used for the mining of coal from the Dorrance vein. The new slope is 1,000 ft. deep and is equipped with a double-track railroad. The Hudson

Major Lunsford, in charge of the mines of Henry Ford, who recently acquired the mines at Twin Branch in Tug River District, located on the main line of the N. & W., and formerly owned by Dexter & Carpenter, of New York, has announced that, effective Dec. 1, it will be the policy of the company to make no profit in the company commissary or company store.

Counsel representing **Peter Radakovitch**, tried and convicted on a conspiracy charge for participating in the Cliftonville mine riot of last July, have filed a **motion to set aside the verdict** and grant the defendant a new trial on the ground that one of the jurors in the case expressed an opinion unfavorable to all defendants prior to the trial. Five affidavits have been submitted in support of the contention of counsel for the defense to the effect that on the Sunday following the verdict in the case of John Kaminski, H. H. Stoops, one of the jurors, expressed the belief that those who participated in the march should be hanged, whether they shot Sheriff Duvall or not and also that anyone connected with the trouble should be hanged.

The large tipple of the **Georges Creek Coal Co.**, near Midland, was destroyed by fire a few days ago, entailing a heavy loss. The company has not determined the origin of the blaze. Operations were suspended for a time by the Georges Creek company, but a month or more ago were resumed.

There is more activity at the present than there has been in some time at the plants of the Gauley Mountain Coal Co., in the New River field, and this company only recently resumed operations at 100 coke ovens, enabling the mines of the company to work about five days a week. Advocates of a strike held out longer at Ansted than at any other point in the New River field, but the strike is a thing of the past at this plant and few of the old men remain.

The Edward Hines coal and lumber interests, of Chicago, have just consummated a deal for the **purchase of 2,000 acres of virgin coal** in the Pittsburgh seam on Indian Run in Monongalia County. Eventually this will result in the expenditure of between $5,000,000 and $6,000,000 for development purposes. The Edward Hines interests were represented in the purchase of the coal from farmers and other owners of small tracts by C. E. Hawker, of Fairmont. It is possible that the coal land acquired will be developed and operations undertaken by one of the larger companies in the Fairmont field, though negotiations have not been completed and hence no details of such a plan are obtainable at this time.

C. A. Allen, of Salt Lake City, one of the mining engineers staff of the Bureau of Mines, has ben assigned to duty in the Pocahontas region as a representative of the Federal Coal Commission for the specific purpose of making a study of waste in coal mining, it having been decided to study that question in West Virginia first.

CANADA

A fire which broke out on the premises of the **Consumer Coal Co.**, at Hamilton, Ont., destroyed a building 200x100 ft. belonging to the company. The owners place their loss at $18,000.

Output of coal from Canadian mines during August, according to a statement issued by the Dominion Bureau of Statistics, amounted to 789,000 tons, a decrease of 69,000 tons from that of July. The output for the first eight months of the year was 7,745,000 tons, which is less by 1,571,000 tons than the average for the same months of the last three years. **Imports in August** were 12 per cent below the record for July. Imports during the first eight months of the year were 49 per cent below the 3-year average for the same period. **Exports in August** were 236,000 tons, as compared with 243,000 tons in July. The record for the calendar year was 25 per cent below the average for the eight months period of the last three years. As a result of the movement of coal during August there was available for consumption in Canada 945,000 tons, as compared with a 3-year average for August of 3,222,000 tons. For the first eight months of the year the amount available for consumption was 12,615,000 tons, as compared with a 3-year average for the same period of 19,452,000 tons.

A number of miners in the **northern Alberta coal field went on strike** Nov. 10 because the operators refused to recognize the United Mine Workers. Operators aver that 50 to 75 per cent of the men are at work, and that the majority of the mines are being worked at close to capacity. The president of district No. 18 has been in the district for some time, and has been very active. On Dec. 1 there was a parade of between three and four hundred strikers through the principal streets of Edmonton. Should the men succeed in forcing their demands, it will greatly strengthen the hands of the union in Alberta as during the strike in the southern Alberta and southeastern British Columbia fields in the spring and summer of this year, the northern field was able to supply the demand, and there was no real coal shortage.

Coal briquets from Alberta mine slack will be made in the university laboratories at Edmonton. An experimental plant has been set up for the purpose, and is now practically completed. All kinds of slack from the Edmonton mines and from mines in other parts of the province will be tried out in the plant and other materials will be tested including bituminous sands from the Athabasca region.

Stating in a recent address at Ottawa that a strike of coal miners in the United States is expected on April 1 next, **Dr. Charles Camsell, Deputy Minister of Mines**, urged further examination of the possibilities of Welsh anthracite. He also suggested using peat up to the end of October, coal from November to March, and peat again for any remaining period that fuel may be found necessary.

WASHINGTON, D. C.

In recognition of his [illegible] as **director of the Maryland Bureau of Mines, Dr. J. J. Rutledge** was tendered a dinner in Washington by [illegible] at the Mayflower who have been associated with him in his work with the Bureau of Mines, Robert Sanford, editor for the Bureau of Mines acted as toastmaster. Dr. Rutledge detailed the Maryland experiment as the result of a competitive examination.

The U. S. Civil Service Commission announces that an open competitive examination will be held throughout the United States on Jan. 24 to fill a vacancy in the position of **master electrician at the Navy Yard, Brooklyn, N. Y.** The salary is $7.40 a day. The duties consist of the supervision, management and direction of all electrical work carried on by [illegible] formation, and inspection [illegible] required from the U. S. Civil Service Commission, Washington, D. C., at any of the local offices mentioned in the notice. The [illegible] of the city.

The U. S. Civil Service Commission announces an open competitive examination for electrical engineer [illegible] Navy to [illegible] Dec. 28, 1922. A vacancy in the [illegible] position, [illegible] Chief of Engineers, War Department, at $4,000 to $5,000 a year, and vacancies requiring similar [illegible] these or higher salaries, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer or promotion. The examination will be open to all [illegible] of the United States who have had [illegible] experience in the manufacture, [illegible] and operation [illegible] electrical [illegible].

The U. S. Civil Service Commission announces an open competitive examination for valuation engineer ($5,000 a year) and assistant valuation engineer ($4,000 a year) to fill [illegible] vacancies in the Interstate Commerce Commission. The examination will consist [illegible] of experience in [illegible] chemical and market values of commodities and real estate, development properties and [illegible]. Full information and application forms may be obtained from the United States Civil Service Commission, Washington, D. C., or [illegible] at any [illegible] U. S. civil service [illegible] of the post offices or custom houses in [illegible].

Traffic News

The I. C. C. on Dec. 7 issued Investigation and Suspension Docket No. 1620, relating to class D proportional rates on coal from West Bank-Mississippi River points to points in Iowa. The commission had ordered a hearing concerning the lawfulness of regulations and practices affecting rates and charges stated in schedules contained in a tariff designated E. B. Boyd, agent, Supplement No. 28 to I. C. C. No. A 1204. Pending a decision the commission ordered that the operation of certain schedules contained in this tariff be suspended and that the use of the regulations and practices therein stated be deferred upon interstate traffic until Dec. 13, as the hearing could be concluded within the period of suspension the commission ordered that the operation of the schedules contained in the above tariff be further suspended, and that the use of the regulations and practices therein stated be further deferred upon interstate traffic until Jan. 12, 1923 unless otherwise ordered by the commission and no change shall be made in such regulations and practices during the said period of suspension unless authorized by special permission of the commission. It was further ordered that the regulations and practices thereby sought to be altered shall not be changed by any subsequent tariff or schedule until this investigation and suspension proceeding has been disposed of or until the period of suspension and any extension thereof has expired, unless authorized by special permission of the commission.

That the divisions between carriers of rates on bituminous coal to destinations in Michigan, Ohio, Indiana, Illinois and Wisconsin should retain the same relationship as before the Interstate Commerce Commission's report in Ex Parte No. 74 is the contention of the **Baltimore & Ohio, the Norfolk & Western, the Chesapeake & Ohio and the Louisville & Nashville** railroad companies. If the divisions which existed on Aug. 15, 1920, were not just, it was due to the disparity resting in their being more favorable to the Michigan lines, the carriers mentioned contend. The changes in transportation and traffic conditions affecting the two groups of lines, that is up to and beyond Toledo, which have taken place since the early days when the divisional arrangement was made, according to these carriers, have been for the most part changes which increased to greater ratio the burden of the lines south of Toledo than that of the lines north and west of Toledo. One respect in which this is said to be pointed out, is in the matter of railroad fuel as to which the Michigan roads are having coal a little less than 100 miles haul, the expense of [illegible] coal for them. It is declared further that [illegible] increased [illegible] consideration which should be given in the balance with the increased haul of the lines south of Toledo, may not become the sole [illegible].

The Fort Dearborn Coal & Export Co. was the [illegible] in the federal court for the southern district of West Virginia against the Norfolk & Western [illegible] in the amount of $11,446.93 by a jury. This was an action brought by the coal [illegible]

Publications Received

Recent Patents

Loading Machine Attachment. John W. [illegible] Pittsburgh, Pa. 1,430,669. Oct. 3, 1922. Filed [illegible]; serial No. [illegible]. [illegible]

Engine Trip for Steam Shovels. C. A. [illegible] and C. E. [illegible], Cleveland, O. 1,430,942. Oct. 3, 1922. Filed Feb. 14, 1921; serial No. 443,003.

Bail for Skip-Hoist Buckets. Wm. E. [illegible], Pittsburgh, Pa., assignor to the [illegible] Co., Pittsburgh, Pa. 1,430,985. Oct. 3, 1922. Filed May 26, 1921; serial No. 472,514.

Picking Screen. E. W. Johnson, Pittsburgh, Pa., assignor to Roberts & Schaefer Co., Chicago, Ill. 1,431,113. Oct. 10, 1922. Filed March 13, 1922; serial No. 543,113.

Safety Appliance for Mining Cars. [illegible] H. Shamey, Lilly, Pa. 1,431,697. Oct. 17, 1922. Filed March 10, 1920; serial No. 364,874.

Loading Machine. Wm. Wilbur Camp [illegible], Ohio. 1,431,857. Oct. 10, 1922. Filed Oct. 28, 1920; serial No. 418,166.

Coal-Feeding Mechanism. Arthur C. [illegible], Lexington, Ky. 1,431,944. Oct. 17, 1922. Filed Feb. 16, 1920; serial No. 359,071.

Portable Apparatus for Elevating and Screening Coal. Paul J. Alwart, Chicago, Ill. 1,432,198. Oct. 24, 1922. Filed July 25, 1921; serial No. 487,897.

Portable Bucket Conveyor. Arthur L. [illegible], Chicago, Ill., assignor to Chicago Automatic Conveyor Co., Chicago, Ill. 1,432,241. Oct. 24, 1922. Filed Nov. 4, 1916; serial No. 295,902.

Automatic Mine Door. James L. Dealy, Chandler, Okla., assignor of one-half to Charles Salisbury, Chandler, Colo. 1,432,972. Oct. 24, 1922. Filed April 10, 1922; serial No. 551,043.

Association Activities

Northeastern Kentucky Coal Association

A general meeting of the Northeast Kentucky Coal Association was held in the Ventura Hotel at Ashland, preceded by a joint meeting of the executive and railroad relations committees in the offices of the association, Gayfard Building, Dec. 7. It was one of the best attended meetings in the history of the association. The newly proposed rules for mine ratings and car distribution were thoroughly discussed, recommendations made and endorsed expressing the association preference for the plan of mine rating used by the N. & W. Ry. prior to Cir. M. Rev. 14, known as the number system, and the "round robin system" of car distribution, providing therein that on any day a mine receives cars it shall receive its full rated capacity or no cars at all, thereby giving it a full day's run in place of a part day and reduce the increased cost of production caused by a part supply on any given day. The following committee was appointed to cooperate with the general committee, and to represent Northeast Kentucky Coal Association [illegible] in all matters pertaining to the Fuel Supply Commission investigation: C. W. Cooper, general manager, Kilburn & Shoaly Creek Coal Co., Esco; [illegible], general superintendent, Edgemoor Coal Co., Isaban; R. C. Thomas, superintendent, North-East Coal Co., Pennington; Car-loader Jones, Big Elkhorn Coal Co., Ashland; E. B. Price, general manager, Consolidation Coal Co., Van Lear; [illegible], general manager, Kentucky Coal Corporation, Wayland; D. H. [illegible], secretary-treasurer, Big Sandy Coal Co., Ashland; secretary C. J. Neckamp. It was recommended that [illegible] A committee representing coal and producing county in the district was appointed to work with the Railroad Rate Commission on the assessment of coal lands in the state, with the view of equalizing valuations and reducing [illegible] in the State Tax Commission [illegible] request to lower valuations.

Trade Literature

[illegible], Chicago, Ill., has issued [illegible] Tachometer Hoist, Double-Drum Type, [illegible] Sullivan gas engine. Furnace [illegible] or gas fuel. [illegible] Valveless Stopping Valve. These valves are 3 to 9 in.

Centrifugal Pumps. Dayton-Dowd Co., Quincy, Ill. Bulletin 249. Pp. 31; 7 x 10 in., illustrated. Describes type CS single stage, double suction pump.

The Thew Shovel Co., Lorain, Ohio, new catalog on its power shovels is issued in sections, comprising the following: Bulletin 111, **Type O Steam Shovel**; bulletin 111-X, **Type O Continuous Tread**; bulletin 201, **Type O Electric Shovel**; bulletin 601 **Type O Gasoline Shovel**; bulletin 501, **Type O Cranes**, bulletin 112, **Type OO Steam Shovel**; bulletin 202, **Type OO Electric Shovel**; bulletin 602, **Type OO Gasoline Shovel**; bulletin 113, **Type A-1 Steam Shovel**, and a bulletin on **Lubrication**. The books are 8 x 11 in., well illustrated.

Switchboard Panels and Supporting Framework. General Electric Co., Schenectady, N. Y. Bulletin 47,002. Pp. 11; 8 x 10 in., illustrated. Groups switchboard panels under two general classifications, the vertical type and the bench type, and should prove of interest to prospective buyers of switchboards.

Obituary

James B. Robinson, age 50 years, head of the coal brokerage firm of J. B. Robinson & Co., and also prominent coal operator of Birmingham, died Dec. 10 as a result of injuries received in an automobile accident. Mr. Robinson was president of the Liberty Coal Co., Little Gem Coal Co., Bibb Coal Co. and Aetna Coal Co., and had been a resident of the district for the past thirty years or more.

E. M. Radway, 35 years of age, president of the Richvein Coal Co., of Cincinnati, died Dec. 7 from pneumonia. Mr. Radway was a New Yorker by birth and came to Cincinnati after his graduation from Williams College in 1913. When the war broke out he joined the naval aerial corps and became a first lieutenant. Later he organized the Richvein company and had met with his measure of success. Mr. Radway married a daughter of William Rowe, president of the First National Bank, and leaves a son and daughter.

W. B. Everest, general traffic manager, **Westinghouse Electric & Manufacturing Co.**, died Dec. 5 at his home, 328 Emerson Avenue, Pittsburgh, where he had been confined for one week with pneumonia. Mr. Everest was born July 3, 1868, at Newark, New Jersey. After completing his high school education he entered the employ of the United States Electric Co. at Newark N. J., which was later merged with the Westinghouse company. While at the Newark Works of the Electric Company he was chief clerk to the general superintendent of the works. In May, 1884, he was transferred to the East Pittsburgh Works, retaining his position of chief clerk. In 1895 he was transferred to the auditing department, in charge of cost, and was later appointed storekeeper and shipper, and then traffic manager of the East Pittsburgh works. In 1911 he was made general traffic manager of the company. He is survived by his widow, three daughters and one son.

James Montgomery Harcomb, aged 51, well known throughout the Canadian coal trade, is dead at his home in Ottawa. He had been connected with the coal firm of C. C. Ray, starting in as clerk and rising to be managing director of the firm.

John Irving, sales agent of the Nova Scotia Steel & Coal Co., died at Montreal on Dec. 8, aged 55 years, after a protracted illness. He had been in the service of the company since 1885 and was prominent in commercial circles.

Coming Meetings

American Engineering Council will hold its annual meeting Jan. 11 and 12 at the headquarters of the Federated American Engineering Societies, 24 Jackson Place, Washington, D. C.

Northeast Kentucky Coal Association will hold its annual meeting Jan. 23, 1923, at the Ventura Hotel, Ashland, Ky. Secretary, C. J. Neckamp, Ashland, Ky.

Northern West Virginia Coal Operators' Association will meet Feb. 13 at Fairmont, W. Va. Secretary, G. S. Brackett, Fairmont, W. Va.

American Institute of Mining and Metallurgical Engineers will hold its annual meeting Feb. 19-22, 1923, at the Engineering Societies Building, New York City. Secretary, F. F. Sharpless, New York City.

Volume 22 — New York, December 28, 1922 — Number 26

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

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CIRCULATION OF THIS ISSUE 12,000

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A rail bond doesn't do you any good until it is installed. And it is worth just what the bonding crew makes out of it.

That idea guided the design of O-B AW-7 and AW-8 Rail Bonds. Every detail was so developed as to make it easy for the man on the job to do good work — to give you a 100% bond from rail to rail.

Examine an O-B AW-7 and AW-8 and you'll see what we mean. You'll find the copper strands fanned out and thoroughly welded onto a heavy steel terminal. On the track the welder joins "steel to steel with steel" — the easiest electric welding. The steel of the terminal is heavy and protects the copper.

Shape of the terminal contributes to good welding. It slopes, slightly, away from the rail so that there's a wide angle — better than ninety degrees—in which to weld.

And once installed, O-B AW-7 and AW-8 Bonds are good for long service. The steel-reinforced terminal should last as long as the rail. The copper strands—shielded from welding heat by the big steel terminal, protected by a copper sleeve which absorbs and damps vibration — survive the shock of hundreds of thousands of wheel passings.



O-B Type AW-7 Bond (Patented) Installed
It is easy to weld on all sides of the rounded terminal.



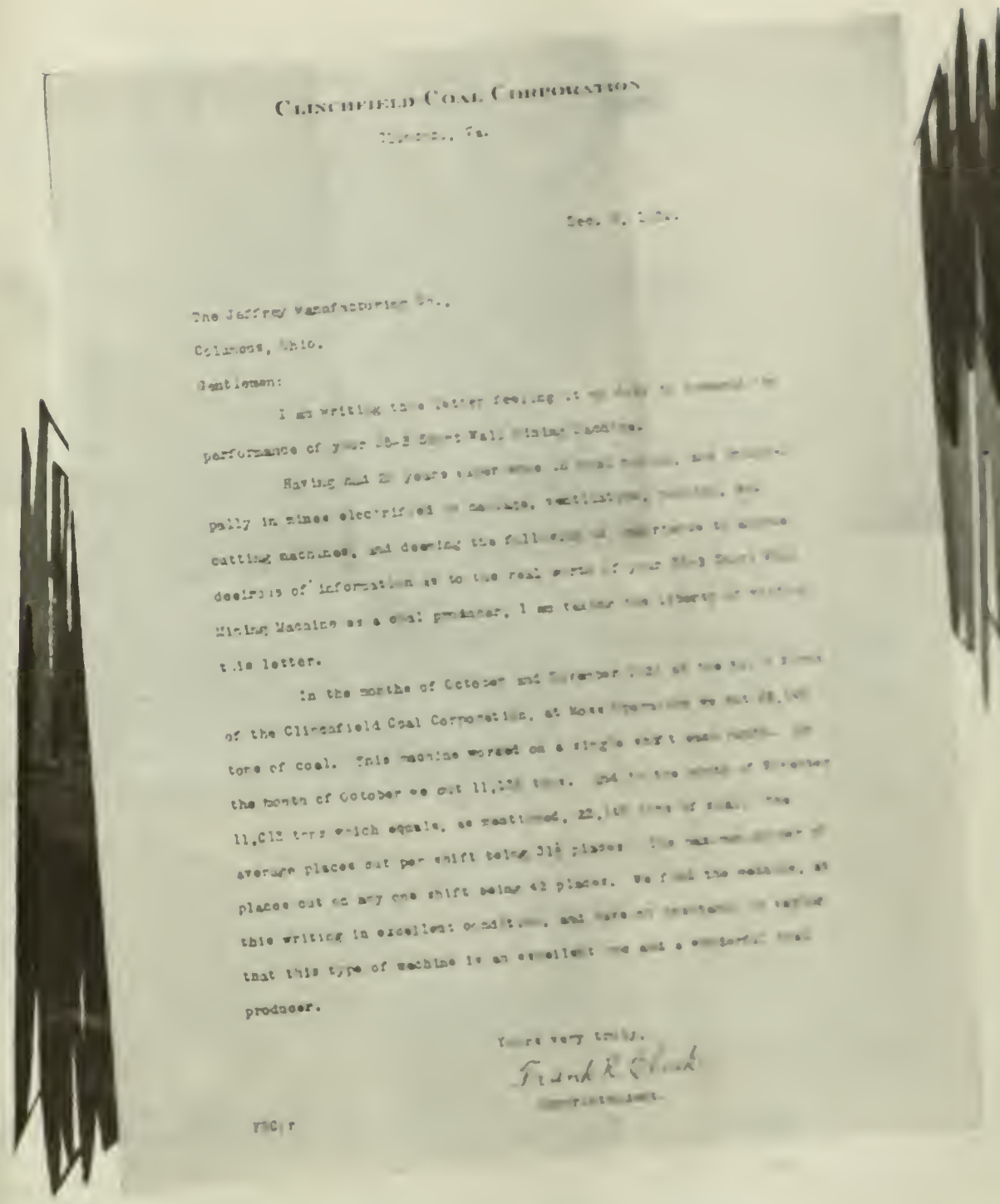
O-B Type AW-8 Bond Installed
Notice the full area weld.

O-B Type AW-7 and AW-8 Bonds improve the return circuit enough to pay for themselves and then stay on the rails to earn you a profit. Order now while you can get prompt shipment and while you have time to install them.

The Ohio B Brass Co.
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New York Philadelphia Pittsburgh Charleston, W Va Chicago Los Angeles San Francisco Paris, France
Products: Trolley Material, Rail Bonds, Electric Railway Car Equipment, High Tension Porcelain Insulators, Third Rail Insulators

One Machine Cuts Over 11,000 Tons Per Month In Single Shifts


CLINCHFIELD COAL CORPORATION

Dec. 8, 1922.

The Jeffrey Manufacturing Co.,

Columbus, Ohio.

Gentlemen:

I am writing this letter feeling it my duty to commend the performance of your 35-B Short Wall Mining Machine.

Having had 20 years other mine machines, and especially in mines electrified as ours is, ventilating, pumping, haulage, cutting machines, and deeming the following statements to answer dealers of information as to the real merits of your 35-B Short Wall Mining Machine as a coal producer, I am taking the liberty of writing this letter.

In the months of October and November last of the two mines of the Clinchfield Coal Corporation, at Moss No. 3 we cut 18,140 tons of coal. This machine worked on a single shift each month. In the month of October we cut 11,212 tons. And in the month of November 11,612 tons which equals, as mentioned, 22,140 tons of coal. The average places cut per shift being 31½ places. The maximum number of places cut on any one shift being 42 places. We find the machine, at this writing in excellent condition, and have no hesitation in saying that this type of machine is an excellent one and a consistent coal producer.

Yours very truly,

Frank R. Clark

Superintendent.

FRC:r

This testimonial, which was voluntarily sent in by Superintendent Clark of the Clinchfield Coal Corporation, is an indication of the remarkable performance and the results obtained by users of the Jeffrey 35-B Coal Cutter.

A light weight coal cutter, simple in design, but rugged in structure, which is easily operated and controlled under all Mining conditions.

Write for Catalog No. 365-D, fully illustrating and describing the 35-B Short Wall Coal Cutter.



The Jeffrey Mfg. Co.
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TRADE MARK

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of Mine Timbering
of the
American Mining Congress
recently reported—

"It is recommended that:

"(4) Information on the use of gunite as a substitute for timber and as a fire-proofing or decay-resisting agent be collected and disseminated."

Therefore the following statement should prove of valve:

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GUNITE
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The Saddle Test

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THE wet Waugh 93 rides with the ease and comfort of a master horseman and this is only one of its many happy features which add no less to the efficiency of the drill runner than to the life and economy of the drill itself. You'll want 93's in your property. Just ask the nearest Waugh branch office for a copy of the "Ninety Series" booklet today.

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Denver, Colorado

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Combination Storage Battery Locomotive with 100-A-10 Edison Cells in operation at Standard Oil Co. of Indiana, Carlinville, Ill.



Storage Battery Locomotive hauling on steady production in producing properties service.



Runs in entries and headings on three feet gauge track.



Coal Locomotive pushing loads from gobs front

PRODUCTION!

The Storage Battery Locomotive increases production and reduces the cost per ton.

It gets the loaded cars to the parting and the empties back in the shortest time. It places the empties right up to the room face. The loaders are not interrupted to push or place cars and coal is loaded continuously.

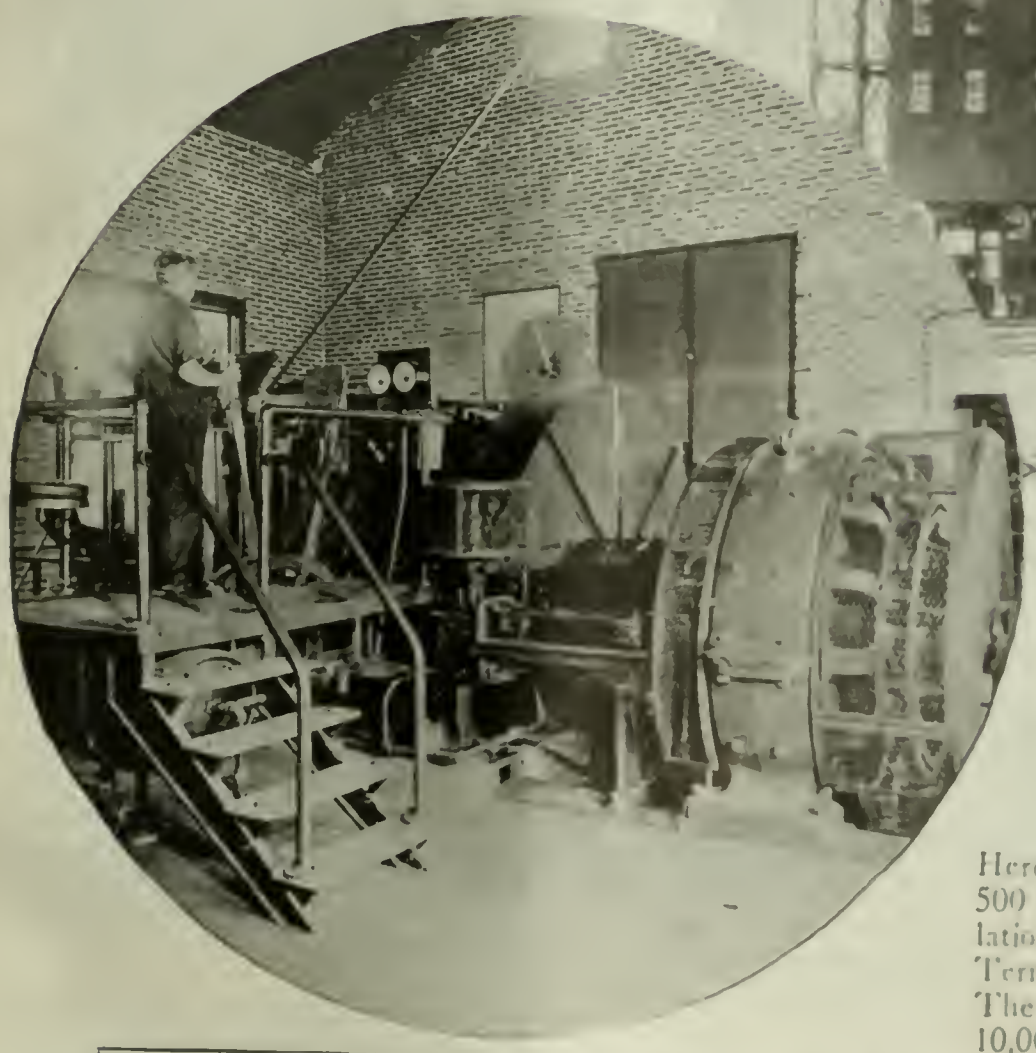
The Storage Battery Locomotive is independent of any external source of power. It does not get tired, balk, or cause delay. Its services are not delayed by the repairing or stringing of trolley wire or by track bonding. It will operate efficiently throughout a full 8-hour day. With a "boost" to its battery, it will be available for emergency work. With an extra set of batteries, it can return to work immediately for another complete shift.

Wherever a man can work, the locomotive can follow him. It will operate successfully on wooden rails in the rooms if necessary. For low coal, Storage Battery Locomotives are built to go into rooms and entries where lack of head room bars mules.

Storage Battery Locomotives, equipped with Edison Batteries, operate more shifts a year and more years. They get out more coal at the lowest maintenance and operating cost which results in the lowest cost per ton.

Bulletin 608 refers especially to coal mining. Write for your copy.

Edison Storage Battery Co.
ORANGE, N. J.



500 tons per hour from a depth of 405 feet!

Here's an 850 horsepower Vulcan, hoisting "on balance" 500 tons per hour from a depth of 405 feet. The installation is at the Coverdale Collieries of the Pittsburgh Terminal R.R. and Coal Company.
The cage weighs 20,000 lbs.; cars, 5,600 lbs.; coal 10,000 lbs.; rope 2,000 lbs.

The Vulcan used here is single reduction geared with a cylindro-conical drum 9 to 15 feet in diameter. An air released, weighted engine operates two post type drum brakes. An auxiliary motor shaft brake, a Vulcan Travel and Speed Limit Device as well as other special Vulcan safety devices, complete the equipment.

The maximum rope speed is 1,560 feet per minute.

There's a Vulcan Hoist for every purpose

Vulcan Iron Works
Established 1849
1730 Main Street, Wilkes-Barre, Pa.

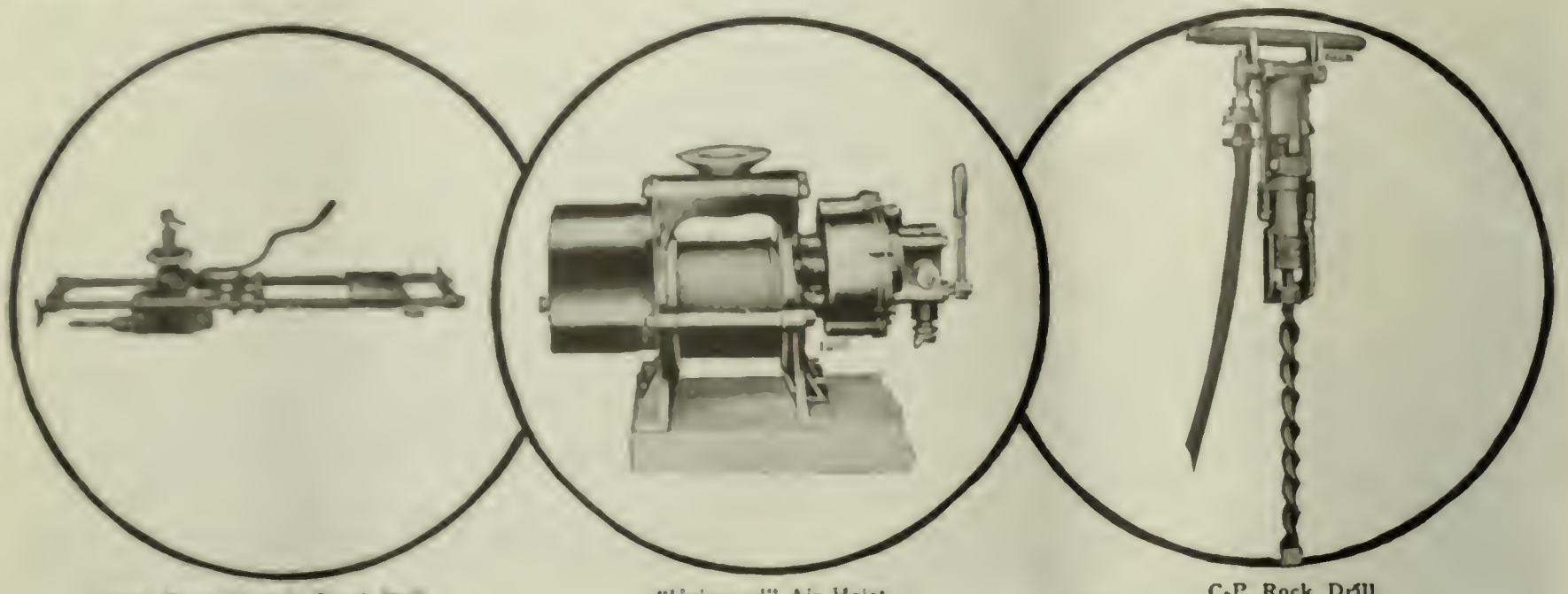
Other Vulcan Equipment

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Gasoline Locomotives
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Mine Ventilating Fans
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Sheave Wheels
Corliss Engines
Coal Crushers and Rolls
Gray Iron Castings
Open Hearth Steel Castings
Gears, Moulded and Cut Teeth
Special Machinery

VULCAN OF WILKES-BARRE HOISTS

A Modern Question-Air

Number Two of a Series



Little Giant Electric Track Drill | "Universal" Air Hoist | C-P Rock Drill

"WHERE are C-P Products used?"

Little Giant Coal Drills are employed in over 249 mines, three of which use a total of 410 Little Giants.

Over 1200 Little Giant Track Drills are in daily use on street railways and in mines, with such records as—"10 to 12 times faster and 85 to 90 per cent cheaper"—and "200 holes per day; 170 more than formerly drilled by hand."

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Other C-P products have equally enviable records.

Therefore the question "Where are C-P products used?" directly and favorably affects per ton cost—an index of their value to your mine.

"WHO makes your air compressors, gas and oil engines, hoists, rock drills, coal drills, track drills, pneumatic and electric drills and grinders riveting and chipping hammers?"

The Chicago Pneumatic Tool Company is in an excellent position to serve you—not only because its products are dependable and economical, but because, by producing a wide variety of tools and power plant equipment for mine use, *manufacturing responsibility is centralized!*

Consequently, with products as dependable as the company back of them—continuous operation, increased production and decreased per ton costs are assured.

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Keep *your* mine in continuous operation by specifying C-P.

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Sales and Service Branches all over the World

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The New York Steam Company, in the heart of a wealthy and exclusive residential colony in New York City, set a table on their COXE STOKER, under the boiler, and gave an invitation banquet to members of the colony in order to prove that

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A source of economical operation to their owners.



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Type D Stokers
Type K Stokers
Type H Stokers
Self Contained Stokers



"Teeter" talks on economical extravagance

"Jim" Robinson, the Superintendent at Coal Fork, and "Teeter" Mayo, General Manager of the neighboring Coaldale plant were in animated and highly colorful conversation. The casual observer might have been led to believe quite easily that the two were sworn enemies instead of the best of friends.

"I have been thinking for some time," says "Jim," "and—"

"Pardon the interruption," cut in "Teeter," "but tell me, 'Jim,' isn't this something a little out of the ordinary for you?"

"Your pardon is accepted, 'Teeter,' only don't try to pawn off any more of those stale Vaudeville gags on me. As I was saying before you made such a mess of trying to be humorous, I have been thinking for some time that most of your 'grief' on semi-automatic substations were 'cons.'"

"Ha! Ha! that's good too," "Teeter" came back at him.

"Well," continues "Teeter," absent-mindedly switching the cad in the right thumb over to the left, "you contend that you have no need of automatic reclosing circuit breakers because the manually-operated devices are seldom opening



The Circuit Breaker with Brains

"As soon as you've quit thinking on a flat wheel, that much sooner are the stockholders of your little organization going to realize they didn't place their hard-earned 'do-re-mi' in your plant for sentimental reasons alone. Why, Man Alive! Small wonder the breakers never come open. You have the overload yokes dropped so low on them that your motormen would have to turn the works inside out and make a stripping operation out of your plant before the breakers opened. Boy—you're suffering from an acute attack of 'over-generatoritis.' You think because you have plenty of generating equipment that it's economical to let those Kilowatt Hours scamper around loose like a bunch of dry peas in a high silk hat.

"And yet you firmly believe you are ahead of the game. That's enough to make Ringling Brothers laughing hyena go into hysterics.

"If you had the overload settings of those breakers in your station carried somewhere near where they ought to be; that is, at some current values approaching your normal mine load, they might open up once in a while and you wouldn't have such a sweet power bill to greet your nimble optics every month."

"I never saw it in quite that light before," admitted "Jim," giving "Teeter," a thoughtful and thankful gaze.

"Now if you're still a skeptic on this stuff, then make this simple test: Put an attendant in the 'sub' for a month and set the breakers so there is a ghostly chance of they're coming out. If you don't have automatics in there the next month, then the Bolsheviki have no use for bath-tubs."

THE AUTOMATIC RECLOSING CIRCUIT BREAKER CO.
COLUMBUS, OHIO, U. S. A.
DISTRICT SALES OFFICES
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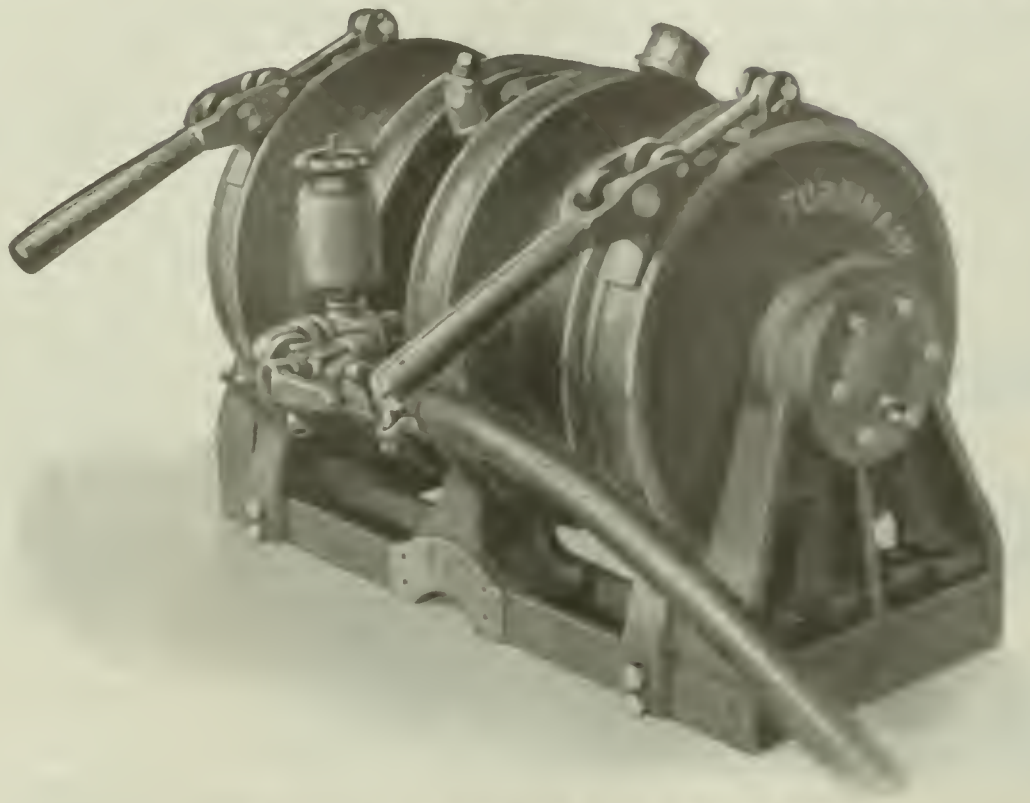
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New Sullivan Double Drum Hoist

secures rapid work with power economy and convenience.

In scraper work one drum hauls in the load, the other returning the scraper by a tail rope.



"HDA" Double Drum Hoist with Brake Bands and Handles removed for use in scraper loading

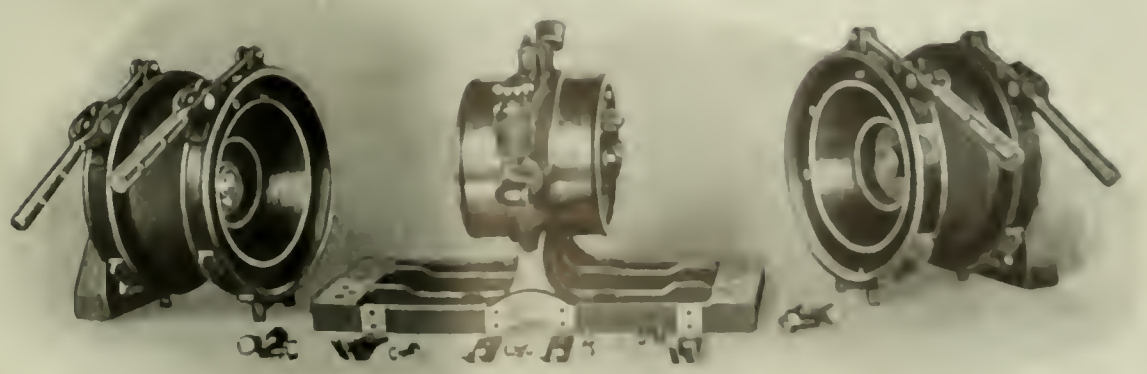
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Ask for new Bulletin No. [illegible]



Hoist with drums removed, showing motor casing and frame

SPECIFICATIONS

Length, inches	[illegible]
Width, inches	[illegible]
Height, inches	[illegible]
Drums, Control, Brakes	[illegible]
Diameter, Drum, Inches	[illegible]
Face	[illegible]
Capacity, Line at [illegible] Ins. Rope	[illegible]
Speed at Rope Pull [illegible] Lbs.	[illegible]
Cyls. and Capacity of each	[illegible]
Air Hose, Size, Inches	[illegible]
Weight, Pounds	[illegible]

*Not including rope

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The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

Volume 22 NEW YORK, THURSDAY, DECEMBER 28, 1922 Number 26

Stop Before Reversing

THERE are those who would thus easily remedy the situation in the bituminous coal industry of too many mines and too many miners—poof! Close up the high-cost and the small mines; concentrate men, capital and transportation on the efficient large operations. How easy that is—to say.

In its recent decision on the Kohler mine-cave law of Pennsylvania, the United States Supreme Court says: "What makes the right to mine coal valuable is that it can be exercised at a profit. To make it commercially impracticable to mine certain coal has very nearly the same effect for constitutional purposes as appropriating or destroying it." The Court goes on to say that the general rule at least is that while property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking.

An overplus of bituminous-coal mines we certainly have for present and immediately future requirements. The periodically speculative profits attracted capital and the high-unit wage rates was the magnet for the labor. Now with the mines and the men started, and in some instances fixed, in this industry and occupation, what means is there for engineering the removal of the overplus, save by a reversal of the process that brought them in? It is quite certain they cannot be legislated out of business and out of jobs.

The tendency even now is to grow and expand. Even today there is an undercurrent of protest that the Coal Commission should have given the soft-coal industry a black eye recently by calling the attention of investors to its condition of overdevelopment.

The Market Turns

TWO ELEMENTS threatened the tranquility of the bituminous-coal market when, at the beginning of September, the mines resumed operation. One was the shortage of stocks of coal in the hands of railroads and industrials, the other the necessity of replacing the millions of tons of domestic fuel lost by the anthracite strike. By careful planning, by nationwide organization of big business and appeals to buyers of coal in quantity to hold off purchases for storage, the first of these as a danger to the market was minimized. The price of steam coal dropped week by week and the small buyer waited for the bottom.

The other factor has come into play within the last three weeks. Cold weather—a real touch of winter—developed a shortage in the householder's cellar, both East and West. Prices have taken a sharp turn upward, buyers are becoming urgent. Along the Atlantic seaboard the necessity for substitute fuel is calling in from Pittsburgh and other distant points block, splint and lump, unobtainable from soft-coal fields nearer by. Incidentally this is adding to the railroad haul, tying up open-top cars and slowing down the usual turnaround.

Production of soft coal began to decline early in the second week of December. Day by day it has been falling away. The cause has not been decrease in demand, for prices are headed the other way. The cause is primarily failure of motive power on the railroads. Engines in poor condition have been no match for zero weather and fatalities on the line are reported as high. Real winter is not starting out well for him who is short of fuel.

Is There a Will to Negotiate?

BETTER business in 1923 is the prospect as the new year dawns. True it is that there is no prospect of a repetition of the boom times of 1920, but undeniably industry is gaining ground as the months roll along—the country is on an upward swing. Progress is slow, as healthy growth should be, and is being helped by a marked feeling of confidence throughout the business structure. The building revival of 1922 promises to continue with the new year; the road building programs, halted in part by the railroad strike, will be taken up again next spring. Unemployment is no longer a national menace; the coal shortage that threatened at the end of the summer has been forestalled and the situation is well in hand; the railroads are getting back on their feet; the country is coming to its senses and will help in some manner to solve the multitudinous problems of Europe. Whatever be the length of the upward swing, no matter if it be followed by another slump, the present fact is that the country is looking up. Business is mending.

One cloud hangs over the country. It is the possibility of another strike of coal miners next April. The disruption to business caused by the five months' shutdown of last summer was serious. Some curtailment of industry resulted, a railroad strike was precipitated, the wheels of industry were thrown out of gear and are but now getting back to smooth running. The country is soured on such strikes. It has caused a coal commission to diagnose the workings of the industry that has these sinking spells. The steel man, the railroad manager, the banker, the farmer, all are earnest in their desire that there be no repetition of last summer's fracas.

What are the coal operators and the union miners thinking about it? What are they going to do? That is the real question, for at this stage the public and the U. S. Coal Commission can do nothing about it. The matter is entirely out of their hands. The public if it has any concrete idea about the threatened strike of next April, turns to the Hammond commission, knowing that these men have been brought together because of a cry from the country for an investigation of the coal industry. The commission has no power and no injunction from its creator, Congress, to intervene in such a contingency. This is not a wage-negotiating body, set up to settle industrial difficulties between the coal men and their employees. It is a fact-finding body, as

1923

It is this question that must be settled before peace can be assured the bituminous-coal industry. The conference for its solution calls for no ascertainments of fact—such as profits of operators or earnings of miners, now being investigated by the U. S. Coal Commission.

What the situation does demand is an earnest will to negotiate.

When Facts Are Most Useful

AS THE date for the preliminary report of the President's Coal Commission approaches, much interest is being manifested in what the commission may say at that time. The industry recognizes that the commission is composed of men of vision who are anxious to concentrate every ounce of their influence to do something constructive and helpful. It is recognized that a communication to Congress of the findings of facts with regard to the status of wage negotiations can be handled in a way to have a profound effect on that situation even though the commission itself take no part in those negotiations.

The commission be may expected to look on this problem as if it were the organized channel through which public opinion is to be expressed. Unquestionably it is its desire to encourage both the operators and the mine workers to get together. It is believed that each side to the controversy has great confidence in the commission. Each side would be inclined to accept its findings of fact.

An authoritative statement from the commission as to its finding of fact in regard to the cost of production, even if incomplete, would be of the greatest importance to those at the wage scale conference. If additional facts could be made available as to the relative costs of production in the union and the non-union fields, it would have great significance. Any facts which the commission may announce with regard to the relative rates of pay in coal mining, as compared with those in other industries, would be seized upon eagerly by the Chicago conferees.

The operators in the union fields contend that they cannot pay the present scale and compete with non-union operations. The commission may be in a position to make some authoritative statement by Jan. 15 as to the point where the non-union costs begin to be an important factor in competition. It would be helpful also to have an authoritative statement as to whether or not non-union miners have larger annual earnings than those who draw, at times, the higher pay in the unionized districts.

These examples give an idea of the very important influence the coal commission could exert on the wage-scale conferences and it is the general opinion that all facts in the possession of the commission which may be helpful in giving the mine workers and the operators, engaged these next few months in the wage-scale conferences, authoritative data, will be put forward as they become available.

The point must not be overlooked, however, that the very incompleteness of the data that can be collected, compiled and prepared by Jan. 15 argues against the fulfillment of this ideal of immediate helpfulness. We are not to be too hopeful, for we must appreciate the handicap of time, the initial unfamiliarity of the commissioners themselves with the details of their task and the grave responsibility that will attach to any and every statement they issue.

Cutting Hoisting Costs At a Shaft With Five Levels

By Dever C. Ashmead*
Kingston, Pa.



Peach Orchard Shaft Had Two Hoists for Its Many Levels—One Hoist and One Level Station Recently Abandoned and All Coal Brought Up One Shaft—Locomotive Formerly Crossed Over Cage

WHEN engineers lay out a track system on paper they frequently fail to visualize just how it will accommodate itself to the needs of the mine. They see some of the essentials, of course, but many others, just as important, are entirely overlooked. This lack of vision is the cause of many poorly laid-out mining plants. It is to be noted not only in the general scheme of operation but also in operating details. For this reason the engineer should depend not only on his own inventiveness and imagination but on the experience of others. They also have had their difficulties and either have seen ways of correcting them or have found them sooner or later after construction was completed.

Just as soon as the plant is operating, these inadequacies in the original layout are seen. The loss of time and money becomes apparent and changes ultimately have to be made which redound but little to the credit of the designer, who naturally is made the butt of much criticism by the official in charge of actual operation.

Some criticisms of course are delayed. Everything works well until distances become longer and traffic heavier or till changes of equipment make the particular layout unsuitable. A little prophetic foresight always is an advantageous quality in the engineer. Especially is it well to keep in mind that a larger tonnage may be desired, labor may become scarce or the price of labor so increase as to make operation by the methods provided uneconomical. When all is said, however, it must be conceded that it would have been hard to forecast the progress of modern development and in many cases it would not have been prudent to do so.

Ten or twelve years ago the cost of labor was lower

*Anthracite Field Editor, *Coal Age*.

Note—The illustration in the headpiece shows No. 1 shaft of the Peach Orchard colliery of the Glen Alden Coal Co. near Wilkes-Barre, Pa. In the background is the boiler plant, the hoisting engine house, the substation and the fan house.



Ebbett Shaft Station

View of the underground side of the 2 shaft. The rail bracket out of the cage to collect coal, pushed toward the background, where a trackman receives it and drives it into the station track on the right on which the "down" or empty set is located. On the left is a passageway running around the shaft. The timber set is about 10 ft. above rail level to give room and to clear the tops of the empty

to fix these today. It was not only cheaper but more plentiful, and an extra mine or so made little difference. So the use of mechanism was not so necessary. The cost of coal was disproportionately low because the coal being mined was not only thicker but nearer the shaft. The thin beds were neglected. Less water also had to be handled. For these many reasons a



OLD AND NEW LAYOUT AT ABBOTT LANDING

The empty cars formerly collected on the side of the No. 1 shaft adjacent to shaft No. 2 and were brought back by a locomotive which had to cross the cages in order to reach them. Now a headway between the two shafts returns the cars one by one to a switch which automatically directs them to the empty pit

greater cost in handling and preparing the coal was counterbalanced by lower cost at the working face.

Many of the plants or parts of plants designed in these earlier days have recently been remodeled in order to cut down operating cost. Among them is the Peach Orchard Colliery, opened twelve years ago by the coal department of the Delaware, Lackawanna & Western R.R., since succeeded by the Glen Alden Coal Co. Two shafts were sunk for the hoisting of the coal from six different levels, one shaft being intended to hoist the coal from four levels and the other from two. To handle this coal at the underground levels seven men were required and often as extra man or even two had to be employed. Because there were two shafts five hoisting engineers had to be provided, one shaft working two shifts and the other three. Furthermore, two men were needed for dumping, one at each shaft.

Here, then, was an expenditure for the labor of fourteen to sixteen men. At the time no one considered the cost too high, but with the labor scale at its present level the waste would be considered almost criminal.

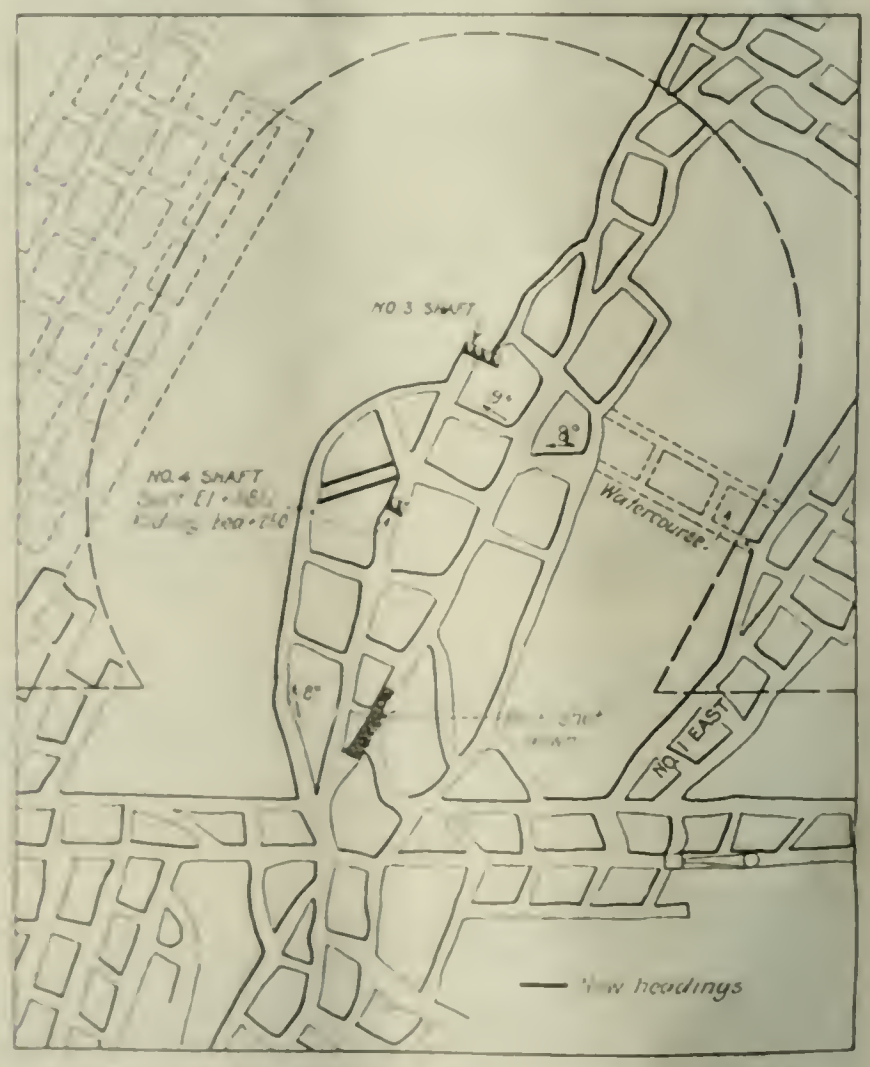
Moreover, the method of operation had elements of danger that could have been avoided. The empty cars had to be pulled backward across the cage in order to take them to the loading faces. This was a danger-

ous practice, as a mistake might occur that would let a car or a locomotive fall down the shaft. Furthermore, the cage had to be held to permit the backward and forward passage of the trip, and that in itself was a cause of much delay.

To avoid excessive cost and unnecessary hazard the layout had to be changed. It was found that one hoisting engine was capable of raising all the coal produced in the mine. It was decided therefore to hoist all the coal from one shaft and to use the other for raising and lowering men and for the delivery of supplies. This obviated much of the confusion due to using each cage for two purposes. It enabled the men at the coal-hoisting shaft to attend strictly to that business, obviating many delays resulting from the loading and unloading of the cage.

In laying out the new shaft stations great care was taken to reduce operating costs to a minimum and to avoid delays. Not only was the new shaft station carefully planned but the old ones were entirely remodeled so that they could be more economically operated.

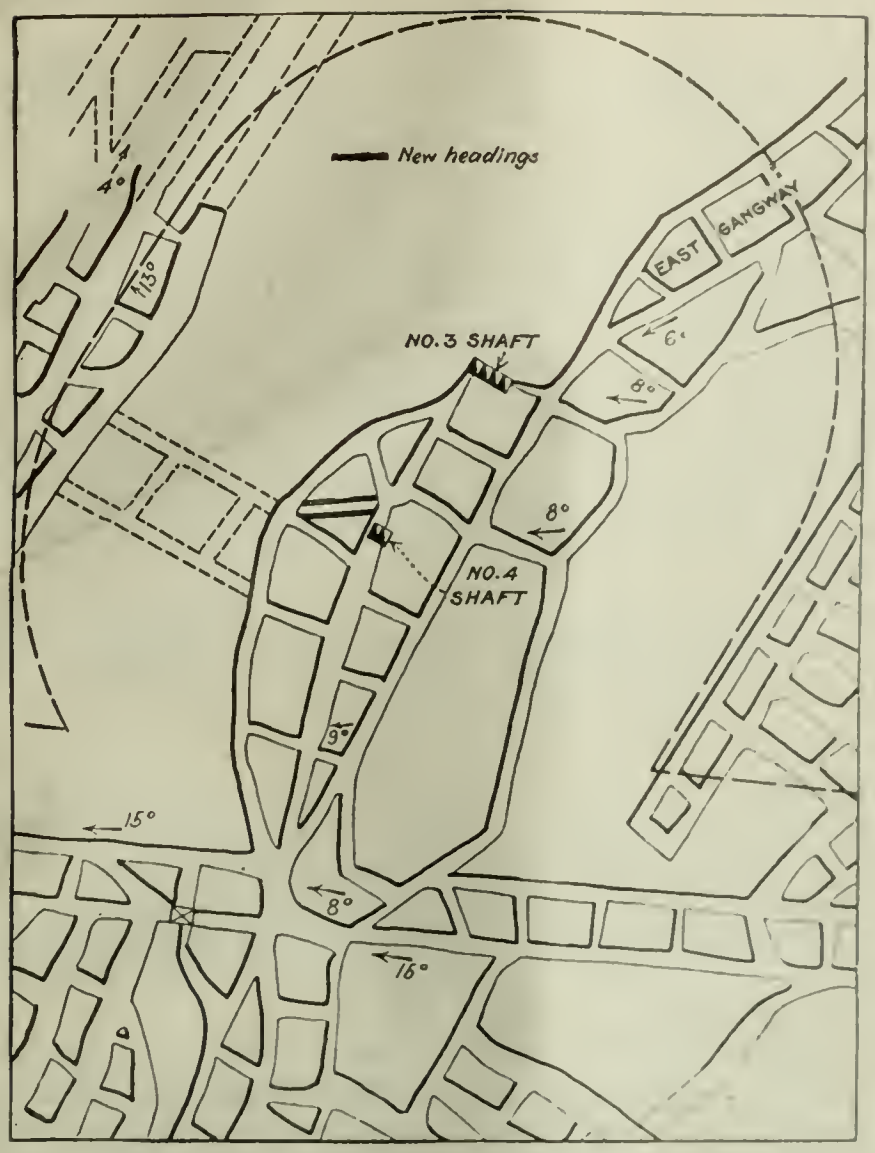
All the coal from the Bennett and the Red Ash beds was formerly hoisted up No. 3 shaft, No. 4 shaft receiving the coal from the Abbott, Kidney, Hillman and



REMODELING OF THE LANDING AT KIDNEY BED

The Kidney bed is 330 ft. below the surface. By driving a crosscut the return track was shortened, making the grades steeper. Elsewhere, the grades were eased by blowing rock. The rearrangement made the use of a mule unnecessary, as the cars ran on the rope automatically without either hauling or pushing

Cooper beds. The Bennett and Cooper beds being close together it was found possible to abandon the shaft station in the Bennett bed and build a new haulage road from that bed to the shaft station on the Cooper bed. This left only the Red Ash with a station on No. 3 shaft, and a new station for the coal from that bed was built at shaft No. 4, No. 3 being converted into a man-and-material shaft.



HILLMAN STATION SUPPLIED BY LOCOMOTIVE

This station required a change similar to that made in the Kidney bed. The cars run back to the empty pit in the heading on the left from a kickback near No. 1 shaft.

The changes made it possible to dispense with four of the men originally employed underground, two foot tenders, one runner and one shaftman. In addition, it was possible to dispense with one substation man. On the surface one cager replaced the two formerly employed, and one of the five hoisting engineers was dispensed with. In all, the force was reduced by seven men. This saving totaled approximately $12,000 a year, which would pay interest on $200,000 when figured at 6 per cent.

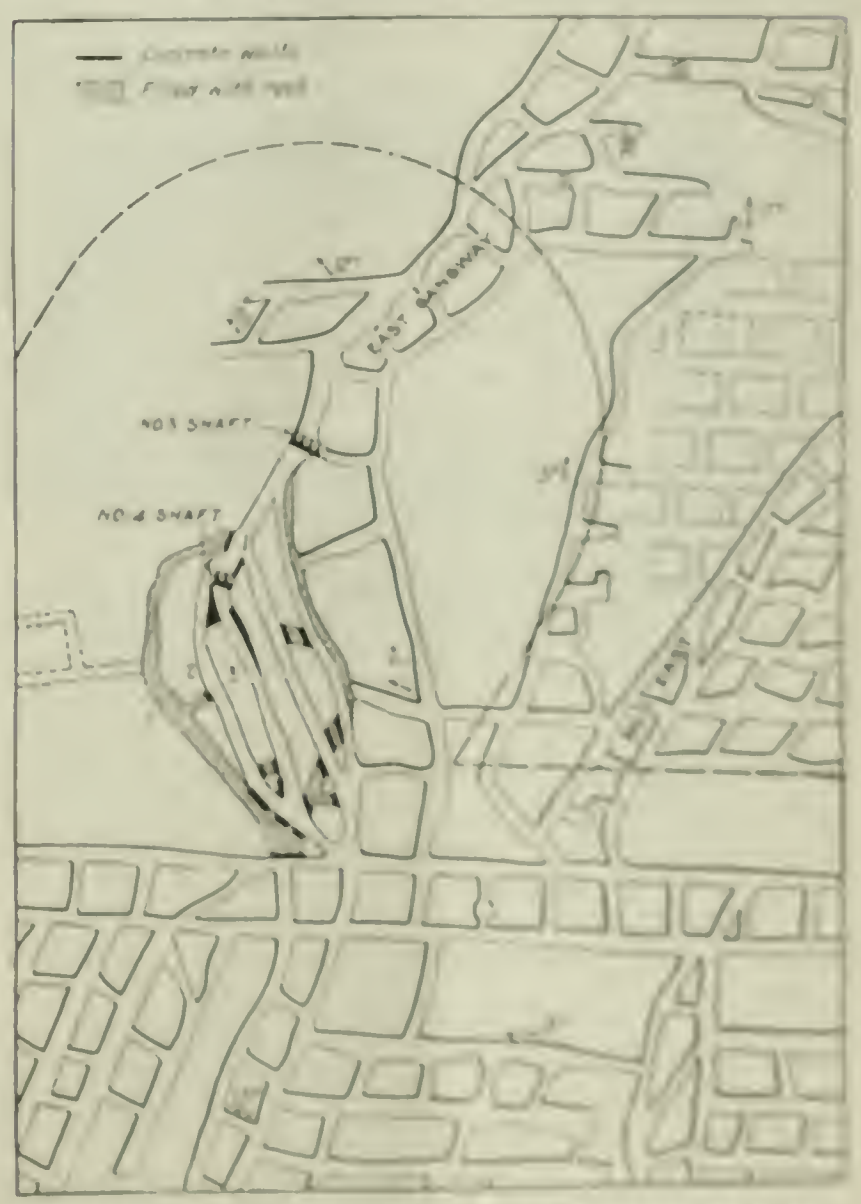
Locomotive Crossed Cage to Reach Empties

The changes at the various shaft stations will be detailed one by one starting from the surface downward, the first station being in the Abbott bed. Here, as the coal was being hoisted already from the No. 4 shaft and was to continue to use the same shaft as its means of exit, no new station had to be built but important changes were made nevertheless. At this station the locomotive had to cross the cage to reach the empty mine cars. After being coupled up it pulled the cars back across the cage. To avoid the necessity for this a new passage for men and materials was constructed around the end of the shaft.

Part of the old runaround on the other side of the shaft was abandoned and that part which was no longer needed was tightly filled with rock so as to give additional support to the shaft. A roadway was driven from a point on the side of the shaft nearest to No. 3 to connect with the empty-car track. In order to improve the grade, rock was lifted in this latter track. The empty cars are now kicked off the cage by the loaded cars. They run a short distance to a kick-back which causes them to travel to the empty track by the passageway described. Thus it is not necessary for the locomotive as in the past to cross the cage to gather its trip of empty cars.

The shaft station of the Kidney bed did not need relocation and only a rearrangement of tracks was necessary. The loaded cars are delivered to this shaft by means of a rope. The original grade at this shaft was not sufficient to make the cars drop by gravity from the end of the rope to the shaft, so a mule had to be kept at this point to move them. By taking down 3 ft. of roof the grade was increased sufficiently to enable the cars to run by gravity. With the old arrangement the empty track also had an insufficient fall, and the cars would not run by gravity to the rope. Consequently they had to be helped along the road by man power. A new road was cut, obviating this difficulty. It shortened the distance and so increased the gradient. By means of these changes a mule was dispensed with and much hand labor avoided.

The Hillman station was similar to the Kidney station except that the mine cars were delivered by a locomotive instead of a rope. Consequently, the grade of the loaded tracks needed no change, but the empty tracks had to be reconstructed so that the empty cars would run far enough from the shaft to give storage room. To get this grade a short cut was driven to the "slum," or empty pit. This shortening of the distance increased the grade considerably.





RED ASH LANDING 1,080 FT. BELOW SURFACE

This is the deepest of all the workings at this time. It lies over old N. Bolan sea level. Two workings are shown over the approach on the left of the shaft, one the new empty track and the other a pump chamber. This heading to No. 4 shaft had to be constructed in its entirety because the coal formerly was hoisted at No. 3 shaft and only the cage connected to No. 4.

In some other parts of the field the Cooper and Bennett beds are one. They unite to form the Baltimore bed. But on this property they are separated by a parting of rock. As stated already, arrangements were made by which the coal from both beds should come to the Cooper bed and be hoisted up shaft No. 4. In the old Cooper station no runaround had been provided, so it was necessary to bring the empty mine cars back across the cage. This was dangerous and caused much delay. In the illustration showing the work in this bed concrete is shown in solid black, old gangways in ordinary black lines, abandoned headings stippled and narrowed headings with the part abandoned in stipple.

The station at shaft No. 3 was left in place so that it could be used in an emergency. All the changes that were made were at No. 4 shaft. When it was decided to make the improvements a gangway marked *1* in the plan was driven to accommodate the empty-car track, but this roadway did not have a suitable grade for that purpose, and as it was thought that it would too greatly weaken the shaft pillar if left open, it was filled with rock to the roof. A new heading, *2*, just to the right of the shaft station was then driven to accommodate the empty tracks. Sufficient bottom was taken up to provide the proper grade for the empty mine cars. With the new arrangement the empty cars, after they are kicked off the cage, run toward No. 3 shaft for a short distance till they reach a kick-back. They then run downgrade on the empty track. All the unused portions of headings were filled to the roof with rock. The ends of the headings and of the cross-cuts thus filled were closed off with concrete walls.

Wherever the shaft station was too wide, concrete walls were placed, thus bringing them back to their proper width. These walls are shown in the map in heavy black. As it was thought that the heading used for the loaded track leading to the old shaft station was too wide, it was narrowed by building stone walls up the side of the roadway. In consequence the roof around the shaft is now satisfactorily supported.

At the Red Ash bed an entirely new shaft station had to be provided because the coal was formerly hoisted through shaft No. 3 as originally constructed, No. 4 shaft, which came down to this level, being used solely for the hoisting and lowering of men and lowering of materials. This new station is provided with a double track and the method of handling cars is similar to that in the Hillman bed. The new work is shown in heavy black lines in the illustration. Formerly the empty cars had to be hauled across the cage as was done in other of the stations in this mine.

Electric Bell Trapper for Partings

By Cecil Rowe*
Tokay, N. M.

FOR several years at the B. H. Kinney Coal Mine a boy was employed as trapper and to notify the rope runner in the main slope if a trip was standing in the parting of one of the headings to the right into which he desired to place cars. From the point where the trip branched off the main slope to the end of the parting was somewhat more than 500 ft.

Being around a curve, the rope runner when in the slope was unable to tell whether the parting held a loaded trip or was empty. Consequently a trapper had to be provided to notify the rope runner when the cars should be run in. A simple and inexpensive change was made in the wiring already installed. This modification cut out the cost of a boy trapper and used only a few cents' worth of electricity each day.

Before the change was made two wires, both of No. 10 galvanized iron wire (*1* and *2* in the illustration), were provided for a bell-ringing circuit. The power used was 20 volts alternating current. This voltage was obtained by connecting in the 220-volt circuit transformers such as are adapted for the ringing of small bells. In making the change one extra galvanized wire, *3*, like those numbered *1* and *2*, was strung along the heading parallel to the other two.

The only other change necessary was to cut out two small parts of the rail on track *B* and replace the portions removed with insulating material, *AA*. Fiber or rubber could be used for that purpose, but a block of hardwood will serve the purpose admirably.

It also was found convenient to place wires *2* and *3* on longer insulators than wire *1* so that the rope runner would not mistake their identity when making contacts to ascertain whether a trip was standing on the parting.

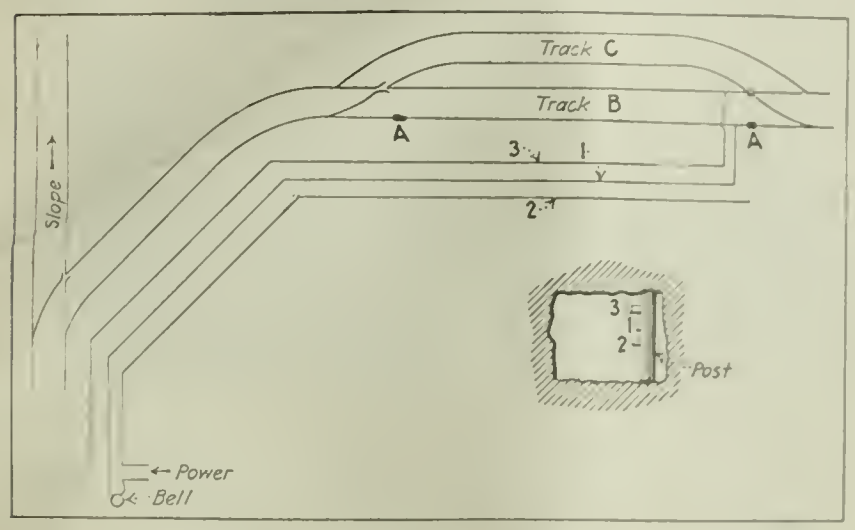
Where there is a trip on the loaded track, *B*, wire *3* automatically is made part of an open circuit with wire *1*, the connection being through the wheels and axles of the cars. When there is no trip in the parting on track *B* there is no connection between wires *1* and *3*, as the rail between the insulated portions *AA* cannot complete its circuit.

When the rope runner has a loaded trip ready to drop into the parting he places his bell ringer across wires *3* and *2* and if the bell rings this notifies him that there is a trip in the parting and that he must wait. After trying at intervals he finds at last a time

*Mining engineer, B. H. Kinney Coal Mine.

when the bell does not ring by connecting these two wires. Then he bells the engineer the regular signals by using the original bell wires, *1* and *2*.

It may be asked what would be the result if the electricity failed or were turned off. In that event, of course, the bell would not ring, although a loaded trip might be in the parting. Provision has been made for



MEANS FOR FINDING IF SIDE TRACK IS FULL

This generalized drawing shows how when cars are on Track B a circuit can be established between wires 3 and 1 through the axles of the cars providing the wires are connected by the rope rider.

this by placing an electric lamp in the power circuit near the switch that leads from the slope to the parting. The rope runner then can tell at a glance whether the current is on or off.

This lamp serves a two-fold purpose. It notifies the rope runner when the wires are charged and it furnishes him with ample light for the manipulation of the switch. Track *C* is used for handling empty cars. The plan just described has been in use for several years and has not given any trouble.

Lifting Bottom in Mine Openings Without Disturbing Timber Sets

By Alphonse F. Brosky*
Pittsburgh, Pa.

How often in the driving of an opening for haulage from the outcrop does it become necessary to change the grade after the entry has penetrated some distance from the outside? It is a problem that crops up almost daily at some one mine or another. The coal may persistently follow a regular grade under the body of the hill, but near the crop it may rise or fall for a short distance without any regard to the regular lie of the measure.

In the event that the entry goes to the dip so as to fall from one to three feet in one hundred for a moderate distance and goes level from there on, it is customary to take bottom in the haulageway from the mine portal in so as to eliminate the adverse grade. This is done before a permanent track is laid. But when the entry was driven it may have been necessary to timber and lag it as it progressed inward. This support may be continued for a considerable distance if the cover is light or of a drummy nature. Should the bottom be hard, much explosive may have to be used in lifting the bottom and unless care is taken timbers may be shot out, bringing down the roof and causing much necessary mucking and retimbering.

J. L. Evans, the mine foreman [illegible] mine No. 304 of the Consolidation Coal Co., at Jenkins, Ky., has an interesting way of accomplishing this task with minimum expense and labor. He had a condition similar to that already described in the No. 302 mine of the Elkhorn Coal Corporation at Mater, Ky. An opening was started, which later was to become the main haulage road. A prospect hole some 2,000 ft. from the pit mouth indicated that the coal dipped into [illegible]. When the opening had penetrated 180 ft., however, it was discovered that the elevation of the coal at that point was 3 ft. below its level at the outcrop, and then it became level for 1,000 ft., where it dipped again. As driving and timbering were carried on simultaneously and as the bottom was sandstone, the work of taking up bottom was precarious. A 1-per cent grade in favor of the loads was made by lifting 5 ft. of bottom at the pit mouth and a decreasing thickness toward the end of the dip. The work was done without disturbing a single timber. When the job was completed the legs of the batter legs of the timber sets rested on a ledge, the upper face of which had originally been part of the bottom.

The entry was 14 ft. wide. Timber sets of [illegible]-in. oak stood on 3-ft. centers. These were [illegible] and lagged as indicated in the sketches shown in the illustration. The arrangement of the shotholes for the blasting of the bottom also is indicated. The first round of holes was drilled in line with the timber set at an angle of 45 deg. These were the breakout holes.



GRADE ADJUSTED WITHOUT DISTURBING TIMBERS

[illegible] drilling and shooting the bottom, using [illegible] as fulcrum on the center of the roadway which is [illegible] by further drilling and shooting. The holes were drilled horizontally.

The second and third rounds of holes were drilled horizontally as shown.

The total cost of the job was approximately $400. This sum would not even pay for retimbering such a roadway. To lift the bottom, holes were drilled of 1¼ in. diameter and charged with a 60-per cent dynamite for the first round and with a 15-per cent dynamite for the second and third rounds. With a crew of three men the job was completed in 60 days.

*Bituminous Field Editor, *Coal Age*.

Sinking a Shaft in Illinois Through Quicksand*

Expecting Only Four Feet of Running Sand and Finding Nearly Thirty Feet, Shaft Had to Be Enlarged and Sheet Piling Driven to Bedrock When Jacking Method Failed

By D. P. Buchanan

How unreliable the diamond core drill may be in prospecting in any formation except solid rock is evidenced by the experience in sinking the shaft of Mine No. 15 of the Old Ben Coal Corporation, at West Frankfort, Ill. The log of the hole, drilled to ascertain the conditions at this shaft, shows only 4 ft. of sand, whereas in reality 25 to 29 ft. was encountered before the rock was reached. No trouble had been experienced in sinking the near-by airshaft, and it was thought that this shaft also could be sunk without difficulty. It is the common practice to rely on a single boring, and with the experience in the airshaft as a guide it was not thought necessary to make an exception in this instance.

The log of the surface measures ran as follows:

From, Ft.	To, Ft.	Thickness of Strata, Ft.
0	4	4
4	50	46
50	63	13
63	93	30
93	97	4

Relying on this log, construction was commenced with the timbering at the exact size planned for the finished shaft, allowance being made, of course, for the concrete lining but not for any divergence of the shaft from the true line.

Until a shaft reaches bedrock the curbing or lining must be supported from the surface. After hard rock is reached the timbers are securely anchored, but during the excavation their weight is borne by a rectangular set of logs known as the bearing timbers or shaft template. These are eight logs from 10 to 30 in. in diameter. Two of them are buried in the ground parallel to each other. The other two are laid cross-wise and are securely fastened to the first pair by drift pins.

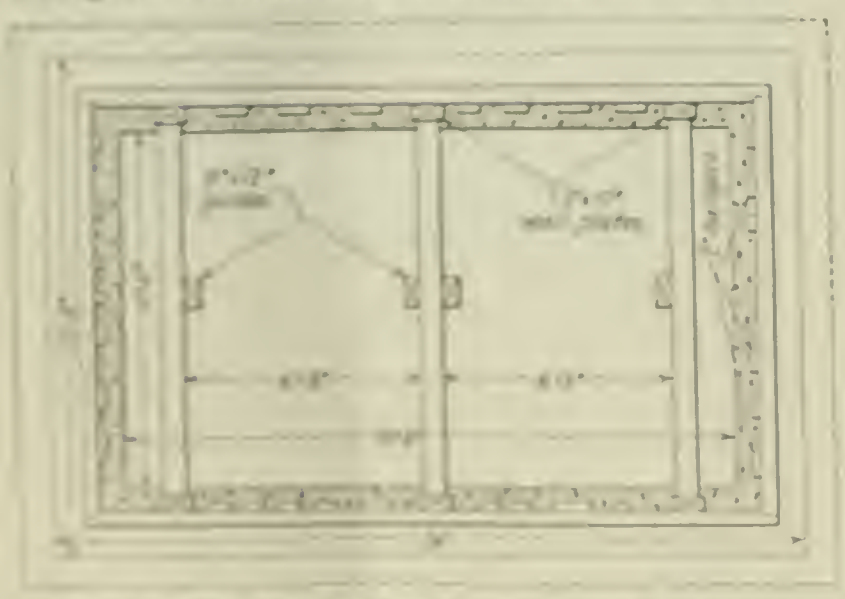


FIG. 1—PLAN OF SHAFT AS ORIGINALLY PLANNED

To insure a strong support the ends of the logs must project 10 ft. to 15 ft. beyond the shaft opening. The inner surfaces of the timbers are adzed to align them with the shaft curbing, which is attached to them by cables. Plumb bobs are suspended from the corners of the template to insure a perpendicular excavation. The first 3 ft. of sandy loam and also the 17-ft. band of sand clay underneath it were excavated by long-handled shovels without the use of explosives.

While this ground was being excavated the temporary headframe for the sinking of the shaft was under construction. This frame was of steel. It was equipped with only one sheave, which was set in such a way that it could be shifted to either of the two main compartments of the shaft. The wooden trestle and hopper into which the excavated material was dumped was about 16 ft. above ground level.

The headframe was so constructed that there was headroom enough below the sheaves only to clear the clamps above the bucket when the latter was hoisted to the elevation of the trestle. The buckets used were made of boiler steel and were approximately 2½ ft. in diameter by 3½ ft. deep with a capacity of about 17 cu.ft. When the hard yellow clay was reached hand digging became more difficult, and an occasional "buster" shot of dynamite was fired to loosen the ground. The excavation was carried on in this manner to a depth of 63 ft. through soil so devoid of water that a pump was unnecessary. When the construction of No. 15 was commenced the excavation was made large enough to permit of a cross-section of 11½x19½ ft.



FIG. 2—SHOWS HOW QUARTER SHAFT WAS RESTORED

Below the sands and clays the quarter shaft was quite readily dug back into the walls and it was constructed accordingly so as to permit the air the more readily to pass the moving equipment in the shaft. Note the water ring at the bottom of the drawing, which in the shaft lies 200 ft. below the surface.

*Excerpted from the proceedings [illegible]



FIG. 2—MUCKING SHAFT FLOOR FOR FURTHER ADVANCE

Crew is getting shaft in shape for the next shift to sink blasting holes and shoot up a further round of shots. The shaft at this point is below the quicksand.

after the curbing was in place. The latter was of 6x10-in. yellow pine (Fig. 1). These are, of course, the full dimensions. Timbers do not as a rule measure as much as the dimensions indicate, however, for practically ¼ in. is planed off in dressing them. Allowance must be made in shaft construction for this odd size, because the permanent hoisting cages usually are purchased before the guides are placed, and a deviation, however slight, therefore is serious.

At a depth of 63 ft. quicksand was encountered. Inasmuch as the log had shown only 4 ft. of sand no great difficulty was anticipated, but, as has been mentioned above, herein lay the fallacy of the log, for the sand lasted until the rock was reached, at 90 ft. A strongly reinforced wooden shoe with a 6x6x½-in. angle was constructed on the surface, knocked down, and reassembled at the shaft bottom.

Jacking Process Which Usually Succeeds

On top of the shoe the four sides were built up with 2x3-in. timbers laid flatwise, and ordinary house-raising jacks of various sizes from 10 to 18 in. in length and 3 in. in diameter were then set around the perimeter of the shaft on top of this timbering at about 4-ft. centers. This is a common method of sinking through shallow strata of sand, and although it is a slow process it is very effective in sand not thicker than 5 ft. The method consists of jacking down the shoe, the jacks operating against the shaft curbing, and as the space between is widened it is filled with more 2-in. plank nailed flatwise. As the jacking progresses the material is excavated by hand and hoisted.

It was necessary to pump continuously, as water was coming up through the sand and pouring in from the sides of the curbing. Two sinking pumps were kept in operation and even when no work was being done in the shaft large quantities of sand were brought up in the water. Naturally, the removal of this material from about the curbing caused the surface to cave in, bringing the weight of the material around the curbing against the timbers.

The buntons, which had not been designed for this unequal pressure, buckled and in many cases broke. It was necessary to install new timbers until the shaft was so obstructed that the work was continued only with great difficulty. This, together with the crookedness of the shaft caused by the bulging, necessitated a change in the method of sinking, as it was useless to go farther with the scheme then being used.

The decision to drive through the sand with United States steel sheet-piling was the result. Obstructed as it was with excess timbers the shaft did not present enough clearance for a pile-driver or steam hammer. It was necessary, therefore, to begin again at the surface and widen the shaft down to the sand. The old timbering was removed as the work progressed and the shaft was sufficiently enlarged to accommodate the hammer.

Even then there was scarcely enough clearance for it, and contrary to the usual procedure of setting all the piles in place before driving any one pile to the rock, each pile was so driven before setting the one next to it. It was necessary to calk the cracks to keep out the quicksand. The pressure was so great that the water was forced beneath the piles and rose in the shaft, making it necessary to keep the pumps working. Elaborate timber sets were placed at 4-ft. vertical intervals to hold the piling in place as the excavation continued through the depth of the sand. The material inside the piling was removed and the shale was picked from beneath it by hand, after which it was driven below the solid measures to a depth of 4 ft.

Shafts Must Be Concreted from Rock Up

The Illinois mining laws require that all shafts be concreted from the rock to the surface. This work was immediately commenced, therefore, as soon as the rock was reached. A 2-ft. kerf or undercut was made, and the anchor block was completed before the upper curbing was poured in. The curbing was then poured in 4-ft. sections, working from the bottom up. For obvious economical reasons old scrap steel, mainly 30- to 40-lb. rail, was used for reinforcement. This material was employed in exactly the same manner as is customary with regular twisted reinforcing rods. A rectangular system of bracing was used, the rails being laid horizontally and vertically on about 2-in. centers. The vertical rails were allowed to project from one ring of concrete about 4 ft. into the next above it.

When concreting was begun it was found that a longitudinal section of the shaft was irregular, and in order to insure a sufficient thickness to the curbing on



that it could withstand the pressure the shaft had to be shortened, one quarter-shaft being dispensed with (Fig. 2). As soon as the excavating was continued in the mill structure it was again lengthened so that the quarter-shaft could be reconstructed. The last time and extra expense resulting from this lengthening were justified by the increased return airway and more rapid hoisting which it provided.

EXPLOSIVES USED SPARINGLY NEAR QUICKSAND

In order not to disturb the rock immediately beneath the quicksand no explosives were used until the work had progressed by hand picking and drilling to a depth of some 10 to 12 ft. below the sand. This care was necessary to avoid shattering the rock and flooding the shaft. As this point machine drilling and blasting were first employed, the wedge or center-sumping cut being used. In this cut a central wedge is first blasted out, leaving free working faces for the remaining side shots. The drills used during this phase of the work were "jackhammers" or hand-held rotative hammer drills. Straight dynamite of 40 per cent strength was the only explosive used. The sinking was completed to this method, the total depth to the bottom of the sump being 465 ft.

A water ring (Fig. 2) was cut out of the rock at a point about 200 ft. deep to drain the seepage. Wire netting was hung from the curbing by long staples, and the entire shaft, beginning from the bottom, was coated with "gunite" by a cement gun suspended on a temporary stage. "Gunite" is impervious to moisture, so the only water collected by the ring comes from the surface or is moisture that condenses on the cool concrete during the summer months.

With this lining completed, the actual sinking was accomplished. All that then remained to be done was the placing of the guides (Fig. 1), which were installed while the permanent headframe was under construction. Because of the deceptive prospect log and the excessive amount of quicksand encountered, the entire project required nearly a year for completion.

Six Coal Articles Presented at Vancouver

OF THE three days during which the Canadian Institute of Mining and Metallurgy held its annual meeting in Vancouver, B. C., Nov. 15 to 17, only one day, Nov. 17, was devoted to coal mining. On the morning of that day four coal papers were presented: "The Complete Gasification of Coal and Its Bearing on the National Fuel Problem," by John Keillor, Vancouver, B. C.; "The Development of the Coal Industry in Canada," by F. W. Gray, Montreal; "The Coal Resources of Southern Vancouver Island," by J. D. MacKenzie, Vancouver, B. C., and "Progressive Coal Mining," by George A. McHattie, Vancouver, B. C.

Many of the delegates took advantage of the opportunity afforded them to visit the coal mines of Vancouver Island in the afternoon, an excursion having been arranged for the two-hour steamer run across the gulf. In Nanaimo the party was taken through No. 1 mine of the Canadian Western Fuel Corporation, and in the evening a second business session took place. At this, a paper was presented by J. A. Richards, district inspector of mines, Edmonton, Alta., on the "Coal Mining Industry of Alberta." It was followed by a paper entitled "Some Interesting Features of Modern Coal Mines," by R. R. Wilson, of Victoria, B. C.

Thomas Graham, superintendent of the Canadian Collieries (Dunsmuir's), Ltd., referred in congratulatory terms to Mr. Richards' address. He had listened with great interest to his account of the progress the industry was making in the Province of Alberta. Within the next twenty-five years, he predicted, this province would be the largest coal producer in the British Empire.

Recognition of the certificates granted to mine officials in one province should be recognized, it was urged, in all the other provinces of Canada. It was argued that if such an agreement could be reached Canadian certificates would carry more weight outside the Dominion than they do at present. A committee was appointed to fully investigate and report on the matter.





Alaska Slowly Develops Commercial Coal Mines

Alaska's coal is distributed on the Pacific slope of the coal measures, a belt which extends from the Arctic Ocean to the Alaska Peninsula and includes Bering River, Matanuska, Nenana, Kenai, Cook Inlet, Kachemak Bay, Herendeen Bay, Chignik, Unga Island, Kukak Bay, Kodiak Island, Alaska Peninsula and the Aleutian Islands. The Bering River coal field, which is the largest of the coal fields, is being developed by the Bering River Coal Co., a subsidiary of the Morgan-Guggenheim Alaska Syndicate. The Matanuska field is the nearest of the Alaska fields to the mines of the Tanana Valley Coal Corporation. The development of this mine on the upper reaches of the railroad promises to have an important bearing on the whole economic situation in the Fairbanks region. The accompanying photographs give an idea of the formation and show the newly laid track facilities as well as the provisions which have been made for handling the output of the property. These illustrations show the status of the mines as of June 1 of this year.

Means Provided to Prevent Abuse of Power in The Federal Coal Council of Germany*

Three Barriers Serve to Promote "Interest" of Community as a Whole"—Conditions of Delivery and Commercial Credits Regulated—Mines Empowered to Appeal from Syndicate and Association Decisions—Teaching Heat Economy

By F. Z. Nedden, M. E.

THOUGH the operators are in a minority as compared with consumers in the Federal Coal Council of Germany, the interest of the miners' representatives in questions affecting development of production is obvious. Furthermore, all coal and lignite mines are combined in the National Coal Association and their representatives usually constitute a unified vote. The consumers' representatives, on the other hand, do not hang together so solidly. The weight thus given to the owners should not be overestimated.

Three main barriers have been erected against their overstepping the limits of control by the community. First, the federal Secretary of Economics and Production has the right to participate or be represented in all meetings of the council or its committees, and to veto "all decisions dangerous to the common welfare." He has made use of this right on various occasions, especially by curbing as far as possible the upward trend of coal prices.

It has proved possible, by bringing to bear constitutional influences in the Reichstag, to prevent the abuse of this right by the Secretary of Economics and Production—yet, in order to keep his right of veto from becoming a weapon for bureaucracy, instead of a shield for the interests of the nation, the originators of the Coal Act, if redrawing it today, might perhaps prefer to accord the council the right of appeal to the Reichstag against this veto.

Give Publicity to Parliament Sessions

The second barrier consists in giving publicity to all full sessions of this coal parliament.

A third protection for the interests of the consumers and the community is provided by the institution of three standing "committees of experts," one dealing with technical, another with social questions connected with mining coal and lignite, and the third with all questions relating to the rational consumption of fuel. Each of these three committees is composed one-half of members of the council and their proxies, and the other half of co-optated specialists, such as experts regarding coke ovens, briquetting plants, shaft sinking, furnaces, gas generators, low-temperature tar etc Thus, if the consumers' or workmen's representatives in the council require expert advice on any question relating to coal or lignite or their derivatives they can at any time recur to the clause in the Coal Act which provides that "the committees of experts have to prepare for final decision all matters which the council may assign to them." Any statement made by any part of the council may under this clause be closely scrutinized by the best neutral experts, and no monopoly of superior economical or technical insight or experience can be claimed by the coal producers.

This self-administrative organization of the German coal trade has proved very effective in serving the purposes for which it was created, namely "to conduct under the general supervision of the federal government the coal trade, including importation and exportation of fuel, according to the interests of the community as a whole."

It should be emphasized again that the Federal Coal Council is supreme in its decisions as far as the coal trade is concerned and that it has legislative powers over it. The only difference as compared with a political parliament consists in its relation to the federal government: while this is responsible to the Reichstag, the Secretary of Economics and Production is not responsible to the Federal Coal Council. Obviously such responsibility would not be possible under any circumstances as otherwise the sovereignty of the people as represented by the Reichstag would be limited by the sovereignty of one fraction of it: the Coal Trade.

National Association Is Executive Medium

The National Coal Association acts as the supreme executive organ of the Federal Coal Council. It carries out in detail the laws of the council, just as a department of the central government acts on the general rules of the Cabinet. In this capacity the National Coal Association keeps the statistical records of the coal trade, analyzes the costs of production within the various branches of coal and lignite mining, fixes the relation between prices according to qualities and special conditions in the various districts, etc. Prices, however, are fixed and become effective only through the co-operation of both the association and the council or its executive committee and are subject to the veto of the federal Secretary of Economics and Production.

The syndicates are actually carrying on the business. Through their trade organization or business connections they sell the fuel produced by their mines. They decide what percentage and what kind of fuel their members may put aside for their own consumption, they uniformly regulate conditions of delivery, of commercial credits, etc., in much the same way as the central office of a large concern takes care of the common interests of all its affiliated works. There is, however, one fundamental difference. Inasmuch as the mines were compelled under the Coal Trade Act to join their respective syndicates and as the syndicates do not hold any part of their shares, they must be protected against undue or arbitrary measures of the syndicate. It is possible, therefore, for each individual mine to appeal against the syndicate to the association, and from the decision of the association to that of the Federal Coal Council. The mode of procedure for these cases forms a particularly well considered part of the Coal Trade Act. During the first three years of its enforcement, however, very few cases of appeal have actually arisen.

*Concluding instalment of Herr Nedden's article on German coal control. The first part appeared in *Coal Age* last week.

Under the Coal Trade Act the syndicate agreement is subject to the approval of the Federal Coal Council. When the matter came before its forum serious misgivings were entertained by the most diverse parties lest this reformation of the privilege of own consumption might gravely endanger all the rest of the non-privileged collieries and consumers. It was feared that not only would a great quantity of coal thus be reserved to a privileged small group of giant combines but that these owing to their immediate influence on the collieries also would obtain the best qualities of fuel. The remainder, it was feared, would suffice neither in quantity nor in quality for all the other and smaller consumers, the market would be narrowed down, high grade coal be practically unobtainable, and the base of competition shifted still more to the advantage of the large concerns. The non-privileged collieries, too, entertained apprehensions lest under the new contract any fluctuation of the market would react heaviest upon them while the privileged collieries always would fall back on the stabilizing base-load of the requirements of their affiliated works or big contracts.

Regulation Redrawn in Orthodox Form

The Federal Coal Council, therefore, decided against the approval of this paragraph, which had to be reshaped very much in the traditional form, so that again a danger to the industrial development of the country and to the coal trade as a whole was averted by the Federal Coal Council.

While these two examples serve to show the protective powers of the council, a great deal of excellent productive work has been performed by it. For instance, through one of its three standing committees of experts a campaign has been begun for the improvement of heat economy, both in industry and in domestic use.

Further, by the co-operation of two of these standing committees with the council in full session, considerable has been accomplished in improving the quality of coal. In May, 1921, the scarcity of high-grade screened coal had become embarrassing. On probing, the experts found that the relation between the prices of screened and unscreened coal had, in the process of re-adapting them to the shifting levels of money value, gradually become so small as to make screening unprofitable for many collieries. It was then ascertained, by careful analysis of the relative over-all efficiency produced by screened and unscreened coal under boilers, in furnaces, etc., that the industry might well pay a slightly higher price for screened coal and yet buy the thermal unit as cheap in the shape of screened coal as in unscreened. By introducing this relation into the schedule of prices and slightly enlarging the margin between screened and unscreened coal screening became profitable again, and the output of screened coal increased 16 per cent within the next three months.

One remark only should be offered in conclusion, and this in connection with the most important business of the Federal Coal Council, namely the fixing of prices. Inasmuch as this is done in common session of producers, consumers and workmen employed both in the mines and in other industries, the economic insight of all participants is extraordinarily developed and their vista enlarged from the individual field of each trade to that of the common interest of all. Mutual understanding is promoted and oppositions are alleviated which political strife is apt to enhance.

Coal Mining Institute of America's Biggest Session—II*

Need for More Technical Training—Economical Way to Humidify Air—Will Overdevelopment Be Eventually Corrected and How?—Sawn Versus Hewn Mine Ties—Pressed or Welded Bonds

SIGNIFICANT among the declarations at the meeting of the Coal Mining Institute of America was that of Dr. Yandell Henderson to the effect that with the aid of a mixture of carbon dioxide and oxygen it was possible to bring back to normal condition victims of carbon-monoxide poisoning in 15 to 30 minutes. The patients find themselves inhaling so energetically from the mask that they try to free themselves from it and can be restrained only with difficulty. From a condition of suspended breathing they are in a short time brought into a state in which they breathe so energetically that the exertion is displeasing to them.

The lecturer declared that by compelling the lungs to breathe in more air than is required the air expired becomes so extremely low in its percentage of carbon dioxide that all voluntary breathing ceases. When the will is no longer used to cause the lungs to operate they will cease entirely to function for a few seconds because the animal is stimulated to breathe solely by carbon dioxide irritating the centers of respiration. The condition of suspended breathing is known as apnoea. Some people, however, are not subject to any such total suspension of respiratory activity, being sensitive to such low percentages of dioxide that no depth of respiration or continuance of the effort will so reduce the percentage as to make its action on the respiration centers ineffective.

Victims Recover Without Having Pneumonia

One of the great dangers of asphyxiation is the pneumonia that is likely to follow. One out of every three or five have that disease, sometimes as many as 50 per cent. With the administration of a mixture of oxygen with carbon dioxide, not a case of pneumonia resulted. The new inhalator invented by Dr. Henderson is being made by the Mine Safety Appliances Co., the royalties received going to a fund for the further investigation of resuscitatory methods for asphyxiation.

Mr. Greensfelder asked whether the inhalator would be useful in reviving those overcome by nitrous fumes from explosives. Dr. Henderson said that he believed it would be of value in all kinds of asphyxiation, even from war gases. In reply to Mr. Affelder he said it might be available in all pneumonia cases regardless of the source. Answering Mr. Cooper he declared that it would be useful in cases of ammonia poisoning such as might occur in connection with ice plants at company stores but that it would be unnecessary where the patient was already breathing, as elimination was rapid.

Mr. Maize recalled a case in the Connellsville region where a stable boss complained of severe headache. Several days later a man was found laid out as in a fit in the return airway. He was found to be bleeding. Inspection showed carbon monoxide in his blood. Some time after the discovery of this man gob stink was smelled in the return airways and it was found that the mine was on fire. The fire must have been of long standing but the evidence was wholly in its physiological effects on the men exposed to its influence. There have been seven cases lately in the Connellsville region of such spontaneous gob fires.

Dr. Henderson said the hemorrhage such as this man developed was quite usual in asphyxiation and also that carbon monoxide usually escaped from the blood completely 6 or 8 hours after it has been inhaled. Dr. Henderson added that he had absorbed carbon monoxide till his blood was nearly 50 per cent saturated and Dr. Haggert till over 50 per cent of the blood capacity was absorbed. Dogs had received up to 80 per cent of saturation and been revived. In fact the degree of saturation might be further extended without death provided oxygen and carbon dioxide in the proportion of 19 to 1 was provided and that the work was done before degeneration of the brain set in. Resuscitation must be done early, however.

College Education Will Be Indispensable

A well-attended banquet at McCreery's Store concluded the sessions of Wednesday. President Rush N. Hosler presided. Jack Armour, humorist from *Coal Age*, made the opening speech, and was followed by Dr. E. A. Holbrook, dean of the School of Mines, Pennsylvania State University, on technical education for mining men. Dr. Holbrook was distinguished by his usual modesty. However, it is to be regretted that the college officials are so modest and such diffident salesmen of the educational idea, for that is one of the reasons why the advantages of education are being only meagerly sought.

How mining men without technical training and stationed where they are largely dependent on their own resources can hope to cope with the problems of the modern electrified mine is difficult to understand. It is safe to say that if men of technical training had been given the proper consideration in the operating depart-



*First part of this article appeared in *Coal Age*, Dec. 21, pp. 997-999.



AN EXPERIMENTAL COAL EXPLOSION IN A GRASS FIELD

mines of coal mined the coal industry would today be as scientifically and as economically administered as the metal mines.

Mr. Holbrook stated that in Great Britain coal mining was taught in seventeen higher-class institutions and in forty-four schools of a secondary rating. He declared that in Pennsylvania there were only three institutions giving a full mining course, yet the output of Pennsylvania was roughly the same as that of Great Britain. He added that using the law in favor of the taxation of anthracite had been approved by the Supreme Court it would seem only natural that the state should tax the coal industry to complete the education of those who had to supervise the work of mining throughout the state.

Dr. Holbrook was followed by Douglas Malloch, of Chicago, Ill., who spoke on "Sinners I Have Met," numbering among them the quitter, the pessimist and the grouch. Mr. Malloch is a past master in epigram and kept his audience convulsed with laughter.

Use Natural Heat of Abandoned Workings

At the Thursday morning session, over which Jesse K. Johnston presided, J. W. Paul replied to the question "What is the most efficient method for humidifying mine air?" He stated that the humidification did not in any way reduce the force of an explosion. The air might be 100 per cent humid and yet the explosion would extend with unrestrained violence. Humidification of air was to be recommended only when the air thus saturated was at a higher temperature than the mine and consequently could be relied upon to deposit moisture in the workings. Even then it was of value only if it has been passed through the mine so continuously as to prevent the natural moisture from being evaporated or be add to that moisture.

Commercially in cold weather the air must be heated. That could be done by putting steam into it or by passing it over radiators. A less expensive way was to pass it through abandoned workings, which would raise its temperature to the natural heat of the ground. If steam were then added the humidification would be effected at a low cost. Mr. Paul said that 50 per cent of water would make coal dust safe against ignition but it would require 30 per cent to make propagation impossible.

It was generally felt that air must be saturated by vapor and not merely by the entrained particles of moisture from a spray, however minutely divided. It had been found that only 10 ft. to the leeway of such a spray might be found dust that could be ignited, showing that the air was not really saturated.

In response to a question Mr. Paul said that to render coal dust safe against explosion varying quantities of rock dust were needed. Some would be rendered safe by the use of 40 per cent of rock dust, others required 60 to 70 per cent, the quantity being readily determinable by experiment.

S. A. Taylor was asked to answer question No. 7—"What is the solution for the overdevelopment of the bituminous-coal industry?" Mr. Taylor said that he had estimated for the Garfield administration that the capacity of the bituminous-coal mines was a billion tons annually. Authorities in Washington placed the yearly capacity at 750,000,000 to 900,000,000 tons.

He declared that he did not believe that the production of coal would mount as steadily in the future as in the past, for coal was being better utilized now that central power stations were superseding the isolated plant and water power was displacing steam in the West and in Canada. Coal mines hereafter will be larger. We may look for an end to come to the many small mines that have hitherto been opened along the lines of established railroads. Mr. Taylor said that more and more does it become necessary, if any new mine is to be constructed, to build big plants capable of drawing on the coal land well back under the hills.

He added that several cures for the overdevelopment of mines had been proposed. The miners' union wanted a shorter day and a shorter week. Great Britain had the seven-hour day, but the results were not favorable to the mine workers or the operators. The suggestion of the mine workers, moreover, was not economic. Government ownership of coal land had been advanced as a means of promoting conservation and a deterrent of overdevelopment.

Others had advocated putting the opening of new mines under the control of the Interstate Commerce Commission, the need for new mines being certified in each case by the U. S. Bureau of Mines, but it seemed unconstitutional to favor operating corporations as against those who so far were not working their lands. Mr. Taylor quoted Herbert Hoover as saying that supply and demand would rectify the overdevelopment, and therein seemed to lie the wisest solution.

Don't Make Railroad Pay for Mine Surplus

It would be unfair to the railroads to compel them to meet the peak demands of the mines by unduly large purchases of equipment which would be idle many months in the year. He favored basing freight rates on the engineer's estimate of haulage costs and terminal expense. This would eliminate those mines which were worked only by virtue of freight rates that had been made unduly low for the especial purpose of enabling these mines to enter the market.

G. H. Ashley wanted the date of the wage settlement changed from April to July 1. Now we have a cold-weather peak at the same time as a peak caused by the desire to get coal for storage against a possible strike. Mr. Taylor responded that the busiest time in the Pittsburgh region was in the spring. The Pittsburgh operators would be willing to delay the question of settlement until July 1, but the Middle West, which mines coal mostly for domestic purposes, finds its mar-

ket briskens later when the public begins to stock up for the winter. Consequently the date of settlement has been much debated. The mine workers favor April 1 as the date, because they can find work in the spring which is not available in the winter.

In reply to question No. 4 it was stated that the mines should view the tie question in the same way as the railroads as far as the adzing or sawing of the timber is concerned. It is true that some mine ties are always wet but most of them are like railroad ties—wet occasionally and dry at other times. The railroads have concluded that the adze closes the pores and that the saw opens them up. With the adzed tie also only two sides are smoothed and the pores on the other two sides are in a state of nature. Unfortunately when a tie is not sawn it takes more room in a freight car and is heavy out of proportion to its effective size. Where a tie is sawn it will the more readily absorb preservative. Consequently it is best to use a sawed tie if, for the purpose of prolonging its life, it is to be given a bath or a brush coat.

The ayes had it unanimously in the question, "Are doors necessary in the ventilation of a gaseous mine?" C. P. Byrne, who made the main reply, stated that he had never seen a mine that could be ventilated without doors, and Mr. Ross said that this was particularly true of the anthracite mines.

Pennsylvania Danger Sign in Many States

Question No. 10 had evidently aroused some feeling. It ran, "Would there be any advantages in having a national danger sign for use in American coal mines?" G. H. Dyke in reply said the National Safety Council's universal sign, though carefully selected by experts after due experimentation, did not seem to be coming into general use. He recommended that the Pennsylvania sign for danger be adopted throughout the mines of the United States and that a committee be formed to hasten its adoption. Mr. Maize said that the Pennsylvania sign, a red oval with a black background and "Danger" in white letters, despite all that might be said about the uselessness of a black background in a dark mine with black coal in the rear, was giving satisfactory service. W. G. Duncan said that the use of the danger sign had so far not been enforced in the anthracite region and that the law did not require its enforcement.

W. H. Howarth and Sim Reynolds favored the universal use of the Pennsylvania sign. The general feeling was that someone had some other sign in view for universal adoption, and this caused somewhat general indignation, but Mr. Maize admitted the question was his and he favored the use of the Pennsylvania sign. G. H. Dyke said that the sign which the Pennsylvania Department of Mines had prescribed was selling all over the country including the anthracite region. Its adoption seemed to progress without any formal action.

D. J. Price, engineer in charge of grain-dust explosion investigations of the U. S. Department of Agriculture, in a paper on that subject, which he has made his especial study, said that the inquiries of the U. S. Bureau of Mines furnished the foundation for the researches of the Department of Agriculture into explosions of all kinds of industrial dusts.

In the afternoon G. A. Richardson showed his slides and moving pictures of the Rosedale mine and by-product plant, and A. C. Callen, professor of mining, School of Mines, West Virginia University, Morgantown, W. Va., gave an address on "Methods of Education in Coal Mining." He said that in Illinois, mining classes were being held in twenty-three towns, in Pennsylvania in twenty-four towns and in West Virginia in thirty-one towns. In West Virginia 1,096 men were enrolled and about 800 attended the classes weekly. The average class contained twenty-five men.

He believed in itinerant instruction. Local instructors might do the work at less cost but they did not attain the same success. Few of them gave the necessary time to the task. Being local men they did not have the respect shown them that was accorded to men from the outside. In fact he would not let any man instruct in the section from which he came for this very reason. The period of instruction lasted over two years.

In many places the superintendent and mine foreman attended and solved their questions on the board with the rest. At one point a district mine inspector made it his practice to attend. The presence of these men was stimulating to the class and really in some degree helpful to themselves, for a little refurbishing of facts and ideas is always well.

After Professor Callen's address, Edward Steidle, supervisor, co-operative mining department, Carnegie Institute of Technology, Pittsburgh, took the chair and Question 11, propounded by D. L. Boyle, was discussed. He wanted to know why all Pennsylvania mines should not be inspected by the Pennsylvania Inspection and Rating Bureau and duly rated, whether they were insured by the state, the stock companies or the mutual companies or were self-insured.

Company's Own Safety Inspectors Preferable

William Patterson declared that the safety inspectors of the coal company's own staff were more careful and more reliable than those of the bureau because they were always on the job and did not have to visit so many mines. As they learned to know intimately the few mines they had to inspect they could more readily detect hazardous conditions such as it was the interest of the employees of insured companies to discover. Besides, he alleged, the anxiety to get business sometimes made the insuring companies disposed to give a rating that the condition of the mine would not justify.

It was explained that as the law was framed the bureau was not allowed to inspect self-insuring mines. In no case could the rating inspectors order changes in the conditions. It is true that they could raise the insurance rates in accordance with a schedule, but even that they certainly could not do with a self-insuring company.

Question 12 asked, "At drift or slope mines where the coal is 3 or 4 ft. thick are rotary dumps more efficient than crossover dumps?" The answer to the question appeared to indicate that at a mine where the number of cars dumped depended on the capacity of the dump to discharge coal the endless crossover dump had an advantage over the type of rotary crossover which dumps only one car at a time, but the opinions expressed differed as to the relative merits of the two kinds of dump where in the case of the rotary dump provisions have been made for the dumping of two or more cars concurrently and where in either case the dumping capacity is not the question which is directly at issue.

Question No. 13, "What is the best type of head block—pressed or welded—and why?" was answered by

Mr. Bryant. He said that the compressed-terminal bond gave satisfactory results when the track was dry and the temperatures were even. Properly installed this bond gave satisfactory service, but when once it began to fail it deteriorated rapidly. It might serve its purpose excellently for ten, twelve or even fifteen years. On the other hand a bond poorly put in by the same man might show rapid deterioration. The hole must be absolutely clean and therefore must be drilled without lubrication.

Electric Welds Displacing Compressed Terminal

Investigation showed that the electrically welded bond was fast taking the place of the older compressed-terminal bond. Today 64 per cent of the new bonds were welded and only 36 per cent were compressed-terminal bonds. A few years ago the latter bonds were much more popular, the welded bond being comparatively rare. Another member said that the welded bond was either a good bond or a 100-per cent failure.

It was stated that at the meeting of the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers in Huntington, W. Va., several rails with welded bonds were tested and that it was found that the welding crystallized the rail and weakened it, the rail breaking in every case at the point of welding.

Question 14, as to the most effective methods of reducing the present appalling rate of fatalities in coal mines from "falls," brought out the remark that one member had spoken to his men by attempting about their families and by suggesting that in neglecting safety the men were jeopardizing not only their own lives but the happiness of their wives and children. The thought of leaving them dependents with no one to care for them had more effect than the fear of the mines for his own life. Mr. Maize recommended the extensible use of the center prop.

Relative Value of Near and Far Coal Land

Thursday's meeting closed with a paper read on behalf of Bernard J. Reis on "Depletion, Depreciation and Other Factors Bearing on Cost." He urged that the coal near a mine opening or near a railroad sold at a higher price than coal that was more distant and consequently the whole cost of the area held by the operating company should not be divided by the whole anticipated tonnage of the territory to be operated when the depletion of the value of the property per ton mined was being computed. The actual value of the coal depleted should be taken and no other. Otherwise too large a depletion would be charged at a later period and profits would be declared at first which would be excessive and would represent not operating profit but profit plus a return part of the original capital.

The last expression from the meetings was the invitation ring in the last day of the annual session. Those who were able to stay over were well repaid for their tarrying, the objective the Springdale mine and central station of the West Penn Power Co., offering much of an instructive nature.

At least seventy-five were intercepted from Pittsburgh by Springdale, Pa. The meeting was spent looking through the central station. Divided into manageable groups, the visitors were familiarized with the power-generating operations and power distribution in the tri-state system. A luncheon still to learn pulverized coal, now being erected, attracted considerable attention.

The party then motored to New Kensington, Pa., where lunch was served. On their return to Springdale the men congregated in the main hoist house, where they were furnished with slickers, storm hats and safety lamps for their trip through the tunnels under the Allegheny River. Descending the stairway in the main shaft, an inspection was made of the big bottom with its rotary dump and skip-hoist arrangements.

A trip of ten all-steel 3½ ton mine cars such as are used in the Springdale mine carried the visitors through the river tunnels, during the course of which they were told of the difficulties encountered in solving the problems of the subaqueous construction. Arriving underground on the Logan's Ferry side of the mine the members were conducted to the airshaft, which elicited deep interest because of its huge proportions and its four-way split passages at the bottom. A well constructed first-aid room and a recently completed pump station with a 3,000,000-gallon sump offered suggestions aplenty. An ascent of the manway of the double-decked slope brought the men to the surface on the opposite shore of the river from the power station.

Safety Provisions Not Neglected at Mine

Here the slope hoist room, the substation, and the fan house were visited. An inspection of the orderly and well-lighted supply room and machine shop occupied some time. Here also a demonstration was made in a smoke chamber of the use of the carbon-monoxide gas mask.

Filing down the slope again the visitors walked to the east section of the mine and inspected the coal faces and other conditions on the main east entries. Few companies have adopted safety precautions on so large a scale as this one and the visitors did not fail to note these. Among them were large clean airways, electric lamps on the manways, crossover bridges over the haulage tracks, well-guarded trolley crossovers and a liberal application of whitewash on roadways.

A return to the Springdale side through the river tunnels in mine cars and a climb up the stairs brought the men to the surface and the convention to a close.

THE EFFECTIVENESS OF THE STEPS taken by the administration during the coal strike, looking to the prevention of a runaway market and an equitable distribution of coal supplies may be judged best, Secretary Hoover points out, by the fact that no acute hardship has followed the long period during which many mines were closed and by comparing the average prices that have prevailed since the strike with those that prevailed during the corresponding period following the strike in 1920. He emphasized, however, that domestic consumers will have themselves to blame if they do not provide substitutes for anthracite. There is not enough anthracite to go around and this condition must be recognized instead of relying on someone else to do the substituting.

UTILIZING THE SERVICES OF 194 RAILROAD CARS the United States Coal & Coke Co.'s mine at Lynch, Ky., on Dec. 5 loaded 10,573 tons in nine hours, the greatest output in its history. All this coal passed over one tipple and is derived from two openings. E. V. Albert is the general superintendent.



Problems of Operating Men

Edited by James T. Beard



Driving Wide Rooms a Factor in Maximum Unit Production of Coal

Conditions Affecting Maximum Unit Production—Necessity for Freedom of Movement in Mining—Requirements in Driving Wide Places—Objections to the Same

IN HIS letter, *Coal Age*, Oct. 26, p. 676, L. F. Klinginsmith requests a discussion of what influence, if any, the width of rooms has on the possible daily output, per man. In response to this request, I would like to offer the following remarks as being pertinent to that question.

The correspondent appears to be of the opinion that a wide room, or working place, will tend to produce a maximum tonnage, per man. In that connection, allow me to suggest that, aside from the prowess of the miner, the production of a maximum daily tonnage is largely dependent on certain physical conditions in the seam and the extent to which these are considered in the working out of the coal.

Miner Must Have Room to Work to Develop Full Capacity

In the first place, it is very essential that the miner should have freedom of movement. For instance, the place must be of sufficient width and arranged in a manner not to impede the loading of the coal. In this respect, it must be remembered that the width of the room is not necessarily the dominant factor.

For example, a 10-ft. entry if unobstructed may afford greater freedom of movement than a 20-ft. room where the roof conditions require the setting of posts so close together and near to the face of the coal as to provide little room for the miner to work.

On the other hand, where the conditions of roof and floor permit the driving of wide rooms, a single mining across the face of the room will produce a correspondingly larger tonnage and less time will be lost in the mining of the coal or in waiting for the machines to cut the face.

Wide Openings Assist Breaking Action of Roof

Again, the cantilever action of the roof is more effective in breaking down the coal, where the width of the opening is such as to throw the pressure on the face of the coal. A greater width of coal face will also greatly facilitate the setting and loading of more care at one time than is possible in a narrow place.

In respect to expediting the loading of coal in a working place, a most important matter is the arrangement of the track in the room. Where proper attention has not been given to this arrangement, the result will be to largely offset any advantage that might be gained in working a wide breast of coal.

Location of Track Important

The distance the miner must handle his coal along the face will largely determine his speed of loading. For this reason, conditions permitting, laying the track in the center of a wide room is a decided advantage over laying a track along the straight rib; but this must always involve the question of relative cost of the upkeep of the road, in the two cases.

Conditions may enable the driving of double rooms in which a track is laid along each rib. This will prove a distinct advantage in drawing back wide pillars. Briefly summarized, the driving of wide places, consistent with the prevailing conditions, favors a maximum production of coal, per man, by yielding a larger tonnage, per cut, and expediting the loading of the coal, where proper attention is paid to the arrangement of the tracks in the rooms.

Precautions to Be Taken When Driving Wide Rooms

Personally, I do not advocate the driving of rooms of a greater width than the local conditions and facilities of loading will permit. With wide rooms and proportionately large pillars, there is not the sustaining resistance to roof pressure as with a larger number of pillars of a size suitable to the conditions.

Under the conditions named by the correspondent, however, the driving of wide rooms will require the exercise of the greatest care in maintaining and form pillars. Lack of uniformity, size of pillars and the manner in which they are drawn back will result in an uneven distribution of roof pressure and create a disposition or tendency to creep.

The chief objection to wide rooms, driven under any roof conditions, will be found to be the danger of trouble in the later extraction of the pillars. In my judgment, the driving of rooms from 35 to 40 ft. in width, with pillars of proportionate distance, is apt to develop a dangerous condition when drawing back the pillars.

Owing to the large area of extraction, not only is there greater danger to the miners robbing the pillars; but there is every possibility of a crack extending back into the room a considerable distance beyond the breakline. If this does occur there is bound to result a total loss of large quantities of coal and material.

When the Fight Breaks Quickly

In the present instance, the coal being overlaid with a sandrock roof, it is probable that the initial break will only take place after a considerable area of pillar extraction is accomplished. The resulting heavy fall of roof may release large volumes of inflammable gas, with every prospect of a disastrous explosion taking place.

In any event, the cantilever action of the roof, increased by the extended area of extraction, cannot fail to have a destructive influence on the pillars and stumps yet remaining, to which I have previously alluded.

Taking these conditions into account, I consider it always objectionable to sacrifice future production to a temporary maximum output. This should be made subservient to economic production and development. It should be the aim to maintain a sufficient number of working places that will not compel the men to be crowded together so that they cannot work to the best advantage, and develop the highest productive capacity of the individual. Lastly, it is of the utmost importance to arrange the schedule for the cutting of the coal in a manner that will insure no delay in its loading. There must also be an adequate supply of cars at each place.

Washington, D. C. T. C. Taggart

Practical Safety-Lamp Test

Lamp to be surrounded with fine wire gauze and exposed to explosive. Flame in a closed chamber and water used to generate gas.

READING the short letter of a Pennsylvania [illegible] *Coal Age*, Nov. 9, p. 770, in which he describes his method of testing a safety lamp by means of a carbon lamp brought in proximity to the gauze of the safety, I am prompted to give the following practical test of a safety lamp, to [illegible] the real purpose:

[illegible] from asking the question, Will some means or system that will insure safe mining ever be found through study and investigation?

Mine Disasters Continue Though Knowledge Has Increased

Notwithstanding the rapid increase in the knowledge of mining conditions, brought about through our study and investigation, the past month or six weeks have recorded many fatal mine disasters, both in this country and elsewhere. It is appalling when we stop to think of the number of lives that have been sacrificed in these dread happenings.

Many of the disasters can be traced to the careless act of some ignorant or thoughtless miner, while others must be charged to the disregard and indifference of certain mine officials to safety rules and regulations. Operators must not cease their efforts to eliminate all known sources of danger and see to it that safety rules and regulations are strictly enforced, with suitable penalties.

Incompetent Officials Often Take Unwarranted Risks

It is with deep regret that we acknowledge a goodly number of our coal operators, though well meaning men, know very little regarding their underground operations. The most of these operators employ careless and incompetent officials, with the result that an explosion or other mine disaster follows. Many are in the mining business for the purpose of making all the money possible.

This latter class of operators are often willing to assume unwarranted risks and require to be carefully watched if their mines are to be operated in a safe manner. If the safekeeping of mines was a matter of heavy penalty for the violation of mining laws and safety regulations, we would soon have better mines and fewer disasters.

We often hear the question asked, "What are the chief dangers to be guarded against in coal mines and how can this be done?" The two chief elements of danger involved in the mining of coal are gas and dust. These must be guarded against in the operation of all mines. In respect to gas, adequate ventilation of the workings is the most effective means to employ. In the matter of dust, its removal and the humidifying of the mine air are the remedies.

Maintain Good Circulation

In his article, "Keeping the Mine Safe," *Coal Age*, Nov. 2, p. 719, Oscar H. Jones says: "One of the chief factors in mine safety is maintaining a good circulation of air throughout the workings." With this statement, I heartily agree. It hits the nail squarely on the head.

No mine can be considered safe or sanitary without a sufficient supply of fresh air at all times. A large volume of air circulated at a low velocity and made to sweep the working faces is a great safeguard of life in mining. All abandoned places where gas is wont to accumulate should be required, by law, to be kept well ventilated or substantially sealed with stone or concrete.

Good ventilation is the key to safeguarding the mine against gas. Dust is the dangerous element met with in all dry mines, the degree of danger varying with the inflammability and fineness of the dust. In my judgment, the dust danger is the most difficult one with which miners must deal and requires constant attention. Unlike gas, the danger from dust is increased by an abundant supply of fresh air.

Sprinkling or Spraying Inadequate

Again, quoting from Mr. Jones' letter to which I have referred, we find the statement: "In my opinion, no spraying system is thoroughly effective." Continuing, he does not believe that watering the dust renders it inexplosive or increases the safety of the mine. He regards the humidifying of the mine air and the broadcasting of salt more effective means of overcoming the dust evil.

In these respects, the correspondent has again clearly stated my own convictions regarding the dust evil. After a long experience in sprinkling dusty mines, and the use of spraying systems for laying the dust on mine roads, I have lost faith in the effectiveness of these means of overcoming the danger. Where there is much dust make the roads as wet as you may, today, and tomorrow they are dry again.

The most effective way of dealing with the dust question, in coal mines, is to reduce to a minimum the means for making dust. Permit no accumulations of fine coal at the working face. Load out all fines and coal cuttings in dustproof cars. Forbid the loading of cars with topping, and keep all haulage roads and travelingways clear. In addition to these precautions, humidify the intake current with steam.

Like Mr. Jones, I believe that, in all mines where the coal is hard and dry, blasting should be done with permissible explosives only and all holes should be tamped with clay. Preferably, experienced shotfirers should be employed to examine, charge and fire all shots after the men have left the mine.

JOHN ROSE.

Dayton, Tenn.

Determining Fault of Dislocation

Normal and reverse faults—Ends of strata bent to show direction of the throw—Common rule is to follow the greater angle.

IT WAS with much interest that I read the letter of I. C. Parfitt, *Coal Age*, Nov. 16, p. 799, entitled, "Locating the Coal Beyond a Fault." The writer dwelt particularly on the direction in which the ends of the strata were bent at the point where the slip occurred.

The subject ought to be of deep interest to everyone in charge of coal-mining work. In my own experience, I have gone through many faults. At

times, it was necessary to drive long entries or slopes to connect with the continuation of the seam when that had been found.

Lack of Geological Knowledge

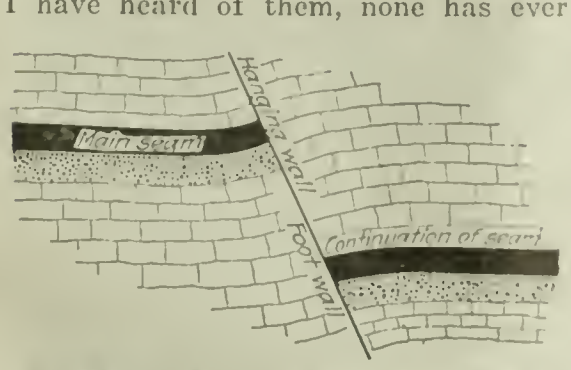
Owing to the lack of knowledge on the part of mine foremen and other officials, regarding the nature of faults and the means to be adopted to locate the seam beyond, there is often incurred much needless expense when an entry strikes a fault. In the majority of cases, there is much guessing as to the direction in which the strata has slipped.

Drillholes are often put up in the roof and down in the floor; or, perhaps, the heading is driven a considerable distance in the rock, in a fruitless endeavor to locate the continuance of the seam. It is needless to say that these efforts are largely without any intelligent direction and generally end in failure.

Causes Producing Reverse and Normal Faults

In the figure presented by Mr. Parfitt, there is shown what is termed a "reverse fault," which is evidently the result of contraction in the formation. The two sections of the strata were apparently forced together, until rupture took place and one portion then slipped under the other.

Such faults are not common. While I have heard of them, none has ever



NORMAL FAULT AS A DOWNTHROW

occurred in my practice. What I would term a "normal" fault is one where the strata were pulled apart by a force of extension till rupture occurred with the result shown in the accompanying figure. In this type of fault, it is clear that no drillholes, whether put up in the roof or down in the floor, would avail to find the coal. What I have to say, here, has reference to this more common type of normal fault.

Practical Rules for Finding the Coal Beyond a Fault

There are two general indications that intelligent miners seek when approaching a fault. One of these has been referred to by Mr. Parfitt; namely, the bending upward or downward of the ends of the strata at the fault line. It is my experience that the coal rises when the fault is a downthrow; and dips when the fault is an upthrow. This characteristic of a normal fault is shown somewhat exaggerated in the figure.

A practical rule that I have found has never failed to get the coal, is to follow the greater angle between the floor of the seam and the line of fault. This rule, of course, would not apply to a reverse fault, where it would be necessary to follow the lesser angle to get the coal beyond the fault line.

In reference to the bending of the ends of the strata, in a faulted seam, it will sometimes happen that metamorphic action has destroyed these marks and rendered the cleavages practically indiscernible. It will be interesting to learn the experience of others regarding these indications.

Linton, Ind. W. H. Luxton.

Inquiries Of General Interest

Method of Humidifying Mine with Steam When Ventilated by Exhaust Fan

Use of Steam in Exhaust System of Ventilation—Changes Required to Avoid Annoyance on Haulage Roads—Heating Intake Air Before it Enters the Hauleway

AT THIS season of the year, the subject of humidifying mines is one of absorbing interest. Recently, this interest has been much increased by reason of the numerous reports of mine disasters that have occurred in different localities where coal is being mined.

Mine explosions reported within the past two months have occurred in widely distributed parts, the territory covered extending from Vancouver Island in the northwest, to Alabama and including England. This wide distribution of mine catastrophes, in connection with repeated volcanic eruptions and destructive earthquakes during the same period, awakens renewed interest in the possible connection of seismic disturbances and gas in mines.

However this may be and whatever may have been the causes of the ignition of gas and dust that created these recent disasters, it behooves all coal miners and operators to exercise every precaution and seek to avoid danger by reducing, as far as practicable, explosive conditions in the mines. With this end in view, I am constrained to ask *Coal Age* and its readers for suggestions regarding the application of steam to humidify mines ventilated on the exhaust system.

In an excellent article that appeared some time since in *Coal Age* (Aug. 3, p. 169), the use of steam for this purpose was fully explained. Its application in that instance, however, clearly related to mines ventilated by the blowing system, which lends itself readily to the introduction of steam to the intake airway.

In the exhaust system of ventilation, on the other hand, the conditions are different, requiring the main haulage road to be made the intake airway for the mine. In that case, whether the mine is opened by a drift, slope or shaft, it is evident that the introduction of steam in the intake current would greatly hinder the haulage operations and prove a decided annoyance to workmen on that road.

The question I would like to ask is: Under these conditions, how is it practicable to humidify a mine ventilated on the exhaust system? There are hundreds of mines ventilated in this manner and a practical answer to this question will be greatly appreciated by many, at this time.

——, Ky. Superintendent.

In presenting his case, this correspondent has brought forward a matter of much importance in reference to humidifying mine air where exhaust fans are used. As he has stated, the blowing system of ventilation is ideal for the application of steam for the purpose mentioned, since the main haulage roads



MAIN HEADINGS LEADING INTO MINE

are then the return airways of the mine and the introduction of steam in the intake does not interfere with hauling the coal.

Perhaps the best answer that can be given to this question is to cite an instance of an exhaust mine that was, with slight alterations or changes, adapted to the introduction of steam for humidifying the mine, without interference to the operations of haulage and handling of cars at the mine entrance.

Although the answer about to be given relates to a mine in which the arrangements shown in the accompanying figure will apply equally well as in a mine or a shaft bottom, as far as the effect in the mine is concerned. If the mode illustrated in the figure was practicable, it was located at one side of the drift mouth, as near entrance A. The discharge

moisture. The air current is thus enabled to completely absorb the steam as it issues from the ends of the pipes and strikes against the baffle curtains hung in the airway.

Therefore, after passing these curtains, the air current presents a dry but saturated condition, at a moderately high temperature. By the time it has reached the main haulage road at *C*, and mixed with the cooler air entering the mine at *A*, it begins to deposit its moisture as the temperature falls.

When this arrangement is carefully followed, there is no appreciable fog formed on the haulage road that would inconvenience the drivers and other workmen. We shall be glad to have the question of practical humidification of mines, in the exhaust system of ventilation, further discussed, giving results actually obtained as to temperature and percentage of moisture at different points in the mine and the effect in overcoming the dust evil prevailing in coal mines.

Examination Questions Answered

Miscellaneous Examination Questions

(Answered by Request)

it has once been started in the workings of a dusty mine.

QUESTION—*(a) If the velocity of an air current is 700 ft. per min. and the size of the airway is 11 x 6 ft., what is the volume of air passing? (b) Show the perimeter and give the rubbing surface, the entry being 2,700 ft. long.*

ANSWER—(a) The sectional area of this airway is 6 × 11 = 66 sq. ft. The volume of air passing, at a velocity of 700 ft. per min., is 700 × 66 = 46,200 cu.ft. per minute.

(b) The perimeter of this airway is 2(6 + 11) = 34 ft. The rubbing surface of the airway is then found by multiplying the perimeter by the length of the airway; thus, 34 × 2,700 = 91,800 square feet.

QUESTION—*State the different methods of timbering hard roof and soft bottom, and hard top and soft bottom.*

ANSWER—When the roof is bad and the bottom soft, it is necessary to use good cap pieces above the posts, for the better support of the roof. Also, each post must be set on a good foot board so as to distribute the pressure more evenly and prevent the post from sinking into the soft bottom. Where the top is hard and the bottom soft, good foot boards only may be needed.

QUESTION—*(a) Give the essential requirements for a well ventilated mine. (b) Why is it necessary to take measurements of the air at certain intervals throughout the mine?*

ANSWER—(a) In a well ventilated mine, the volume of air entering the mine must be sufficient to comply with the requirements of the mining law of the state where the mine is located. In addition to this, the quality of the air and the velocity of the current at the working face must be sufficient to make the place safe and healthy for work. Simple compliance with the requirements of the mining law does not necessarily insure good ventilation, which depends primarily on the quality and velocity of the air at the working face. In every case, the condition must be such as to render all places healthy and safe for work.

(b) Air measurements should be taken at intervals throughout the mine, in order to determine any losses that may occur by reason of leaky doors and stoppings, so that these can be repaired and the entire volume of air made to sweep the working faces throughout the mine.

QUESTION—*(a) What elements determine the ventilating pressure? (b) What determines the air resistance and how is it measured? (c) What is a booster fan? Do you consider a booster fan practicable? Give reason for your answer.*

ANSWER—(a) The ventilating pressure, or the pressure producing circulation in the mine, is determined by the mine resistance.

(b) Resistance to the flow of air in a mine is determined primarily by the extent of rubbing surface and the velocity of the air current. In addition to these elements, the resistance is greatly modified by the amount of obstruction to the free passage of the air, owing to roof falls, contracted breakthroughs, or other hindrances in the airway.

Mine resistance is measured by observing the reading of the water gage, in the fan drift or at the shaft bottom. The water-gage reading, in inches, multiplied by 5.2 and that product again multiplied by the sectional area of the airway, in square feet, will give the mine resistance, in pounds.

(c) A booster fan is a small fan installed at some point in the airway of a mine, for the purpose of improving the ventilation in a given section of the workings. A booster fan is generally operated by an electric motor.

The use of a booster fan is never practicable if employed as a unit of the permanent circulation in a mine. Its use is limited to improving the circulation, temporarily, in a section of a mine, about to be abandoned and where the conditions do not warrant incurring any unnecessary expense for ventilation.

The reason why a booster is not a practical means for increasing the circulation in a mine, permanently, is because the location of the booster requires its constant watching to prevent accident resulting from possible failure in its operation. Also, the location of such a fan renders it unavailable in case of accident occurring making it important to restore the circulation before entering that section.

"Better Settle for Year at Present Wages on Four-State Basis," Big Western Operators Now Say

Big coal operators of the Middle West are reaching a new decision about what ought to happen April 1. Opinion is fast crystallizing in favor of making a settlement with the union miners at the present scale to run one year. The fact that John A. Donaldson, of Pittsburgh, Pa., one of the chief opponents in the recent Chicago meetings of re-establishment of the old four-state plan of scale making, is reported to have changed front and now favors the four-state plan is an important factor. It is important also that the central Pennsylvania operators are reported to be willing at last that this should be done. Thus, is spite of what the horde of small operators and the outlying districts may think, the situation is shaping up for a quick decision by operators and miners at the Jan. 3 scale conference at Chicago in favor of negotiating a one-year, four-state contract at present high wages, serious though the consequences may be to smaller and weaker coal producers in face of the probable poor market next year.

The one-year plan is said to have been approved by the miners, who feel so secure in their strength to whip the operators under any conditions at any time that they would just as soon put off the finish fight—if there is to be one—until April, 1924. There has been no official decaration on this point from Indianapolis, of course, but the word has passed around that John L. Lewis will agree to the one-year contract provided no reduction in wages is insisted upon.

Four of the principal operators whose headquarters are in Chicago agreed during the past week that they have concluded that a settlement with the union April 1 is essential. A strike, they say, will inevitably bring down some sort of government control through the agency of the Federal Coal Commission, and neither miners nor operators desire that. If settlement is made for one year, then time will have been allowed for the commission to do its utmost for the industry. At the end of the year, with the commission's work done, the deplorable labor situation in the industry may have been changed somehow so that the balance of power may not lie so completely in the hands of the union. Possibly other corrections of the industry's ills will have been made. In any case the spring of 1924, with no Federal Coal Commission in existence, is now looked upon by the large Western operators as a better time for a finish fight with the union than April, 1923.

It is prophesied freely enough that a continuance for another year of the present wage scale would simply spell ruin for hundreds of operating companies the country over. But the defence of those who would avoid a strike is that the public is in no mood to stand for another conflict between operators and union. Further than this, it seems evident that official Washington favors a settlement even at the present scale. If it is made, the larger operators say they will feel that they have shown their entire willingness to do their bit for the general good of the country. That is, they think they will have bowed to what they consider to be the will of the people, foolishly conceived though that will may be.

The indications now are that on Jan. 3 when the subcommittee of two miners and two operators from each of the fifteen union districts get together for a last minute effort to frame up a negotiations plan before the main scale conference convenes that same day, a hasty recommendation will be written favoring four-state negotiations. This is the subcommittee which spent more than a week in two Chicago sessions, Nov. 14 and Dec. 6, without reaching any conclusion. But whatever this subcommittee may do, it now appears likely that the main conference will set up the Central Competitive Field once more and that a settlement with the union will be made.

Case In Against First Herrin Defendants; Defence Begins Three Weeks' Grind

The state's full case against the first five prisoners in the Herrin massacre trial at Marion, Ill., is now in and the defense put a few witnesses on the stand just before adjournment until Jan. 2. No important new angles have been introduced. The state's witnesses presented more evidence supporting the direct charges of murder against all five prisoners, the witnesses reciting further details of brutality toward Howard Hoffman and C. K. McDowell previous to the killing of those two non-union members of the Lester strip mine's force on the day last June when the mine was besieged and 21 of the defenders killed and wounded after the whole force had surrendered. It was plainly shown by the testimony of first defence witnesses and by public statements by attorneys for the miners' union in charge of the case that "justifiable homicide" is to be the grounds of defence.

The defence put on its first witnesses on Friday, Dec. 22. John D. Conroy, farmer, union miner and contributor to the defence fund, whose farm is near the mine, told of being warned one evening about June 15 by an armed man on the road near his house not to "be around there after sunset or before sunrise." On the 21st he said he was fired upon from the mine as he went along the road, whereupon he ran into the farmhouse cellar with the rest of the family for protection. The next morning more shots were fired at him as he went out to the pasture after the stock. Conroy's father, mother and sister all told of the firing on the farm and of the killing of a colt. The elder Conroy, under cross-examination, could not be sure that the bullets were not overshot by mine attackers on the opposite side of the pit.

Ed Crenshaw, farmer and ertswhile miner, whose farm is near the strip pit, told of seeing Geordie Henderson, union miner, shot as Henderson lay on the ground 100 ft. from Crenshaw. He wasn't sure whether Henderson was armed or had been firing at the mine at the time. "Uncle Tink" Donahue, aged "character," whose farm is near the strip mine, testified that the guards closed a road he had been using as a public highway for 40 years. Walter Farry, highway commissioner of West Marion, said the road had been maintained with public funds. Oscar Daughar and his aged father, George Daughar, miners and farmers near the mine, told of bullets flying around the Crenshaw house.

Over the Christmas holiday prisoners and jurors were guarded in the county jail. Judge Hartwell warned witnesses to be ready promptly when court convenes Jan. 2. It is probable it will take the defense three more weeks to get its entire case in.

Howat Ticket May Have Won in Kansas

Results of the election, Dec. 12, of officers in District 14, United Mine Workers of America, over-Alex Howat, fornerly are still in doubt pending tabulating of the returns. Early reports were that the Howat slate, headed by William Howarth, candidate for president, was in the lead. The day after the election, however, Otis Glasscock, member of the International Board, United Mine Workers, and of the special election committee in charge of the election in District 14, declared there was little doubt but Clark, leading the Lewis faction, would win.

I. C. C. Issues Service Order 31

To insure adequate supplies of coal for the Government Fuel Yards at Washington, the Interstate Commerce Commission has issued Service Order No. 31, instructing the Pennsylvania R.R. to assign three cars per day for fifteen consecutive working days to the mine of the Consolidated Coal Mining Co. at Twin Rocks, Pa.

Senator Walsh Urges Seizure of Coal; Michigan Seeks Canadian Embargo

[illegible] Walsh of Massachusetts, advised state officers to commandeer and distribute coal necessary to prevent suffering, in a statement sent to his constituents and made public Dec. 26.

Prompted by reports of distress caused by coal shortage in New England, Senator Walsh, who said he had received many letters on the subject, took the unusual course of sending a circular letter to his constituents telling his efforts to prevent a fuel famine.

"I tried to arouse action of our government," he declared, "at a time when action could have been taken with advantageous results."

"Last summer," he added, "was the time to have compelled the necessary production and distribution of coal. The only immediate relief I can suggest now is for the respective state governments to commandeer whatever coal is available and apportion it equitably and at hard cost of production and distribution."

In his effort to obtain a more liberal supply of anthracite for Michigan and Detroit, Charles F. Dunn, Wayne County Fuel Administrator, is directing the attention of Representative Vincent M. Brennan to various features of the situation. Representative Brennan, it is said, will make use of the information in urging congressional action placing an embargo on shipments of anthracite to Canada.

Mr. Dunn informs the congressman that between Sept. 10 and Nov. 24 shipments of hard coal via Canada amounted to 13,536 cars, or 404,567 gross tons, while in the same interval Michigan received 2,947 cars, or 107,871 gross tons. It is pointed out also that the figures for Canada do not include shipments over the Delaware & Hudson, which is reported to have handled a considerable tonnage for Montreal, but the shipments carried out of Buffalo on lake steamers for delivery in Canada.

The fact that the railroads receive a freight rate of 67c. more per gross ton on shipments into Canada than the rate to Detroit and Michigan is suggested as one of the reasons for the apparent discriminatory diversion of anthracite into Canada.

Mines Bureau Fares Well in Appropriations

The Bureau of Mines fared particularly well at the hands of the appropriations committee of the House of Representatives. The only cut made in its budget was the lopping off of $10,000 from the amount requested for the investigation of mineral fuels. In that case the bill reported to the House carries $130,000 instead of $140,000. On the other hand, however, an increase of $20,000 was allowed for the supervision of petroleum leases on the public domain and $41,000 for enforcing the provisions of the leasing act with regard to coal, phosphates, sodium and potassium.

In the case of the Geological Survey the total carried in the budget was reduced by $136,400. The appropriations committee reported $225,800 for land-classification work, a reduction of $75,000. An additional $9,500 was lopped off of the amount requested for stream gaging, and $51,900 was withdrawn from the amount desired for geologic surveys.

Only Four Companies Bid on Coal Supply For Navy Yards and Naval Stations

Only four companies submitted bids Dec. 19 to the Bureau of Supplies and Accounts, Navy Department, for [illegible] coal for navy yards and naval stations. Only four bids were for the full list of more than one hundred, and on the items requiring 14,000 tons for delivery at Norfolk, Va., and 800 tons for delivery at Lee Hall, Va.—no bids at all were received.

In addition to the four bids mentioned at the opening, an informal proposal, which was not considered, [illegible] was received from the Madison Coal & Iron Co.

The bids received were as follows:

Empire Coal Mining Co., Philadelphia, 300 tons, for delivery at Hingham, Mass., $9.25 per ton; 900 tons, for delivery at Iona Island, N. Y., $7.98 per ton; 8,500 tons, for delivery at Lakehurst, N. J., $8.23 per ton.

Iron Trade Products Co., Pittsburgh, 300 tons, for delivery at Hingham, Mass., $8.41 per ton; 25,000 tons, for delivery at Brooklyn, $7.06 per ton, delivered at coaling plant, or $6.76, delivered into navy barges; 5,400 tons, for delivery at South Brooklyn, N. Y., $7.39 per ton, delivered in cars, or $6.76 per ton, delivered into navy barges; 900 tons, for delivery at Iona Island, N. Y., $7.15 per ton; 1,200 tons, for delivery at Lake Denmark, N. J., $8.04 per ton; 8,500 tons, for delivery at Lakehurst, N. J., $7.39 per ton; [illegible] tons, for delivery at Washington, D. C., $6.76 per ton; 500 tons, for delivery in the District of Columbia, $6.76 per ton; 400 tons, for delivery at Alexandria, Va., $6.76 per ton; 10,500 tons, for delivery at White Plains, Md., $7.34 per ton; 13,800 tons, for delivery at Annapolis, Md., $9.42 per ton, for large delivery, or $9.07 per ton, delivered by rail.

Quaker City Coal & Coke Co., Philadelphia, 8,500 tons, for delivery at Lakehurst, N. J., $7.11 per ton.

L. A. Snead, Washington, D. C., 400 tons, for delivery at Alexandria, Va., $8.50 per ton; 17,900 tons, for delivery at Sewalls Point, Va., $8.24 per ton; 3,400 tons, for delivery at Norfolk, $8.25 per ton; 4,000 tons, for delivery at Charleston, S. C., $8.64 per ton.

Beehive Coke Output in 1921, 5,538,042 Tons, Lowest Since 1885

Beehive coke production in 1921 was 5,538,042 net tons, the smallest record since 1885 and 73 per cent less than in 1920, according to the U. S. Geological Survey.

Byproduct coke continued to supersede the beehive-oven variety, for of the 25,287,22 tons of coke produced in 1921—both beehive and byproduct—but 22 per cent of the total came from beehive ovens against 40 per cent in 1920.

The principal facts concerning the beehive coke industry are revealed in the following tables:

TABLE I—BEEHIVE COKE INDUSTRY IN THE UNITED STATES IN 1921*

Beehive ovens:	
In existence Dec. 31, 1921	66,014
Newly completed during year	0
Under construction at end of year	0
Coal charged into ovens:	
Quantity, net tons	8,475,446
Average value, per net ton	$2 52
Beehive coke produced, net tons	5,538,042
Average yield of coke from coal, per cent	65.3
Coke used by producer, net tons	495,481
Furnace and foundry coke sold:	
Quantity, net tons	4,969,052
Average value, per net ton	$5 42
Domestic and other coke sold:	
Quantity, net tons	56,874
Average value, per net ton	$4.79
Screenings and breeze:	
Used by producer, net tons	10,520
Sold, net tons	12,910
Average value, per net ton	$3.06

TABLE II—THE BEEHIVE COKE INDUSTRY, BY STATES, IN 1921*

State	Coal Charged Into Beehive Ovens Net Tons	Beehive Coke Produced a Net Tons	Beehive Coke Used by Producer a Net Tons	Total Sales of Beehive Coke and Breeze Net Tons	Value
Alabama	223,119	132,912	69,586	63,133	$411,471
Colorado	123,828	81,376	56,358	26,219	244,581
Georgia	12,708	6,943		7,243	80,888
Kentucky	161,507	99,442		100,509	753,621
Ohio	99,787	62,150	62,126	1,344	2,917
Pennsylvania	6,722,491	4,466,105	275,834	4,174,164	20,842,186
Tennessee	54,328	28,005	6,403	21,466	136,044
Virginia	442,038	280,476	13,034	270,662	1,946,364
Washington	6,291	3,495		3,495	34,572
West Virginia	343,226	209,537	12,116	198,313	1,313,305
New Mexico and Utah	286,123	167,401	24	172,288	1,457,980
Total	8,475,446	5,538,042	495,481	5,038,836	27,223,929

[a] Exclusive of screenings and breeze.

TABLE III—ESTIMATED MONTHLY PRODUCTION OF BEEHIVE COKE IN 1921*

(In Net Tons)

Month	Production	Month	Production	Month	Production
January	1,868,000	May	302,000	September	291,000
February	870,000	June	233,000	October	418,000
March	578,000	July	181,000	November	480,000
April	340,000	August	250,000	December	517,000

* Compiled by H. L. Bennett, U. S. Geological Survey, Dec. 9, 1922.

Incomplete Data Will Hamper Commission in Making Report Jan. 15; Important Deductions Likely

By Paul Wooton
Washington Correspondent of *Coal Age*

In making its Jan. 15 report the U. S. Coal Commission will be greatly handicapped by lack of complete figures, but it is believed many pertinent deductions can be made from the returns that will have been received by the time the report must be written. In that connection it is charged that returns have been delayed because an adequate supply of cost forms has not been made available. It is stated that the number of forms needed was underestimated. While it is probable that the number of companies which will require the C-1 form does not exceed 2,000, the average number which each company will require is large. This is due to the fact that many of the companies will make separate returns for each mine. Many of the companies operate in more than one district. Forms must be had for local associations and for the National Coal Association. Allowance must be made for work sheets and wastage.

Commissioner Neill has signed an agreement proposed by J. C. Bryden, chairman of the special committee of bituminous operators which is co-operating with the commission, whereby the name of the company, the location of its offices and the names of its mines may be omitted from the labor form povided that information is furnished on a separate sheet. A confidential identification mark can be placed on the sheet in lieu of the name of the company, which will be kept by the commission in a confidential file. The feeling is that the commission very properly may safeguard the business secrets of the reporting company, especially in such a matter as wages. On the other hand, it is equally apparent to all concerned that the commission cannot accept anonymous information, but it is a comparatively easy matter to identify reports in a manner which need reveal none of the information which would injure the individual making the returns.

The week of Dec. 18 was taken up largely in discussions between the commission and its staff and with Washington retailers. The amount of time which the commission has taken with the Washington retailers has led some to wonder how a body charged with responsibilities of such a pressing character can take up such details as have been under discussion. The thought is that such work should be left to field agents of the commission, although it is admitted that more profit than is apparent may come from these conferences. One outcome has been the tracing of high-priced coal, which has revealed some very significant information, it is believed.

George J. Anderson made a statement before the commission on Dec. 22 in regard to industrial relations in the coal industry. Mr. Anderson appeared at the request of the commission.

Supplemental instructions regarding the filling out of details of Form L-1, covering earnings of mine labor have recently been issued, as follows:

Referring to the letter of instructions for filling out the details in Form L-1, it was stated in the paragraph referring to column 48 that a formula would be sent later for deriving the net annual earnings. The method for deriving the net earnings is as follows: from the gross earnings subtract charges for items such as powder, dynamite and other kinds of explosives, caps, fuse, oils, carbide, smithing, etc. These are not given as a complete list but are typical of the kind of occupational expenses that are to be deducted, and if there are any items which are deducted at any particular mines and are not included in the above, and are of the same type of occupational expenses, they are to be included for that time in the items to be deducted.

The deductions are, of course, to be made only from the classes of employees against whom these charges are made. For example, the charge for explosives would be made against all classes of miners who actually pay for explosives, but would not be made against machine runners who were not required to work in occupations which required the use of explosives. Any amounts deducted for checkweighmen or check docking boss should also be subtracted from gross earnings in order to derive the final net earnings. Other deductions made on account of the union are not to be subtracted from gross earnings.

It is understood that in some cases only one general deduction is made for the union account and that this includes items for checkweighmen lumped in with the other items. In such cases the total

McChord and Eastman Reappointed

Charles C. McChord, of Kentucky, and Joseph B. Eastman, of Massachusetts, have been confirmed by the Senate for new terms as Commissioners of the Interstate Commerce Commission. The term is for seven years.

Utilities Proxy to Face Coal Commission

The President's Coal Commission will confer on Jan. 5 with J. W. Lieb, chairman of the [illegible] committee which the utility associations have set up. The commission expects to hear extensively from Mr. Lieb in regard to the problems and suggestions of large consumers of coal.

Preliminary Statistics of Production of Coal in 1921

(Recovery of product of wagon mines)

Locality	Short Tons	Short Tons	Short Tons	Short Tons	Short Tons	Total Value	Average Value per Ton	Number of Employees — Underground — Miners, Loaders etc. (a)	All Others	Surface	Total	Average Number of Days Worked
Texas												
						$1,241,880	$5 88	1,077	351	168	1,596	121
						1,322,600	1 74	912	258	126	1,296	161
						$2,564,480	$2 64	1,989	609	294	2,892	139
Utah												
						$12,309,000	$3 33	2,178	929	851	3,958	156
						870,000	3 61	161	50	44	255	95
						296,000	4 00	60	31	13	104	83
						170,000	2 92	47	27	21	95	186
						17,000	4 54	4	4	2	10	185
						$13,662,000	$3 35	2,450	1,041	931	4,422	151
Virginia												
						$203,700	$3 89	78	35	41	154	258
						1,378,000	3 07	281	229	145	655	191
						1,927,000	2 80	748	390	253	1,391	159
						155,000	4 22	61	24	20	105	189
						4,639,000	3 00	873	597	484	1,954	171
						3,989,000	3 18	836	806	278	1,920	195
						10,656,000	3 07	2,874	1,925	894	5,743	153
						$22,947,700	$3 06	5,751	4,056	2,115	11,922	166
Wyoming												
						$2,131,000	$3 59	277	155	122	554	186
						484,400	3 59	90	55	41	186	174
						2,751,100	3 97	445	306	183	934	156
						4,202,000	3 23	725	363	283	1,371	224
						2,541,000	2 71	899	250	172	1,321	71
						11,249,000	3 18	2,353	1,102	663	4,118	178
						$23,358,500	$3 24	4,789	2,231	1,464	8,484	167
Washington												
						$1,053,000	$3 08	576	523	310	1,409	99
						5,766,000	4 14	1,149	402	288	1,839	194
						449,000	3 22	75	56	45	176	225
						613,000	5 98	184	168	102	454	129
						895,000	4 55	146	52	57	255	277
						1,011,000	3 94	111	44	46	201	202
						$9,787,000	$4 03	2,241	1,245	848	4,334	159
West Virginia												
						$2,842,200	$2 83	1,111	513	267	1,891	114
						3,092,090	2 62	1,330	596	373	2,299	118
						433,000	2 46	228	100	59	387	91
						4,167,000	2 72	1,526	372	254	2,152	182
						1,458,000	2 35	463	168	160	791	205
						19,755,000	3 22	6,171	3,461	1,690	11,322	129
						439,000	2 82	179	84	81	344	122
						329,000	2 27	207	91	58	356	103
						8,500	2 53	11			11	85
						10,980,000	2 91	3,878	1,609	949	6,436	110
						11,025,000	2 79	3,993	2,020	1,433	7,446	126
						48,000	2 05	54	25	16	95	82
						612,000	2 49	220	111	75	406	166
						29,482,000	2 57	6,045	4,412	2,080	12,537	168
						40,373,000	2 95	7,119	5,624	3,411	16,154	163
						13,589,000	2 75	3,420	1,691	887	5,998	160
						3,340,000	3 66	803	346	186	1,335	174
						204,000	2 94	109	46	34	189	116
						9,346,000	2 96	1,667	1,305	687	3,659	232
						330,000	3 23	343	106	90	539	63
						4,978,000	2 63	1,536	1,097	593	3,226	155
						9,003,000	2 34	2,566	970	621	4,157	142
						412,000	3 09	180	83	49	312	120
						3,857,700	2 67	1,076	356	175	1,607	207
						1,974,000	2 87	1,155	643	300	2,098	88
						882,000	2 99	470	246	108	824	191
						22,285,000	3 09	4,422	3,008	1,471	8,901	153
						1,679,000	3 05	508	180	110	798	168
						1,347,000	2 61	712	313	185	1,210	90
						3,118,000	3 46	930	309	126	1,365	162
						1,285,000	2 52	433	208	137	778	123
						79,100	2 24	70	34	23	127	120
						57,000	2 78	45	10	5	60	145
						3,749,000	3 66	765	783	385	1,933	156
						123,000	2 99	56	31	20	107	103
						$200,661,500	$2 84	53,801	30,951	17,698	101,830	149

Bostrup, Henderson, Hopkins, Hooster, Leon, Medina, Milan ... sold to local trade. The total production of the state was ... (a) Gilmer and Sumners.

Collective Analytical Study of Costs Is Legal, Says Nelson B. Gaskill

Trade associations or groups interested in cost accounting have used safely for the purpose of the study of costs, the detection of errors and the improvements of their methods without contravention of law, in the opinion of Commissioner Nelson B. Gaskill, of the Federal Trade Commission. Mr. Gaskill further believes that it is perfectly legal to make reports of such conferences available to absent members, government agencies and other interested parties. This opinion was expressed unofficially by Mr. Gaskill in response to an inquiry from E. W. McCullogh, manager of the Fabricated Production Department of the Chamber of Commerce of the United States.

"To prohibit collective study of costs for the purpose of their analysis, the detection of errors, and the improvement of methods, is to shackle educative progress," Mr. Gaskill said.

Revision of Western Coal Rates Recommended in Tentative Report of I. C. C. Inquiry

Many revisions in the rates on anthracite and bituminous coal from mines in New Mexico, Colorado, Wyoming, Montana and other Western states are recommended in a lengthy tentative report submitted by Attorney-examiner M. A. Pattison, for the Interstate Commerce Commission, in Docket No. 13588, entitled "Western Coal Rates." The report summarizes "an investigation instituted by the commission on its own motion into the reasonableness and lawfulness of interstate rates on coal" in Western territory.

"Complaints against the rates on coal in this territory," the report says, "have been numerous, and those more recently considered have disclosed a lack of uniformity in the rate structure, both with respect to the measure of the rates and the relationships between the various competing mines and groups of mines, that appeared to call for a comprehensive inquiry." Cameron Coal Co. et al. vs. A. T. S. F. Ry. Co. et al., No. 9613, also is embraced in the report. Hearings, extending over seven months, were held at Denver, Salt Lake City, Butte, Seattle, San Francisco, Phoenix and El Paso.

Colorado and New Mexico shippers presented evidence on interstate rates from Colorado into New Mexico, Wyoming and other Western states as well as in regard to the intrastate adjustment in Colorado. After reviewing the evidence adduced the report states: "There appears to be no just reason why the Union Pacific should maintain rates from its northern Colorado mines to Cheyenne that exceed those from Hanna. For the future the rates from the two districts should be the same. . . . The Colorado & Southern and Burlington have met the rate of the Union Pacific from the Rock Springs-Kemmerer district, disregarding the additional haul from Kirby, but the former has failed to accord a similar adjustment to the Walsenburg operators, although their advantage is 23 miles as compared with Rock Springs-Kemmerer and 61 miles as compared with Kirby."

Discriminate Against the Walsenburg District

The report says, further: "If the Colorado & Southern and Burlington, affiliated lines, consider it a good policy to maintain the same rate from Kirby to Cheyenne as the Union Pacific maintains from the Rock Springs district, thus permitting the Kirby operators to compete on an equality with the Rock Springs operators, they should accord similar treatment to the operators in the Walsenburg district, whose mines are not only less distant from the common market but are served under no greater operating disadvantages than prevail generally in this territory. The rates from Walsenburg to Cheyenne should not be higher than $3.25, and in no event should exceed the rate from Kirby."

In regard to Montana rates the report states: "The rates from Sheridan to points in Montana on the Northern Pacific east of Billings should not exceed the rates from Red Lodge to the same points by more than 30c and to points on the line of that carrier west and on the Great Northern when routed via Billings by more than 45c. For the added haul of 124 miles from Kirby, rates therefrom should not exceed those from Red Lodge by more than 60c. Unless the authority of the Montana Commission is obtained for increasing the basic Red Lodge rates, observance of the differentials from Sheridan and Kirby must necessarily be accomplished by reduction. . . . A maximum differential of 25c. against the Sheridan mines at points west of Clark's Fork to and including Spokane would meet the desire of the Sheridan operators and would conform to the general rule of diminishing differentials with increasing distances. The present differential is less than the maximum here suggested as proper, and need not be changed . . . . The materially shorter distances via Sidney would seem to require the establishment of rates via that junction. Joint rates should therefore be published by way of Sidney from Sheridan to points on the Great Northern in northeastern Montana, to which the short-line distances over that route are shorter than through Havre, and such rates should not exceed the rates for corresponding distances from Sheridan to points on the Great Northern north of Billings. The rates via Billings and via Sidney should be restricted in their application so as to avoid fourth-section departures."

"The rates on coal from mines in Utah to destinations in Idaho, Montana, Oregon and Washington, referred to collectively as the Northwest" the report says, are higher than the rates from mines in the Kemmerer-Rock Springs district by from 22 to 45c and over, and one of the principal points of controversy developed in this investigation was the propriety of this adjustment. The Utah operators claim the right to a rate equality in this territory with their competitors in Wyoming. On the other hand, the Wyoming operators claim the differential should be substantially greater. . . .

"The operators in the Utah district protest against the inclusion of the mines in the Kemmerer and Rock Springs groups in one rate district and contend that it has the effect of moving Rock Springs, the principal shipping group, 47 miles farther to the west to the disadvantage of the Utah mines from a comparative distance standpoint. The Wyoming operators, who would naturally be presumed to have a greater interest in the grouping of their mines, are content with the present arrangement.

Adjustment Based on Consolidated Fuel Case

"The adjustment prevailing rates between the Utah and southern Wyoming mines on traffic to points routed through the McCammon or Pocatello gateway is the result of the decision in Consolidated Fuel Co. vs. A. T. & S. F. Ry. Co., 24, I.C.C., 213, decided June 3, 1912. On the date of that decision the rates to Pocatello were $2 from the Kemmerer-Rock Springs district and $2.25 from the Castle Gate district as then constituted, a difference of 25c.

"Consideration of the circumstances which brought about the establishment of the 25c. differential from the Castle Gate district as now constituted and the differences in the distances and operating conditions . . . leads to the conclusion that the Consolidated Fuel Co. case cannot be deemed controlling. A differential of less than 25c. per ton at McCammon will be for the future unduly prejudicial to the operators in the Kemmerer-Rock Springs district and unduly preferential of the operators in the Castle Gate district."

"The rate from the Kemmerer-Rock Springs district to Butte compares favorably with the rates from competing districts. The length of haul and the competitive conditions at Butte justify a slightly [illegible] differential against the Utah mines than at McCammon. A differential in excess of 40c. will be for the future unduly prejudicial to the producers in the Castle Gate district.

The report notes that "rates to Portland and Seattle are highly competitive," but states that "the Washington Coal Producers' Associat on does not in this proceeding attack the reasonableness of the rates now maintained by the carriers serving the Washington mines." The Washington operators oppose reduction in the rates from the Utah and southern Wyoming districts and contend that the present rates from those districts are too low.

In considering rates to San Francisco the report says: "No changes should be required in the rates from the Kemmerer-Rock Springs district except that the rates on nut and slack should not be more than 25c. and 75c., respectively, lower than the rates on lump. In recognition of the principle that as distances increase the differentials should decrease, rates from the Castle Gate district should be 10c. higher than those from [illegible] Wyoming. To Seattle, rates from the Sheridan, Red Lodge and Rock Springs [illegible]

...rates are the same, and from Utah 25c. higher. The distances from the Rock Springs and Castle Gate districts are greater to Seattle than to Portland or San Francisco, and the rates are properly higher. The differential against the Utah mines should be the same as at Portland, or 25c. per ton. The rates from the Kemmerer-Rock Springs districts to Spokane have been adjusted with relation to the rates from Roundup and Kirby and the rates from Utah are differentially related to those from southern Wyoming. The differential against the Utah mines is less than that found reasonable at Portland and should be increased to 25c."

On rates to points on the Southern Pacific in Oregon, the report states: "For the future the rates on lump coal from the Rock Springs district should not exceed $6.25 to Salem, $6.50 to Eugene, and $6.85 to Roseburg, Medford and Ashland, with corresponding reductions to other points north of Ashland. The rates from the Castle Gate district should be 25c. higher."

"There is no reason disclosed in this record, either from a transportation or competitive standpoint," says the report, "why the rates on anthracite coal from Crested Butte should be so much in excess of those on bituminous coal. For the future the rates on anthracite coal from Crested Butte to intermediate destinations should not exceed the rates contemporaneously maintained on bituminous lump coal to the same destinations by more than 50c. per ton. . . .

"The equalization of rates as between the Kemmerer-Rock Springs and Castle Gate districts at Ogden is maintained also at points in Utah north of Ogden, but at Preston and Malad, Idaho, the termini of branch lines of the O. S. L. extending from Cache Junction, Utah, and Brigham, Utah, respectively, rates from southern Wyoming are 25c. lower. The average distances from the southern Wyoming mines to these points over the routes through McCammon or Ogden, depending upon the point of origin, are 34 miles greater at Preston and 51 miles greater at Malad than the average distances from the Castle Gate mines. The differential against the latter should be eliminated. . . . The competitive conditions at Salt Lake City are more compelling than at Ogden. The Union Pacific should now be permitted to publish rates of $2.50 on lump, mine run and nut, and $2.20 on slack to points south of Ogden on the O. S. L. This will result in a differential of 40c. at Salt Lake City, which, in view of the relative conditions of operation on the Union Pacific and Rio Grande will not be too low. The maintenance of the present differential relationship is unduly prejudicial to the southern Wyoming operators. . . . Rates from the Rock Springs-Kemmerer district to points in Utah between Lyndyll and Uvada," the report states, "should be 75c. per ton higher than the corresponding rates from the Castle Gate district, and to Boyd, Nevada, and to points west thereof 50c. higher.

"Present relationships are unduly prejudicial to the operators in the Raton-Dawson field and unduly preferential of their competitors. Tha rates from the Los Cerrillos district to points on the Santa Fe and its connection west of Gallup should not exceed the rates on the same classes of coal contemporaneously in effect from Gallup to the same points by more than $1.30 per ton, which differential may be reduced on the longer hauls to competitive points in California. The rates from the Raton-Dawson district to these points should not exceed those from Los Cerrillos by more than $1.10. Rates from the Los Cerrillos and Gallup districts to points south of Belen appear to be reasonably related. To such points the rates from the Raton-Dawson district via the Santa Fe should not exceed the corresponding rates from Los Cerrillos by more than $1.10. . . . Under all the circumstances a differential of 15c. is justified and should be observed on all classes of coal, both eastbound into Colorado and westbound into New Mexico, Arizona and California. The rates from the Walsenburg district southbound should be based upon the generally recognized differential of 25c. over the rate from the Trinidad district."

Eleven Firms Submit Bids on 178,895 Tons Of Coal for N. Y. City Departments

Eleven bids were received by the Board of Purchase of the City of New York on Dec. 21 for furnishing and delivering to several of the city departments during the three months ending March 31, 1923, 178,895 net tons of coal, of which 59,641 tons is to be buckwheat; 10,080 tons, No. 2 buckwheat; 18,000 tons, No. 3 buckwheat; 36,253 tons, bituminous, run-of-mine; 5,000 tons mixed (No. 3 buckwheat and run-of-mine); 2,078 tons, pea; 247 tons, chestnut; 6,232 tons, stove; 12,694 tons, egg; 350 tons, coke, and 29,260 tons mixed.

The prices submitted showed a wide range. The lowest bids received for furnishing and delivering No. 1 buckwheat in the various boroughs ranged from $9.50 to $10.38; No. 2 buckwheat, from $6.60 to $7.69; No. 3 buckwheat, $5.60; bituminous, run-of-mine, $10.50 to $13.04; pea coal, $12.25 to $13.74; mixed bituminous, $12.40 to $14.54.

For barge deliveries of No. 1 buckwheat bids ranged from $6.82 to 7.98; No. 2 buckwheat, $6.19 to $9.98; No. 3 buckwheat, $3.97 to $5.60, and for bituminous, run-of-mine, from $9.74 to $10.95; anthracite, stove and egg, and coke (stove coal size), $14.25 each.

For carload deliveries of buckwheat No. 1 on Long Island there were two bids, $8.45 and $12.24, and for bituminous, run-of-mine, there were two bids, $10.95 and $11.14.

To Discuss Car-Distribution Rules

A conference between representatives of the National Coal Association and of the American Railroad Association will be held in Washington the week of Jan. 8 to discuss car-distribution rules other than those applying to assigned cars. An effort will be made to reach an agreement on as many as possible of the amendments which have been put forward. Others interested will be invited to this conference.

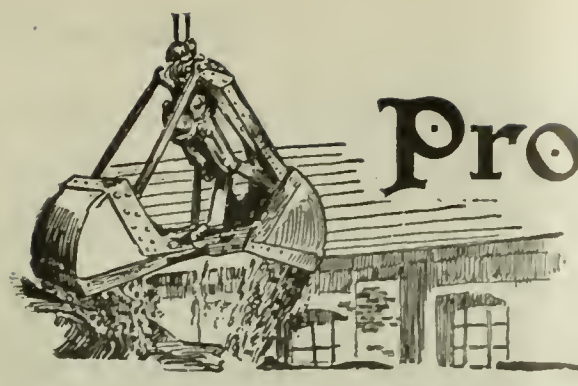
Monthly Production and Average Daily Production of Byproduct Coke in the United States, Jan., 1917, to Oct., 1922 (a)

(In Net Tons)

State	1917 Monthly Production	1917 Daily Average	1918 Monthly Production	1918 Daily Average	1919 Monthly Production	1919 Daily Average	1920 Monthly Production	1920 Daily Average	1921 Monthly Production	1921 Daily Average	1922(b) Monthly Production	1922(b) Daily Average
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2,441,000	79,000	2,426,000	78,000	2,259,000	73,000	1,879,000	61,000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	77,000	2,343,000	81,000	1,872,000	67,000	1,795,000	64,000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	74,000	2,646,000	85,000	1,757,000	57,000	2,137,000	69,000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	68,000	2,267,000	75,000	1,506,000	50,000	2,208,000	74,000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	61,000	2,400,000	77,000	1,577,000	51,000	2,537,000	82,000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	63,000	2,487,000	83,000	1,396,000	47,000	2,580,000	86,000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2,844,000	72,000	2,658,000	86,000	1,286,000	41,000	2,486,000	80,000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	71,000	2,742,000	88,000	1,371,000	44,000	1,794,000	58,000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	72,000	2,744,000	91,000	1,411,000	47,000	2,244,000	75,000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1,747,000	56,000	2,915,000	94,000	1,720,000	55,000	2,806,000	91,000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	64,000	2,679,000	89,000	1,751,000	58,000	2,908,000	83,000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	64,000	2,527,000	82,000	1,844,000	59,000	..	.....
Totals	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	30,934,000	84,000	19,750,000	54,000	.....	.....

(a) Reported to the Geological Survey cooperating in the compilation of statistics. Figures for 1917 and 1918 appeared in weekly reports No. 222 and 235.

(b) Preliminary figures.



Production and the Market



Weekly Review

Transportation troubles and cold weather have bolstered a falling market and demand has grown by leaps and bounds during the past week. Crippling weather has proved too severe for the railroads and motive power has failed to carry the load. Engine trouble has slowed down the movement of loads and the return of empties, curtailing production, and the cold weather has swept a multitude of orders to the retailers. The indifferent attitude of industrial buyers has been upset and many of the smaller consumers have rushed into the market for immediate deliveries. Higher prices are inevitable under such conditions and *Coal Age* Index of spot bituminous coal prices rose 13 points during the week to 349 on Dec. 26, representing an average price at the mine of $4.23, compared with $4.07 in the week preceding. This is the highest mine price since late in October.

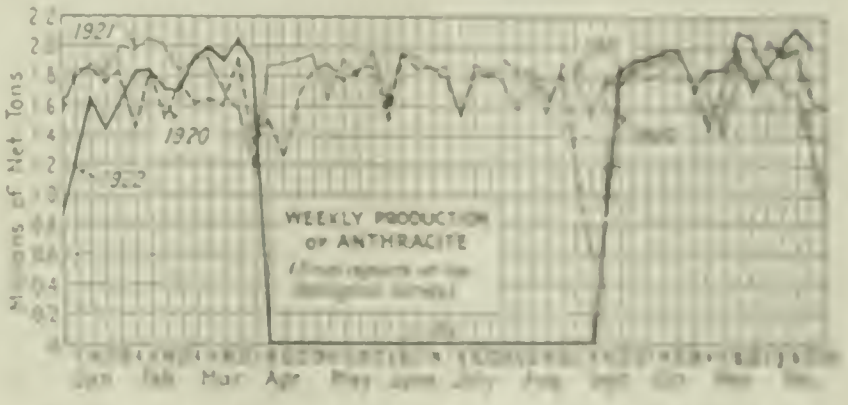
Pinch Tightest in North Atlantic Section

All markets are stronger, but the larger North Atlantic centers seem to be feeling the pinch more than any other section. Demand is tremendous as receipts continue to lighten and "coal is coal" with the market sensitive to every demand made upon it. Quality coals are off the market and intermediate pools show but little price range. The domestic situation in the East adds considerably to the shortage. Screened coals are in strong demand and attractive prices are being offered for quick shipment. The available supply is not large, however, and thus a considerable tonnage of inferior or poorly prepared coal is being loosed upon a brand new market. It is to be hoped that this practice can be checked or domestic soft coal will have its reputation ruined in this new territory almost before it has had time to be given a fair trial. There are a number of concerns shipping excellent domestic coals to New York who have built up a trade with much care, but the trend of market conditions is causing them anxiety lest their high-grade screened product be classified with the nondescript tonnage that a boom market always attracts.

New England consumers have ample reserves and while they must pay higher prices than a fortnight ago the condition of their stockpiles is all that keeps delivered prices from soaring. Offerings of Southern coal from Hampton Roads are light and high priced and this has improved the position of all-rail coal.

Sellers' Market Appears Almost Overnight

Screenings are very scarce in Chicago and the Middle West. The cold weather has increased the domestic demand and all prices are up. What was a surplus industrial market has been turned almost overnight into a sellers' market with buyers endeavoring to overcome their individual shortages. Illinois coals are in good demand in the Northwest, where brisk weather has



strengthened the market both all-rail and off the docks.

The Eastern Inland section is also experiencing a shortage, with slow deliveries aggravating buyers. Pittsburgh district coal is stronger, as local demand is good and the East is but after prepared sizes.

The retail trade is barely existing on the meager receipts of anthracite. Substitute bituminous fuel, snorted a few weeks ago, is in active demand and is fast being cleaned up. Retailers did not stock heavily





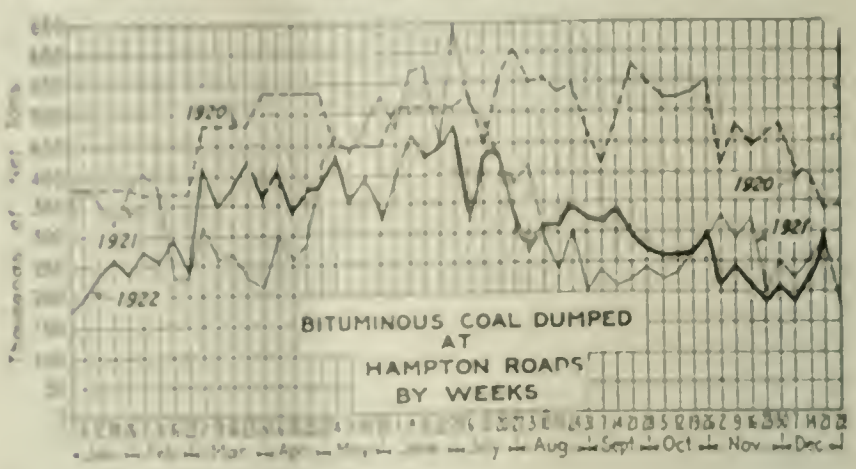
be welcomed substitutes met a very cool reception earlier in the season, and this sudden demand found most of the Eastern dealers unable to meet the situation. Buckwheat is in excellent position because of the scarcity of domestic anthracite and the smaller steam sizes of the independents are now selling at unusual prices.

Canadian buyers who had been bidding up the independent market have been checked by an announcement from Washington that shipments must be discontinued, temporarily at least, because of the acute shortage in the United States.

BITUMINOUS

Production of soft coal has been falling since the second week of December. Estimates for the week ended Dec. 16 show an output of 10,515,000 net tons, according to the Geological Survey and for last week (Dec. 18-23) around 10,000,000 to 10,300,000 tons. The decline began on Dec. 12, after the observation of miners' election day in some districts, and has continued since that date, which marked the first real wintry weather this year. It is generally attributed to the failure of the railroads' motive power to stand the strain of heavy traffic under unfavorable weather conditions.

November saw a production of 45,300,000 net tons—23 per cent more than during November, 1921, and only exceeded twice in the last ten years. Cumulative production for the year was 361,000,000 tons, or 6 per cent less than in 1921, a year of business depression. Largely on account of the strike, this was 30 per cent less than in 1920 and 20 per cent less than the average for the last nine years.



Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

	Market Quoted	Dec. 26 1921	Dec. 11 1922	Dec. 18 1922	Dec. 26 1922†
Pitts. No. 8 mine run	Cleveland	$1 95	$3 10	$3 20	$3 20@3 35
Pitts. No. 8 screenings	Cleveland	1 70	2 85	3 05	3 00@3 25
Midwest					
Franklin, Ill. lump	Chicago	3 65	5 25	5 25	5 25@5 50
Franklin, Ill. mine run	Chicago	2 90	4 10	4 10	4 00@4 25
Franklin, Ill. screenings	Chicago	2 10	2 35	2 70	2 75@3 50
Central, Ill. lump	Chicago	3 10	4 25	4 25	4 25@4 50
Central, Ill. mine run	Chicago	2 50	3 10	3 10	3 00@3 25
Central, Ill. screenings	Chicago	2 00	1 65	2 00	2 00@2 40
Ind. 4th Vein lump	Chicago	3 35	5 10	5 10	5 00@5 25
Ind. 4th Vein mine run	Chicago	2 70	3 85	3 85	3 75@4 00
Ind. 4th Vein screenings	Chicago	1 75	2 25	2 25	2 25@2 50
Ind. 5th Vein lump	Chicago	2 95	4 75	4 75	4 50@5 00
Ind. 5th Vein mine run	Chicago	2 45	3 60	3 60	3 50@3 75
Ind. 5th Vein screenings	Chicago	1 80	2 00	1 95	2 25@2 50
Standard lump	St. Louis	2 80	4 25	4 10	4 00@4 50
Standard mine run	St. Louis	1 90	2 25	2 10	2 00@2 25
Standard screenings	St. Louis	1 40	1 35	1 35	1 50
West Ky. lump	Louisville	2 75	3 75	3 85	4 25@4 50
West Ky. mine run	Louisville	1 75	2 25	2 25	3 25@3 50
West Ky. screenings	Louisville	1 85	1 50	1 80	2 25@2 75
West Ky. lump	Chicago		3 85	3 85	4 00@4 50
West Ky. mine run	Chicago		2 60	2 60	2 50@3 00
South and Southwest					
Big Seam lump	Birmingham	3 65	3 95	3 95	3 45@4 45
Big Seam mine run	Birmingham	2 10	2 35	2 35	2 50@2 75
Big Seam screenings	Birmingham	2 15	2 60	2 60	2 50@2 75
S. E. Ky. lump	Chicago		6 25	6 25	6 00@6 50
S. E. Ky. mine run	Chicago		4 25	3 85	3 75@4 00
S. E. Ky. lump	Louisville	2 85	6 35	6 35	6 50@7 00
S. E. Ky. mine run	Louisville	1 50	3 35	3 35	3 25@3 75
S. E. Ky. screenings	Louisville	1 45	3 25	3 25	3 00@3 75
S. E. Ky. lump	Cincinnati	3 15	5 85	5 85	6 00@7 00
S. E. Ky. mine run	Cincinnati	1 30	3 35	3 15	3 00@3 75
S. E. Ky. screenings	Cincinnati	1 25	2 80	2 75	3 00@3 50
Kansas lump	Kansas City	5 00	5 00	5 25	5 50
Kansas mine run	Kansas City	4 10	3 50	3 60	3 75
Kansas screenings	Kansas City	2 50	2 50	2 50	2 50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in heavy type, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

Market Quoted	Tonnage Basis	Latest Prices Independent	Latest Prices Company	Dec. 18, 1922 Independent	Dec. 18, 1922 Company	Dec. 26, 1922† Independent	Dec. 26, 1922† Company
New York		$3 50	$3 75	$8 00	$7 75@$8 25	$9 00	$7 75@$8 25
Philadelphia		3 50	3 75	7 90	7 90@8 10		7 90@8 10
Buffalo		3 50	3 75	8 25@10 50	8 10@8 35	9 25@12 00	8 00@8 35
Pittsburgh		3 50	3 75	9 25@11 00	8 10@8 35	9 25@11 00	8 10@8 35
Chicago		3 50	3 75	12 50@13 00	7 25@8 25	12 50@13 00	7 20@8 25
Cleveland		3 50	3 75	9 25@12 00	8 00@8 35	9 25@12 00	8 00@8 35
Detroit		3 50	3 75	9 25@11 00	8 15@8 35	9 25@11 00	8 15@8 35
Boston		3 50	3 75	12 50@13 00	7 35@8 35	12 50@13 00	7 35@8 35
Milwaukee		3 50	3 75	9 25@12 00	8 00@8 35	9 25@12 00	8 10@8 35
Minneapolis		3 50	3 75	9 25@11 00	8 15@8 35	9 25@11 00	8 15@8 35
Duluth		3 50	3 75	12 50@13 00	7 35@8 35	12 50@13 00	7 35@8 35
Cincinnati		3 50	3 75		8 25		8 25
St. Louis		3 50	3 75	7 00@11 00	6 15@6 30	7 00@11 00	6 15@6 30
Louisville		3 50	3 75	7 00@8 00	6 15@6 20	7 00@8 00	6 15@6 20
Kansas City		3 50	3 75	5 40@6 00	5 40@6 03	7 00@8 00	5 40@6 03
Omaha		3 50	3 75	4 75@5 00	4 00@4 10	4 00@5 00	4 00@4 10
Denver		3 50	3 75	4 50@5 00	4 00	5 00	4 00
Portland		3 50	3 75	2 75@3 00	2 75@3 00	3 00@3 25	2 75@3 00
Seattle		3 50	3 75	2 75@3 00	2 75@3 00	2 50@2 75	2 75@3 00
San Francisco		3 50	3 75	2 25@2 50	1 50@2 00	1 75@2 00	1 50@2 00
Los Angeles		3 50	3 75	1 75@2 00	2 00	1 00@1 75	2 00
					2 10		2 10

* Nominal. † Advances over previous week shown in heavy type, declines in *italics*.

Lake dumpings during the season were 19,330,860 net tons—18,501,055 tons cargo and 829,805 tons vessel fuel—as compared with 23,171,449 tons in 1921.

The all-rail movement to New England increased to 3,491 cars during the week ended Dec. 16, as compared with 2,872 cars during the preceding week. Central Pennsylvania is finding a better market in that section because of the rising of coastwise coal from Hampton Roads.

Dumpings at Hampton Roads were 300,552 net tons during the week ended Dec. 21, as compared with 257,326 tons in the preceding week. Supplies are divided among many houses, making cargo sales difficult. Shippers find that Western consumers are willing to pay high for Southern coals and this necessitates increases at the Roads to obtain tonnage from the mines.

ANTHRACITE

Production of anthracite during the week ended Dec. 16 was 2,197,000 net tons, the highest week's output in 1922. Early returns for last week indicate a diminished rate, with a probable total of 2,000,000 tons.

Buffalo dumped 1,070,680 tons of Lake coal during the season, as compared with 3,810,315 tons in 1921. December dumpings of 123,600 tons were heavier than expected. The Northwestern States must look to all-rail sources for a considerable tonnage to eke out this winter's needs and already some of them have requested Washington to authorize a priority movement of 250 cars per day of all-rail anthracite.

COKE

Beehive coke production was 298,000 net tons during the week ended Dec. 16, 7,000 tons more than in the preceding week. Connellsville production established a new high record for the year.

Eastern demand for Connellsville coke for domestic use has taken the situation out of the hands of the blast furnaces and foundries because of the higher prices being paid. The sudden shift of the market has suspended many contract negotiations for the first quarter, as operators now feel that they want their tonnage free to apply against the more attractive open market.

Car Loadings, Surplusages and Shortages

	Cars Loaded	
	All Cars	Coal Cars
Week ended Dec. 9, 1922	918,829	290,[illegible]
Previous week	845,219	146,158
Same week in 1921	741,841	138,215

	Surplus Cars	
	All Cars	Coal Cars
Dec. 8, 1922	6,657	37,618
Nov. 30, 1922	5,595	42,948
Same date in 1921	340,000	160,000

$1,000,000 Damage Suit Against U. M. W. Continued in Next Term of Court

The case of the Willis Branch Coal Co. against the international organization of the United Mine Workers, for $1,000,000 damages, set for trial in the U. S. District Court for the southern district of West Virginia at this term, has been continued until the next term of court. The company claims the above damages in connection with the destruction of its mining plant at Willis Branch, for which it alleges members of the United Mine Workers organization were responsible. The company bases its claim on the Coronado decision of the U. S. Supreme Court and contends that under the terms of that decision the miners' union is responsible for the acts of its members. The entire town was destroyed by members of the organization, it is alleged by the plaintiff in this case. Continuance followed an agreement between the parties to the suit.

JOHN HAYS HAMMOND HAS OUTLIVED the South African judge who sentenced him to death after the Jameson raid. That magistrate, who had acquired the title of "the hanging judge" died last week, according to press dispatches.



Coal Age Index 219, Week of Dec. 16, 1922. [illegible]

How the Coal Fields Are Working

[illegible]

Foreign Market And Export News

Heavy British Output Finds Ready Market; New U. S. Orders Placed

The South Wales coal industry is in a prosperous position such as it has not known for the past year. Demand is exceptionally heavy and nearly all mines have been reopened. The South American requirements are heavy and South Wales is no doubt benefiting from the absence of the United States as an active competitor for the trade with the Atlantic coaling depots and the South American countries. France is also an active buyer and Italy is increasing for approximately 600,000 tons. Last week the United States placed orders for 100,000 tons, delivery over the first half of 1923.

British production apparently knows no limit. The output during the week ended Dec. 9 was 5,827,000 gross tons, according to a cable to Coal Age, exceeding the preceding week's output, a record for the year, by 20,000 tons.

Shipments at the Welsh ports recently show very great strength. Until the three-shift system can be secured at the docks, it will be impossible to cope with this. Wages of the Welsh miners for December remain at the minimum of 2s per cent above the standard of 1915. October results show that the colliery workers, in order to make up the minimum wages, had to sacrifice a considerable part of their standard profits.

French Miners Again Seek Raise

Owing to the failure of Belgium and Italy to make the deliveries expected from them, the domestic demand requires much larger than can be met from the output of the Nord and Pas-de-Calais. All sorts of industrial coals are the object of a good demand, as pottery gas coals, steam nuts and washed smalls. In some cases, inferior coals—those easily procurable—are mixed with coals of a better quality.

Coking steam coals become scarcer and the recent starving of several coke ovens batteries in the Pas-de-Calais has more than absorbed the available supplies.

French miners are starting an agitation for an increase of wages. The French National Federation of Miners has just written to the Minister of Labor, asking for a raise of wages based upon the increase in living costs and the recent improvement in the French mining industry from the point of view of financial results.

Hampton Roads Pier Situation

	Week Ended Dec. 14	Dec. 21
C. & O. Piers, Lamberts Pt.:		
Cars on hand	529	638
Tons on hand	25,071	40,185
Tons dumped	107,367	112,804
Tonnage waiting	16,350	17,350
Virginian Ry. Piers, Sewalls Pt.:		
Cars on hand	328	814
Tons on hand	36,950	46,600
Tons dumped	77,571	96,078
Tonnage waiting	14,800	23,301
C. & O. Piers, Newport News		
Cars on hand	479	615
Tons on hand	33,930	35,000
Tons dumped	44,818	59,471
Tonnage waiting	16,493	3,320

Scattered Supplies Boost Roads Price

Increasing car shortage, with consequent diminishing supplies, featured the market last week. This condition occasioned a stiff advance in prices, and inquiries were received on a scale which had not obtained for several months. Supplies were so scattered, however, that little business was being done.

Total coal dumped at Hampton Roads during 1922 was 14,800,880 tons, with the last ten days in December estimated. The dumpings for 1921 amounted to 17,246,848 tons.

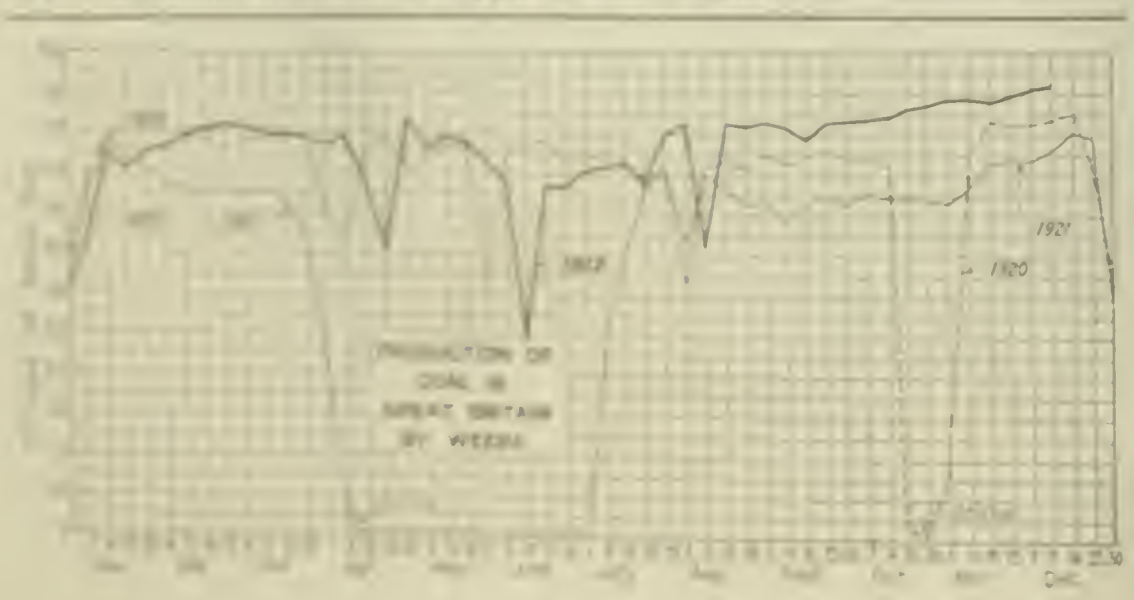
Germany Would Cut Coal Imports

It had been expected that the depreciation of the mark and the slightly declining employment of industry would materially reduce the coal import during October. Such hopes, however, have been only partly fulfilled. The total imports were 2,295,371 tons and exceeded the preceding month on account of the increased supply from Polish Upper Silesia. Only the most expensive coal, from Great Britain, declined. These were 918,598 tons in October, or 142,203 tons less than in the preceding month, but still 82,000 tons more than in the corresponding month of 1913.

Approximately 1,500,000 tons were delivered to the Reparation Commission during October. Also, 203,321 tons of German coal were exported.

The output of the Ruhr Valley for November is estimated at 8,600,000 tons for twenty-four working days, as compared with 7,800,000 tons for the same number of days in November of last year. The daily production in the Ruhr was the highest shown in available statistics, at least since April, 1921, the average last month being 356,000 tons, as compared with 339,505 in October.

The increase is attributed to the greater amount of overtime labor and the use of large working shifts. The daily production in October, 1913, was 366,484 tons.



Export Clearances, Week Ended Dec. 21, 1922

FROM HAMPTON ROADS

For West Indies	Tons
Nor SS Iram, for Bridgetown	4,081
For Cuba	
Amer Schr Dorothy, for Cienfuegos	1,060
Nor SS O A Knudson, for Havana	5,612

FROM PHILADELPHIA

For Cuba	
U S SS Lake Elmhurst, for Havana	
For Porto Rico	
U S SS Sioux, for San Juan	

Pier and Bunker Prices, Gross Tons

PIERS	Dec. 9	Dec. 16†
Pool 9, New York	$8.00@ $8.25	$8.50@ $8.75
Pool 10, New York	7.40@ 7.75	7.50@ 8.00
Pool 11, New York	6.75@ 7.25	7.00@ 7.50
Pool, 9, Philadelphia	7.80@ 8.10	8.10@ 8.30
Pool 10, Philadelphia	7.30@ 7.50	7.60@ 7.80
Pool 11, Philadelphia	6.65@ 6.85	7.00@ 7 25
Pool 1, Hamp. Roads	7.75@ 8.00	8.25@ 8 50
Pools 5-6-7 Hamp. Rds.	7.75	8 25
Pool 2, Hamp. Rds	7.75@ 8.00	8.25@ 8 50
BUNKERS		
Pool 9, New York	8.40@ $8.70	$8 90@ $9.15
Pool 10, New York	7.80@ 8.15	7 90@ 8 40
Pool 11, New York	7.15@ 7.70	7 40@ 7 90
Pool 9, Philadelphia	8.15@ 8.35	8 35@ 8 65
Pool 10, Philadelphia	7.65@ 8.05	8 00@ 8.25
Pool 11, Philadelphia	6.85@ 7.15	7 15@ 7.50
Pool 1, Hamp. Rds	7.75@ 8.00	8 25@ 8 50
Pool 2, Hamp. Rds	7.75@ 8.00	8 25@ 8 50
Welsh, Gibraltar	38s. f.o.b.	38s. f.o.b.
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	50s. f.o.b.	50s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	42s. t.i.b.
Welsh, Algiers	38s. f.o.b.	38s. f.o.b
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b.	65s. f.o.b.
Welsh, Madeira	40s. 6d. f.a.s.	40s. 6d. f.a.s.
Welsh, Teneriffe	38s. 6d. f.a.s.	38s. 6d. f.a.s.
Welsh, Malta	41s. f.o.b.	41s. f.o.b.
Welsh, Las Palmas	38s. 6d. f.a.s.	38s. 6d. f.a.s.
Welsh, Naples	39s. 3d. f.o.b.	39s. 3d. f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s 6d. f.o.b.
Welsh, Singapore	50s. t.i.b.	50s. t.i.b.
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Welsh, St. Michaels	50s. t.i.b.	50s. t.i.b.
Welsh, Port Said	49s. f.o.b.	49s. f.o.b.
Welsh, Oran	38s. f.o.b.	38s f.o.b.
Welsh, Fayal	50s. t.i.b.	50s. t.i.b.
Welsh, Dakar	42s. 6d. f.o.b	42s 6d. f.o.b.
Welsh, St. Vincent	42s. f.a.s	42s. f.a.s.
Welsh, Montevideo	50s. f.o.b.	50s. f.o.b.
Welsh, Alexandria	43s. f.o.b.	42s. f.o.b.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to *Coal Age*

Cardiff:	Dec. 16	Dec. 23†
Admiralty, large	28s @ 28s 9d.	28s @ 29s
Steam, smalls	16s 6d. @ 18s.6d	17s 6d. @ 18s.
Newcastle:		
Best steams	25s.6d. @ 26s.	25s.
Best gas	24s @ 25s.	24s @ 24s.6d.
Best bunkers	22s.6d. @ 23s.6d	22s @ 23s.

† Advances over previous week shown in heavy type; declines in *italics*.

North Atlantic

Market Rises Rapidly; Better Grades Scarcer

Many Firms Withdraw Quotations—Intermediates Advance Steadily—"Anything Black" Sells Readily—Future Trading Light—Strong Call for Domestic Soft Coal.

The market moved upward very rapidly last week. Better grades are well sold and many houses have withdrawn their quotations. This has caused a growing scarcity and the intermediates are steadily advancing. "Coal is coal" in Baltimore, New York and other large centers and "anything black" is fast finding a quick market. Buyers are seeking price indications for January delivery, but future trading is rather light and uncertain.

Domestic soft coal is in strong call as a substitute for anthracite. There is already a scarcity of the screened sizes, shippers being unable to meet the sudden demand. Some orders for British coal for January delivery have been closed.

BALTIMORE

Very little coal is coming in, the railroads having fallen down miserably in the matter of supplying empties to the mines, and the demand has advanced by leaps and bounds. The larger consumers of this section were particularly active in trying to get coal the past week and few secured as much as they sought. Some of the smaller industries too are almost without coal.

The best grades of steam coal are practically off the market. The scarcity of intermediate coals is such that when offered they are gobbled up at $5. The market is one in which anything black can be sold. Gas coal is equally as tight as to scarcity.

While there are no importations of English coal here at present, the sharply advancing market of the past week or two gave a ready demand at high prices for some of the Welsh product that was stored near Baltimore. The lump from this pocket, in view of the scarcity of anthracite, has sold to retail dealers up to $14.

NEW YORK

The market moved rapidly last week. Business picked up and the recent loss in prices was more than made up. There is a constant demand for the better grades and when they cannot be obtained buyers fall back on the lower grades, which with increasing scarcity have steadily advanced in prices.

Many operators are refusing further orders and in some instances quotations have been withdrawn. With the holiday season at hand during which most of the mines will be idle for a couple of days at least, it is expected that the railroads will be able to clear their roads and that when the mines do resume operations there will be plenty of empties for at least a few days.

The using of bituminous coal as a substitute for anthracite has added considerable to the present demand. It is being used heavily in apartment and other dwellings in New York. Screened coals are in active demand, shippers not being able to meet the call.

There is a report here that agents are busy placing orders for British coal to help out on the anthracite shortage. Arrivals of foreign coal here during the past week were negligible. It is understood however, that several orders have been closed for January shipments, some of which have been placed by public utility corporations.

Coke is in heavy demand, some dealers having difficulty in supplying call for it. Run of oven coke was quoted around $7.50, and prepared, $10@$10.25.

CENTRAL PENNSYLVANIA

Operators and miners are having a hard time making both ends meet in the midst of the great demand for coal. Operators, generally, are working but one or two days a week and miners are not making a living. As a result of the acute car shortage, producers are not accepting orders as they know they cannot make prompt delivery. Prices are gradually going up.

The situation is said to be aggravated through the storing of large quantities of coal on wheels, as is usually the custom of the railroads at this time of year, in anticipation of severe weather. The Central Pennsylvania Coal Producer's Association is authority for the statement that no relief is expected before March 1. To make matters still worse, considerable coal is being thrown on the market by the Bethlehem, Cambria, and other large steel companies with operations in the district.

PHILADELPHIA

Consumers are now considerably stirred by the slow deliveries and have come into the market very strongly for additional supplies. No doubt much of this anxiety is occasioned by the usual slowing down of production due to the holiday season. Many of those who have been buying from hand to mouth are once more bidding for coal and stiffening prices to just that extent.

The demand for soft coal in the Eastern domestic market grows, the one great difficulty being to make shipments. Shippers of the better class coals feel confident that their product having already made good there will be able to retain some of this trade even during normal times. This seems particularly likely among the larger consumers of domestic coal such as apartment houses and hotels. There has also been developed a good domestic market on coke. Practically all by-product coke is well sold in advance and as a result much Connellsville coke is being shipped.

Prices on soft coal of all grades has materially strengthened and at times the quotations on Pools 1, 2 and 10 are so closely grouped as to show little difference, depending on the eagerness of the purchaser for immediate deliveries.

FAIRMONT

Heavier demands have been made upon the mines as a result of more active buying in Eastern markets, to be attributed in part at least to the substitution of bituminous coal for anthracite in some sections. Mines are still greatly handicapped by a car shortage though production is on a larger scale in the northern part of the district. Mines leading railroad fuel sections receive the bulk of the car supply.

UPPER POTOMAC

Though the strike still continued in the Georges Creek field with Lonaconing the stronghold of the men remaining out, yet it is gradually disintegrating and at Frostburg and other points mines are able to increase their production. Upper Potomac production is not on quite so large a scale as it was about the middle of November. The demand has picked up somewhat. Pool 18 is bringing $2.25@$2.50 and Pool 11, $2.50@$3.

West

KANSAS CITY

Three firms which did not announce an increase in the price of Kansas coal Dec. 14 fell in line the following Monday. Since Dec. 18 all Kansas City dealers have been quoting Kansas lump and nut 50c. higher, and mine run 25c. higher than the season's low prices, established Oct. 23.

The demand, which was more or less revived by the threat of cold weather the first of last week and the latter part of the preceding week, took another slump when the mercury again shot upward.

SALT LAKE CITY

Retail business is good locally as a result of the colder weather. There is a big run on lump, but smaller sizes are expected to move faster soon. The car supply is satisfactory. Mines are working about four days a week which is all the market will stand.

Canada

TORONTO

Owing to severe weather the demand for anthracite is greatly increased. Only small quantities are being received and where orders have been taken for [illegible] have been greatly delayed. Many householders are using soft coal or coke. The rule has been generally adopted by the dealers that 75 per cent of the coal purchased must be hard coal, and this percentage will probably be increased.

There is no change of importance in quotations, which are as follows: Retail steam lump, $11.25; domestic lump, $12.50. Wholesale [illegible] cars at destination, lump, $8.50@$9.00; Pennsylvania soft coal, $4.75.

Anthracite

Scramble for Domestic Raises Independent Prices

Action of Spree Halts Bidding Up by Canadian Buyers—Retail Stocks Low—Substitutes in Demand at Mounting Prices—Smaller Sizes in Good Position.

The domestic shortage increased further last week and the meager supply caused a scramble for tonnage which has raised independent quotations. Canadian buyers, who have been bidding the market up, have received a setback in the warning of Federal Fuel Administrator Spens that this movement must be discontinued, temporarily at least, because of the shortage in the United States.

Retail stocks are very low. Many yards are almost out of substitutes. Bituminous coal, coke and anthracite buckwheat are in strong demand and prices have mounted. The smaller steam sizes are now in good position and little if any are being sold below company schedules. River coals may show stronger because of the strengthening steam prices.

NEW YORK

With the opening of forty-nine "preferred cars" allotted to various parts of Greater New York those users of the domestic sizes who buy in small lots are being largely supplied. It is, however, apparent judging from the way the buyers are to obtain stations that the need of coal is not as acute as it has been reported. Contrary to expectations there was not the rush expected, but there was heavy buying. The coal distributed to the public stations is being sold at the per ton rate.

The companies and larger independents are permitting their coal among their regular customers and are being urged by large shippers. Supply is entirely too small to meet the demand. The supply of substitutes is growing smaller, while those users of the domestic sizes who always put in enough coal to last them well through after the New Year are now realizing that they will have to resort in the way of substitutes when their present supply is exhausted.

The weather, which did almost a complete about face with closing in the last of January, is proving severe. Atmospheric conditions in this section caused the mercury to fall to the zero mark, first in the season of the year.

BOSTON

The retail trade is nearly exhausting its hard-coal supplies with almost all its sales. From the largest distributing yards only occasional cars are delivered to keep the dealers' shelves from being entirely empty. The unfavorable weather during the week has very much interfered with street movement and the coal has moved to a critical time in anthracite.

The evils of recent interference with car supply on certain of the hard coal roads is beginning to be apparent to all. One of the great arteries of supply to this territory is the water route from Philadelphia, and already there are signs that service via this route will be crippled through insistence that cars be sent all-rail.

BUFFALO

The only encouragement is that when the Lakes closed the amount turned in for city use came up till the emergency orders are now about all filled. If the receipts continue the feeling will soon be quite easy, though nobody looks for an adequate supply till the winter begins to go.

At the same time the independent price runs up, some mines refusing to sell for less than $14.50, to which must be added at least $3.28 for freight and perhaps $2 more for carting. If the dealer gets anything the consumer must pay $20 or more a ton.

The Lake trade closed on Dec. 15 with the loading of the steamer A. B. Wolfe for Milwaukee. The amount loaded is 1,070,680 tons for the season. A big effort was made to continue the movement later and 123,630 tons was loaded in December, which is the largest amount for a long time. The shipments for the season of 1921 were 3,810,315 tons. This leaves nearly 2,700,000 tons for the upper district to make up.

PHILADELPHIA

The market continues to be short and there is something akin to a scramble on the part of the consumer to get coal. The shippers claim that their shipments to the city are fully up to the allotments based on a production of seven months.

Natural winter weather still prevails and therefore the consumption of fuel is heavy. Certainly the situation would not have been met as well as it has been if not for the growing use of soft coal and coke. Unfortunately, the deliveries of soft coal are very much delayed, but the movement of coke seems better for some reason and almost every dealer is now carrying both fuels in stock. Coke prices are running $11.50@$13 per net ton.

On such shipments of anthracite as are received the trade is experiencing much trouble with shortages. Most every car received shows evidence of having been robbed, and when complaint is made a considerable delay in securing copies until the railroad can research.

Buckwheat has even grown stronger in demand than last week and spot prices run all the way from comparatively $4 up to $5; in fact many dealers who delayed purchases of this size would gladly pay the latter figure to get the coal. Much of the slack has been taken up in rice and barley and it is doubtful if any of this size can now be bought below $3 and $3 respectively. Under these conditions it seems likely that free coal will soon be offered on the market again.

BALTIMORE

Many yards were left without supplies to distribute. Household burning of soft coal and even wood is on the increase. The Maryland Fuel Distribution Commission charges that Baltimore's share under the allotment promised through the Pennsylvania committee is not being delivered.

The following figures are given out by the local commission on the shipments to Baltimore since the arrangement began in mid-September, the receipts being for the week ending on the days given: Sept. 23, 15,889 tons; Sept. 30, 12,123 tons; Oct. 7, 10,176 tons; Oct. 14, 13,722 tons; Oct. 21, 11,940 tons; Oct. 28, 11,862 tons; Nov. 4, 6,796 tons; Nov. 11, 13,536 tons; Nov. 18, 12,839 tons; Nov. 25, 13,509 tons; Dec. 2, 13,425 tons. The entire allotment for the period from Sept. 1, 1922 to March 23, 1923 is 365,691 tons.

A situation which faced the trade here during the past week was that a number of smaller yards who supply coal to the poorer sections had neither hard nor soft coal to dispose of. In this emergency the city provided Welsh coal at three of its storage yards and disposed of this fuel at 65c. a bushel.

South

BIRMINGHAM

Demand in the spot market is easy, consumers in general continuing to buy scantily and only to meet current needs. The railroads are the only interests which have bought any extra coal for stocking and use during the balance of the year, supplementing contract deliveries, which have been somewhat in arrears due to car shortage.

The last few days of cool weather has strengthened the domestic market to some extent though inquiry is not very insistent, considering the season and the fact that little or no stocks are carried on yards in the territory. Consumers buy a ton or two at a time as weather conditions necessitate, a vast number of householders having stocked no winter supply. Spot and contract requirements about equal the production and there is no surplus coal of either grade.

Although inquiry is comparatively light this condition has not served to weaken prices and quotations have been practically stable for the last several weeks, the minimum for mine run being $2.50. The general price range is the same as shown in our last report.

Car supply has shown no improvement with the exception of the Southern, which is now giving some better service and mines served by it have been operating more regularly. The situation on the Frisco and L. & N. is reported unimproved.

VIRGINIA

Transportation conditions are somewhat more conducive to a larger production though the increase has been small. In view of general market conditions and a stiffer demand in the East a larger production would be possible. Some mines, in order to avoid a suspension when empties are not available, are utilizing their product in the making of coke so that coke production continues at about 14,000 tons a week.

Chicago and Midwest

Market Freshens Over Entire Midwest Region

Run of Cold Quickly Exhausts Dealers' Supplies — Even Steam Consumers Buy Now—Prices Stiffen Noticeably and Transportation Weakens.

The whole Midwest experienced a real stimulation of the coal market during the past week. All signs of sagging disappeared after the run of zero weather began to make itself felt. Dealers who thought they were stocked against a month's trade, sold their yards empty so swiftly that a near-rush for all sorts of domestic coal started. It could not be satisfied because the cold had the simultaneous effect of hampering railroads. This got big steam and gas coal consumers worked up and they, too, leaped nimbly into the trading. Naturally prices started upward.

In some cases domestic lump hiked as much as 75c. a ton though the big companies in the southern Illinois field maintained their circular of $5.50 with a good deal of conscientiousness. Steam coals executed various upward leaps. Screenings got so scarce from one or two of the best-known fields that the producers were unable to fill more than half their contract requirements and boosted their screenings prices ridiculously in order to discourage spot buyers. Even this did not stop orders from men who were solemnly assured they could not expect deliveries quicker than the middle of January.

CHICAGO

The general stir in this market caused by cold weather had exactly the effect that wise observers prophesied some weeks ago. First the winter throttled down railroad motive power, thus reducing car supply to mines. Simultaneously it brought dealers and a large number of medium-size consumers dashing into the market for coal, demanding shipments instantly and generally upsetting things. Naturally, with a smaller flow of coal than previously was available, prices stiffened. Practically all southern Illinois lump is now bringing the top at $5.50; central Illinois hopped from an average of $4 to $4.50 and other coals followed suit. Screenings bounded upward 50c. and even $1 in some instances, for the "considerable stocks" theoretically on hand at big steam plants seemed exhausted. Even gas concerns were caught short.

Domestic sizes were in such demand that every shipper sold everything with ease and producers of the highest grade coals refused orders. Very little Pocahontas coal of any size is reaching here, and, although one shipper with excellent rail connections has been moving a good deal of anthracite here, yet many a householder has turned to soft coal for the first time in his life, thus expanding, as never before, the demand for Illinois and Indiana lump and egg. This, on top of car supply averaging only 60 per cent in central Illinois, 70 in Indiana and 25 to 30 in southern Illinois, is enough to push domestic prices upward distinctly.

ST. LOUIS

Colder weather has kept up the domestic demand in small quantities for the cheaper grades in the city proper and has stimulated business to some extent in the surrounding territory. Steam coal in wagonloads is in good demand in St. Louis. Carload shipments are just about even with the supply. A little anthracite is coming in but no smokeless coals. Some coke is available and is finding a ready market. Steam business outside the city is slow. With continued cold weather business ought to be in pretty good shape within a week.

WESTERN KENTUCKY

Transportation has let down badly the past few days, especially in this field, where car supply as a whole has been fair for some weeks past. Up to Dec. 16 supply had been 20 per cent on the L. & N. lines, and 30 per cent on the Illinois Central but it is claimed that the week of Dec. 19, has shown the poorest car supply in weeks, there having been very few cars on Monday, Tuesday or Wednesday.

This poor car supply along with demand on account of cold weather, and in view of the usual reduction of production over the holidays, is resulting in higher prices. Lump coal recently selling at $3.50@$4, is $4.25@$5. Mine run which was selling at $2@$2.50, is now $3.25@$3.50 and screenings at $2.50@$3.00, with some holders asking $2.75@$3, as supplies are scarce and demand good. Indications are for a stiffer market until the middle of January, with prices after that time largely a question of transportation and weather conditions.

LOUISVILLE

Car supply in Kentucky was quite poor during the week ended Dec. 18, while demand due to colder weather and a desire to stock over the holidays, is resulting in prices advancing, as there is not much coal uncontracted. Prices are largely a question of how badly the buyer wants it, and how many bids the seller is receiving. Trading is in car numbers again.

Railroad consumption is better, while retail demand is much better, and there is a fair demand from gas plants, public utilities, industries and the general lot. While buying is not heavy it is for short-time use, with the general belief on the part of buyers that any advances will be but temporary.

Jobbers and producers are of the opinion that there may be better production during the holidays than usual due to the fact that many miners have been working on such short time that they won't be as willing to take holidays as is usually the case. With cold weather and reduced production, indications point to fairly stiff prices for the next two or three weeks or until the middle or latter part of January. It is claimed that the local market is not as strong in price as Nashville and Indiana points on the same basis. Screenings are scarce and in demand at higher prices. Mine run is only in fair demand.

SOUTHERN ILLINOIS

Colder weather brought increased activity in all sizes. What was a surplus last week is a shortage this week. There is a good demand for everything. Even steam coal moved up in demand. Railroad tonnage shows increases in the Carterville district. Coal from this field is firm at $4@$4.50 on domestic sizes, and moved up to $4 on screenings.

Car supply is unusually bad. The Illinois Central averages but a little better than one day a week. The Missouri Pacific is in bad shape and even the Burlington is not maintaining its standard. The movement of both coal and empties is poor. Similar conditions prevail in the Duquoin field where the Illinois Central car supply has seriously crippled the tonnage.

Movement from the Mt. Olive field would be good if cars were available, but between poor railroad management and short-sightedness on the part of operators the tonnage has diminished except on some steam sizes which are a little bit hard to move. Prices for domestic sizes for the week ended Dec. 23 are $5@$5.50 and $4.50 for the industrial trade, with steam nut and screenings at $3@$3.50.

In the Standard district car shortage has put a crimp in everything. The Illinois Central has plenty cars to move the Louisville & Nashville a fair share and the Pennsylvania is in pretty sharp now that it has been for many months. There is a good demand for all sizes of standard coal except steam nut which is a little slow. Screenings are worth $1.50. Tonnage has moved up to $3@$3.25, while the busy L. & N. is $4@$4.75. Some coal and coke moved to Evansville. Electrical tonnage is good but operators for week during the holidays do not contemplate.

INDIANAPOLIS

Weather [illegible] past two weeks for three days. The first part of the last week did a lot for the coal business both domestic and industrial demand lengthened out, though there was no appreciable change in prices except [illegible] advances on some domestic grades. The [illegible] has been a growing scarcity of Pocahontas in the territory. Some wholesale dealers reported deliveries were very slow on all grades of Kentucky and West Virginia coal. Many Indianapolis operators reported [illegible] to contract out of some grades. However, there has been nothing that might be called a shortage.

The increasing use of Indiana coal for domestic purposes is quite noticeable. While there has been a slight increase in demand from the industrials there is not enough in the fact that they are active at any moment, but to a normal consumption in production.

Eastern Inland

All Grades Show Strength. Storms Cripple Railroads

Retail Yards Getting Buyer and Orders Coming—Pocahontas Grades Scarce—Industrials Insist on Quick Delivery—Sizable Premiums Obtained for Prompt Coal.

All grades of coal have strengthened with the colder weather. The car shortage is most acute and motive power has been dealt a hard blow by the severe storms of the last two weeks.

The slow car movement has drained the retail yards and replacement orders are coming in volume daily. Pocahontas grades are very scarce. Industrial buyers, alarmed at meager offerings and slow receipts, have entered the market insisting on quick delivery. This buying of car numbers has boosted the market to such a point that a considerable price differential exists between prompt coal and tonnage that users are willing to buy before it is loaded.

CLEVELAND

A [illegible] shortage of domestic coal is cut as a probability as retail yards find shipments from the mines held up by the severe car shortage. Public utilities have been making [illegible] purchases, and irregular buying is being done by the iron and steel plants. Industrial operations remain surprisingly broad for this time of the year. The usual slowing down of big enterprises for inventories is relatively small, especially operations of iron and steel, automobile manufacturers and building.

The steel mills have been stocking coal and most of them now have fairly large supplies. Little price softening has resulted from the absorption of Great Lakes tonnage. Some softening of quotations on West Virginia coal has developed within the last few days. Eastern Ohio steam also has advanced about 50c.

Difficulty has been found by coal dealers in getting domestic consumers to substitute anthracite coal for Pocahontas, which users have been accustomed to burning. Gradually, however, domestic users are placing orders for anthracite coal as they realize the difficulty of getting coal from West Virginia because of the railroad situation.

DETROIT

There is some buying being done, but it is apparently in an irregular way and without regard to the desirability of accumulating reserves. The orders coming from industrial plants are of small proportions and seem to be an effort to provide for present needs without regard to requirements [illegible] many days in the future.

Instead of the shipments to Detroit increasing in bulk with the close of Lake navigation jobbers report that there is apparently a reduction in receipts, which results from the transfer of cars to other lines of business and is brought about also by lowered efficiency of transportation facilities in the extremely cold weather recently prevailing. Embargoes on various coal-handling roads, also, are a factor in cutting down receipts.

Hocking lump is quoted at $5.50, with a freight charge of $2.18 to be added; mine run, $3, and nut, pea and slack, $2.50. With the same freight charge, Pittsburgh No. 8, lump is offered at $4.25; mine run, $3.25; slack, about $2.

EASTERN OHIO

Due to the most acute car shortage of the past year, this district produced only a minimum tonnage during the week ended Dec. 16. Output was 288,000 tons, or about 45 per cent of the present rated capacity, registering a decrease under the preceding week of 60,000 tons.

It is reported that on the B. & O. there were no cars whatever available for loading commercial coal during half of the week, and that transportation conditions on the other roads were not much better. Heavy snow storms during the week, coupled with lowering temperatures, apparently had disastrous effect upon the inadequate motive power of the roads. Another factor also contributing to transportation disability is that since the close of Lake navigation the mines are loading coal to more distant destinations thereby necessitating a greater transportation service. Congestion of the Toledo gateway and paralysis of rail movement in the lower Michigan peninsula due to the severe weather also affected adversely the car supply at Ohio mines.

Despite restricted mining operations generally, Cleveland industries and retail yards during the week ended Dec. 16 received the largest quantity of bituminous coal on record. Total arrivals were 3,050 cars, 2,270 for industries and 780 for retail yards. Since Oct. 1 weekly receipts now average 2,240 cars, compared with 1,512 cars per week during first quarter, 1,022 during the second and an average of 791 cars per week for the third quarter of 1922.

In the Lake trade, a new mark was made for shipments from Sept. 1 to the end of the season when 13,350,794 tons were loaded, the year 1917 being nearest to approaching these figures with 12,502,772 tons.

COLUMBUS

With colder weather prevailing, all grades have strengthened materially. Buying for all purposes is active and with a still further decline in the car supply, higher prices are prevailing in every mining district.

Retail stocks are fairly good although the country territory reports low stocks in many communities. The low pressure of natural gas is causing a rush of domestic orders. Some advances have been reported.

Steam buying is now more general. Railroads are taking a good tonnage and the same is true of utilities and other large consumers. Manufacturers are now looking around to increase their reserves in view of a still further car shortage.

An embargo on shipments out of Toledo into Detroit was declared on all roads except the New York Central Lines and other embargoes are holding up shipments. A good deal of interruption in railroad service is also expected during the holiday week.

PITTSBURGH

Prices, which had become firm a week ago, have advanced sharply, partly from operators finding they were getting in arrears with their orders, and offering less coal in the market, and partly from the development of a considerable demand from the East. Relaxation of the distribution regulations on the railroads has facilitated the development of this Eastern demand.

Pittsburgh steam coal, which stood at $2.50@$2.75 a week ago, is now strong at $3@$3.25. Gas mine run, which was nearer $3 than $3.25, is rather strong at $3.25@$3.50. Domestic 1¼-in. lump remains at $4.50@$5 as the general market.

There has been a special call from the East for nut coal, but very little is offered, on account of car conditions. Car shortage has made it that the average mine does not wish to screen at all, as there must be three or four cars in hand at one moment. There has been, in fact, what amounts to an extra price for screening, in that slack, nut and lump, sold individually, bring considerably more than the same coal would bring when sold simply as mine run. Domestic coal is necessarily sold over a 1¼-in. screen, and what is left has been going largely as slack, while to produce nut would subdivide the screening operation farther.

BUFFALO

A few of the shippers claim to see a stir in the bituminous trade, but others say that it is at the best only temporary and some do not see any improvement. It is true that cars are scarce and the demand is a little better.

The slow movement of cars hampers the jobber, who does not dare to promise anything and does not often venture to buy coal unless it is already sold. A price that has not changed much lately is about the only favorable condition. The consumer still looks for lower prices.

Prices have not changed materially for several weeks. The rule has been a gradual weakening without much decline. Present quotations: $4.75@$5 for Youghiogheny gas lump; $4@$4.25 for Pittsburgh and No. 8 steam lump; $3.10@$3.35 for Allegheny Valley and other mine run and $2.75@$3 for slack. A little Pennsylvania smokeless is selling at about 25c. over the other.

NORTHERN PANHANDLE

Mines are finding a better market in the North than in the West, owing to a shifting of market conditions, and at the same time are experiencing less difficulty in making Northern shipments, owing to embargoes against the movement of anything but railroad fuel to some Western points.

Northwest

Brisk Weather Runs Up Market on All Grades

Screenings in Such Good Demand Again That Southern Illinois Brings $3—Lake Season Closes with Only Third Enough Anthracite In.

Winter for 10 days has proven that the strange coal market in the Northwest this fall has been largely a weather proposition. The strong rush on docks and rail shippers about the second day of the cold spell firmed up every price quoted on all coals, raised southern Illinois screenings to $3 in spots and restored lump from that field to $5.50.

The close of the Lake shipping season shows that only one-third of the normal volume of anthracite has arrived and that little over half the ordinary amount of total shipments were made. The grand totals were not all in at the end of the week. Anthracite on hand will be exhausted soon after Jan. 1 without much assurance of hard coal by rail. An advance in freight rates by boat to Duluth added 75c. a ton to Lake anthracite there.

MINNEAPOLIS

After a long mild fall and early winter, some real Minnesota winter descended upon this section. As a result, the local market which has been completely demoralized on screenings, has picked up notably. Prices have advanced sharply and various grades of Illinois screenings are now selling up as high as $3 at the mine, with orders 30 days behind. Central Illinois screenings are $1.65@$1.85. Prepared sizes range from $5.50 for the southern Illinois down to $3.50@$3.75 for central Illinois. All available coal finds a ready market. The docks are sharing in the strengthened situation. Dock coal is worth $9.50 firm for Youghiogheny and $9.25 for Hocking.

The hard coal situation is distressing. The season's receipts were about 560,000 tons—against about 1,800,000 tons for the season of 1921. Deducting the 400,000-ton carry-over, leaves a consumption for 1921-22 season of 1,400,000 tons. Counting the carry-over into this year's total there are only 960,000 tons for the 1922-23 season.

Already dock stocks are down to about 100,000 tons, and the heaviest of the winter consumption is still to come. A number of points have reported being entirely out of hard coal and in dire need of it. The stock on hand will be exhausted soon after the New Year. The fuel commissioner has been working for some time to get all-rail shipments to supplement the Lake receipts but without definite hope of success. So far as hard coal is concerned, the various promises and near-promises made, have been but a harmless poultice to allay irritation.

DULUTH

Hard coal, or what there is of it on the docks here has been advanced in price 75c. a ton. This is not because of the shortness of supply but rather because of the advance in Lake freight rates during the last week of navigation when the majority of the coal now for sale arrived. Egg is now selling at $13.25, stove at $13.65, nut at $13.50, pea at $11.75, buckwheat at $8.50, and anthracite dust at $4.

In view of the fact that substitutes are not proving satisfactory for use in base burners, coal men have decided to reserve what stocks are available here for use in those houses which are not supplied with furnaces.

Dealers here claim that consumers of hard coal are better off than in any other part of the country, because of the stocks which were on docks at the opening of navigation. It is claimed that many of the orders which were listed are being withdrawn, and that consumers had listed their orders with several different companies in the hope of getting coal from one.

Official figures showing coal receipts at this port for December and for the entire year have been made public. During this month 107,042 tons of hard coal arrived here and 195,247 tons of bituminous. A comparison of this year's receipts with last year's follows:

Year	Tons	Tons	Tons
1922	5,136,334	344,687	21,474
1921	8,319,197	1,044,612	

MILWAUKEE

Weather conditions necessitating maximum fuel consumption are responsible for a lively coal market. Local delivery systems are taxed to the utmost, and shipments to the country are as liberal as the railroad conditions will admit. Prices have not been advanced, however.

Following investigation of a charge made at Oshkosh, Wis., that Milwaukee coal dealers were profiteering, Paul Prescentin, state fuel administrator, advised the complainants to do business only with brokers subject to regulation by the coal administrator. He reports that responsible Milwaukee dealers are not charging excessive prices nor have they disregarded restrictions imposed by the state coal authorities. Less than 20 per cent of the coal sold at Milwaukee is from independent producers, which means that the price on the other 75 per cent will remain stationary.

Thirteen cargoes of anthracite and seven cargoes of soft coal represent December's coal quota by Lake. The hard coal approximates 87,000 tons and the soft coal 53,000 tons. Car-ferries brought considerable coal in December but the figures are unobtainable yet.

New England

Buying in Small Tonnages; Prices Continue to Harden

Inquiry Far from Brisk—Scarcity in High-Grade Low Volatile for Spot Shipment — Railroad and Industrial Reserves Tend to Prevent Price Ascent.

The current market shows a further hardening of prices. Inquiry is by no means brisk, and purchases thus far are only for small tonnages, and the volume of high grade low volatile available for spot shipment is undeniably meager. Ample reserves for the present on the part both of railroads and the larger industries are the chief factor in keeping prices from soaring, for it would need but a few comprehensive orders to give the market a decided push upward.

Medium grades of low volatile originating in central Pennsylvania have sold as high as $5.25 per net ton at the mines, the same coal having sold but a few weeks ago at not over $3.75.

As at present advised, buyers are extremely reluctant to buy in advance of actual need. Most contractors have been making deliveries reasonably well, and that has a bearing on the spot market. Offerings of Southern coals are extremely light both at the leading piers and at rehandling points like Providence, Boston, or Portland. December quotas of Pocahontas and New River have been forward and few of the local consignees are as yet short of current supply.

There have been frequent delays recently in clearing coastwise transportation. Short car supply for east-bound movement is having its influence, but doubtless the chief factor is the attractive Western market for prepared coal. Certain of the agencies are pushing for deliveries on large contracts in that territory, however, and the Hampton Roads situation cannot be said to be so closely restricted as might appear.

For inland delivery from rehandling wharves at Ohio and there has been a marked appreciation of prices. From a $9 level spot quotations have advanced to $10.25@$10.50 per gross ton on cars, due partly to a cold increase in demand.

Movement all-rail has slowed up materially during the past fortnight. Certain of the smaller operators in central Pennsylvania have been kept starved for cars and five days a week and closer there are other complaints from consignees who have coal but there or thereabout upon purchases.

Cincinnati Gateway

Contract Talk Is Heard, Arouses Little Interest

Transportation Difficulties and Colder Weather Bolster Up a Falling Market at a Time When It Was Slipping Badly

Somewhat earlier than usual, but not to be denied is the talk of contracts that can be heard in this area. It would appear that the takers of coal believe that there are sufficient business reasons why it would be advantageous for them to get under cover for three, six, or nine months, and some of them are even willing to make it for a year. Prices, however, are not much in accordance with the ideas of the producers. Generally speaking the prices hinted at are $3.50@$4 for smokeless and $2.75@$3 for bituminous.

Transportation affairs were put to their first real test during the past week and were found wanting. The N. & W. and the L. & N. placed embargoes against everything but coal and laid the blame upon the inability of the connecting lines to clear the congestion at this gateway. The C. & O. was in a bad fix though it was able to keep most of its loads moving. Prices which had been weakening stiffened under this condition.

CINCINNATI

The smokeless market holds to the even tenor of its way. Fewer cars of Ivy Fork and New River prepared coal find their way into the hands of the middlemen so that with this tonnage almost negligible it is useless to quote the prices $3@$4, which are being asked. Circulars from the N. & W. have requested Pocahontas operators to dig as many of their cars coal as possible. The distant supply of smokeless this month has thrown for years is now a matter of record.

Increased buying of high-volatile coals with the cars in a fair supply of the mines brought an advance of 25c. per ton, with the holders of coal on track asking even more. The slowing down in production, due to the holidays also has had its effect in helping to stiffen the coal that has been made.

Other business has not changed materially, colder weather has brought a rush of orders which can only be filled gradually. Steamboat coals sell at $3@$3.25 mine or below for the best, lower at $2.50@$2.75 and slack $2.25.

HIGH-VOLATILE FIELDS

Kanawha

There is some promise for relief from the car shortage since the mines have gone forth to Western roads to furnish the C. & O. an excess number of cars for a period of 20 days in the hope of overcoming the deficiency in the supply. What little spot coal it has been possible to produce has been consigned to Western points, although there has been a growing demand in Eastern markets.

Logan and Thacker

Logan production is not averaging over 25 per cent of capacity. Larger shipments are out of the question in view of existing transportation handicaps. There would be even more idleness if it were not for the fact that so many companies are storing their coal. Producers find it difficult to keep up a regular supply for their customers, especially in view of the slow movement over the Western divisions of the C. & O.

Thacker mines are not shipping more than 40 per cent of their possible output owing to the failure of the N. & W. to furnish anything like adequate transportation facilities. Aside from the railroad fuel required by the N. & W., the bulk of the output is flowing on contract, production being insufficient to provide much free coal for the open market.

Northeastern Kentucky

With a car supply not over 26 per cent, the field is not producing as much as 100,000 tons a week. Even when coal is loaded it is held up at various points. There is a fairly good demand for steam grades and with railroads securing a good tonnage but few companies have any free coal to spare.

LOW-VOLATILE FIELDS

New River and the Gulf

The greatly restricted output in New River territory is to be attributed solely to a miserable car supply afforded by the C. & O. It has been going steadily from bad to worse despite all the management of the road could do. It has been almost out of the question to ship any coal to Western points. Eastern shipments have been stimulated.

Though Gulf production is on a little larger scale, it is nothing to boast of, fluctuating between 100,000 and 110,000 tons a week. It is now possible to secure $5 or better for spot mine run.

Pocahontas and Tug River

Pocahontas production has increased because of improved transportation facilities. The car supply is still irregular, however, preventing mines as a whole from loading more than 50 per cent of potential capacity. The great trouble appears to be with motive power on the N. & W. This road, having better facilities for moving coal to Eastern points, is making every effort to increase that rather than Western traffic. There is now a much better demand for Pocahontas in all grades in Eastern markets.

Tug River mines are also limited in production by the poor car supply. Contract miners alone would absorb more than the present output but it is not even possible to take care of that character of business.

Coke

CONNELLSVILLE

The coke market has been lifted entirely out of its regular channel by the sudden demand that has arisen for coke for domestic fuel in the East. The furnace coke market had gotten down to a point where it was easy to buy very good grades for blast furnace use at $6.50, but day by day there were heavy buying orders from the east, and all floating supplies were absorbed, until $9 was paid on a large lot.

The general market is now quotable at $8.50@$9, and this seems to apply equally to heating, blast furnace and foundry coke. The blast furnaces have been indisposed to pay prices asked, while foundries when quoted the advanced prices have postponed purchases.

Some operators seem indisposed to allow a transient demand to interfere with the regular movement to metallurgical consumers, but these are in the minority. Meanwhile, furnaces that buy at flat prices are uncovered for first quarter and are in no position, on account of prices at which they have sold pig iron, including their sales of foundry iron at $25, valley, for first quarter, to pay current prices for coke. There are practically no negotiations for first quarter contracts and matters will probably drift until the situation becomes clearer. There is a possibility of some furnaces banking.

Estimated production of coke during the week ended Dec. 16, was 208 610 tons, an increase of 5,800 tons as compared with an increase of 9,040 tons during the week preceding.

UNIONTOWN

Orders have come into the coke region from Philadelphia, New York and New England for all available tonnage for domestic use and price does not seem to be a factor. As a result the price has advanced sharply.

The sudden shift of the coke market has practically suspended contract negotiations for 1923 delivery but a few inquiries are out for January business. Ten days ago furnaces would have been able to close for business up to March 31 but now operators are reluctant to commit themselves and it is almost a foregone conclusion that no contracts will be made to extend more than a month at a time.

The coal market also has stiffened, due to cold weather, but also to a great extent to the ever-prevailing car shortage. There were fewer cars placed this week than at any time since the strike ended. Quotations now are $2 75 @$3 for steam and $3@$3.50 for by-product.

BUFFALO

The market is getting to be much influenced by the need of something as a substitute for anthracite. Prices are strong. The byproduct ovens are not able to provide any for domestic use. For the present the supply is very short. The local furnaces are increasing their activity. The local illuminating gas company now makes no gas and so has no coke to sell. It buys its gas of the byproduct ovens and mixes it with natural gas.

News Items From Field and Trade

CONNECTICUT

The Devon Coal & Ice Co., Bridgeport, is a recent incorporation under the laws of Connecticut, to engage in the coal and ice business with a capital stock of $50,000. The men signing the incorporation papers are William B. Boardman, Jonathan Grout and Lawrence J. Eckstrom, all of Bridgeport.

ILLINOIS

E. F. Kuhlman, vice-president of the Keystone Coal & Mining Co., Chicago, recently married Miss Margaret Bales, of La Grange, Ill. The couple left immediately for a week's honeymoon in the East, expecting to visit New York City, Washington and other cities en route.

J. H. Vickers, of the Bitumacite Coal Co., of Chicago, announces that Mt. Vernon has been selected as the location for its plant for the manufacture of bitumacite, a substitute for coal. The first plant will consist of a unit with a capacity of 500 tons of bitumacite per day. The company also plans to make Mt. Vernon the headquarters for the manufacture of its processes and other of its machinery and equipment.

The **Sangamon County Mining Co.,** Springfield, owners of the Latham mine, Latham, and the Citizens mine, Lincoln, as well as various holdings in Springfield and vicinity, have changed the name of their company from the Sangamon Mining Co. to the **Brewerton Coal Co.,** and the capital stock has been increased from $200,000 to $500,000. One reason for changing the name of the company was the fact that there is already existing a Sangamon Coal Co. and considerable confusion through the state resulted.

The Central Illinois Public Service Co., announces that it will soon furnish power for the 12 mines of the Old Ben Coal Corporation in Franklin and Williamson counties. The lines of the power company will be connected with those of the mining concern at West Frankfort and will furnish power for the output annually of approximately 6,000,000 tons of coal and the power bill of the mining company will aggregate nearly half a million dollars each year. The contract signed between the two companies calls for the service for a period of ten years. The Central Illinois company states that this will make a total of about 73 mines being furnished with power from its plant at Harrisburg and other plants located in southern Illinois. The company is at present erecting a large new plant near Grand Tower on the Mississippi River.

The Glen Ridge Coal Mining Co., Chicago has been incorporated, with a capital of $100,000; incorporators: Charles W. Bidwell, Calem S. Fudge, Elmer W. Hebbstreet, A. H. Meas and Arthur W. Kettles.

The Quaker Coal Co., Chicago, has been chartered to mine and deal in coal, etc., capital, 100 shares, no par value. The incorporators are Edward D. Pomeroy, Edward P. Kearns and Henry T. Martin.

The Wolverine Coal & Mining Co. has increased its capital stock from $20,000 to $50,000.

The Trojan Coal Co. has increased its capital stock from $20,000 to $30,000.

E. C. Searles, of Chicago of the Crear-Clinch Coal Co., has returned to his home in that city after visiting coal properties in Williamson County.

Clifford Mine No. 8, Christopher, lost its washer and practically all of the wood work in a recent fire. The loss is estimated at $90,000. The mine is owned by the Consolidated Coal Co., St. Louis, Mo. The mine will be able to resume operations as soon as the screens are replaced and general repairs made.

The West Frankfort office of the Old Ben Coal Corporation is to soon have a telegraph outfit installed for the private use of the company with its main office in Chicago and with its many mines in Franklin County. The plan is expected to save a good deal of money.

INDIANA

The Midwest Fuel Co., Indianapolis, has been chartered to deal in coal, capital $10,000; directors, James W. Costin, Mildred C. Costin and Burrell Wright.

Three men were seriously injured recently in the **Wabash mine** at West Terre Haute, when they were struck by one of the haulage motors. It is said the three men were coming out of the mine with mules and that either there was a misunderstanding of signals or the motor broke away and they were struck before having time to clear the tracks. The mine is owned by the Coal Bluff Mining Co.

Fire recently destroyed the miners' wash house and the blacksmith shop of the **Green Mound Coal Co.** mine seven miles south of Washington, on the Big Four R.R. Work clothes of 135 miners and valuable machinery were burned. There was only insurance. The mine is owned by T. C. Bugg, of Evansville.

The Consumers Co-operating Coal Co. has been organized at Vernon with a capital stock of $50,000 to operate mines and deal in retail selling of coal, cement, lumber and other building materials. The organizers of the company are **W. T. Semon, Otto H. Olfe Jr., and B. H. Smith.**

A shot firer was killed in a dust explosion recently which wrecked the **Mohawk mine,** fourteen miles northwest of Linton. The damage to the mine is estimated at $50,000. The shaft will be out of commission for at least two weeks.

A new tipple is being erected at the **Oates coal mine.** The mine is in Fountain County, a few miles east of Deerville. It is a wagon mine and coal is trucked to Lafayette, Crawfordsville, Attica and Veedersburg. The coal is known as the Bastard Block. This mine is proving to be a successful one and is handling a large volume of coal each week. It is owned by W. M. Vaun, of Newport and William Copas, of Stringtown.

IOWA

The Burlington R.R. will build a siding for the **Pearson Coal Co.,** at Clarinda. The switch will be 700 or 800 ft. long. The new mine of the Pearson Coal Co. is southwest of Clarinda, on the G. W. Snodgrass farm. The switch will extend from the Tarkio branch right of way.

KANSAS

The Carr coal mine, near Leavenworth, was closed down Dec. 8, with the consent of the Kansas Court of Industrial Relations. In its petition to the court the company declared it could not operate at a profit until the cost of mining was decreased or the price of coal increased. In 1921 the mine produced 37,462 tons, representing the output of 143 men working 177 days.

KENTUCKY

The Big Seam Coal Co., Creech, has been chartered with a capital of $10,000, stockholders being C. J. Lewis, J. D. Yarbrough and McKinley York.

The Falls Branch Coal Co. has filed articles of incorporation with the County Clerk at Lawrenceburg for mining and handling coal and timber lands and mines. Capital stock was placed at $75,000. The company will be managed by a board of three directors, consisting of F. Woodruff of Power Valley, Ky.; J. F. Worthington of Worthington, Tenn., and C. F. Woodruff of Louisville.

Organization of the **Hazen Coal Co.,** to exploit 12 West Virginia tracts by the syndicate of owners Kentucky coal lands, has been announced by W. H. Denning, C. P. Merrell and R. J. Edwards. The company is incorporated for $150,000.

The Spring Lick Coal Co., of Murray, Ky., has been incorporated with a capital of $10,000, the incorporators being Thomas W. Hickerson, Miss Viola Mabry, Hickman; Carlos H. Glover and Mrs. Mary A. Glover.

Five of Harrison men are held in Detroit for the death of **L. B. Wiles,** union organizer, shot to death by a mob on the night of Sept. 18, 1921, were released on Nov. 8, as the commonwealth was unable to prove any connection between the men and the crime. Eight others are to be tried. Wiles was shot to death at Holden by an armed party.

The Green River Fuel Co. of Muhlenberg County, Ky., capital $50,000, has been chartered by the incorporators, C. H. Sanders, W. H. Sanders and John B. Bunnell.

The Lester Coal Co. of Middlesboro, capital $5,000, has been chartered by P. L. Smith, W. Dyer, J. F. Bradley and John Howard, of Middlesboro.

The Virginia Supply Co., Harlan, has been chartered by W. B. Lewis, P. H. Neal and Wilson Jones.

The Atlas Coal Co., Louisville, capital $100,000, has been chartered by Lee Hogan, P. H. Neal and Wilson Jones.

Articles of incorporation of the **Banner Coal Co.,** Inc., have been filed in Kanawha County, West Virginia, by Thomas C. Hogg, Kenneth Hogg and E. J. Edwards, all of Huntington, W. Va. The company will operate mines in the Elkhorn district.

The State Tax Commission has approved the application of **J. L. Smith,** Louisville, to install a system for the sale of bituminous coal and mineral lands, and it is now in active operation. Three other men will be named later. Chairman Kenney T. Wilson said the 1922 General Assembly appropriated $30,000 annually for two years to be used in securing a survey of the coal and mineral lands of the state so that the Tax Commission could arrive at an equitable assessment.

The West Kentucky Coal Bureau in the near future will try to induce the State Legislature **not to pass a proposed tonnage coal tax.** The bureau considers such a tax would retard business and practically put the mining men out of business. The bureau considers the fact that it is hard enough for miners to make a profit, for the cost of a mine that becomes non-productive is total loss.

MASSACHUSETTS

The Massachusetts Anthracite Co., of Boston, is a recent incorporation whose purpose is to deal in coal, coke, etc. The capital stock is $100,000 and the incorporators are Samuel J. Mansfield, Lewis Cousens, Samuel J. Mansfield, Jr., and Frederick A. Cousens.

MICHIGAN

Coal mining operations have been started on the property of the **Peoples Coal Mining Co.,** Detroit, which has a contract for the entire output of the property for a number of years. The mine was opened by the Peoples Coal Mining Co. in 1919 and operated for a short time, but was then closed down. The mine was reopened recently by the present company.

MINNESOTA

H. E. Hazel, sales agent of the Northwestern Fuel Co., was re-elected president of the Minneapolis Coal Exchange at the annual election held recently.

W. A. Dyment, for a number of years manager of the Minneapolis branch of the Pittsburgh-American Coal Co., has resigned his position with that company to become manager of the Minneapolis branch of the Consolidated Coal Co. of Chicago, and will be succeeded by Mr. Schaefer, who has been assistant manager of the Minneapolis branch.

MISSOURI

The Missouri Lovely Coal Co. has been granted a charter by the Secretary of State to mine coal in Macon County. The capital stock is $10,000 and the incorporators are W. H. Bell, E. L. Bell and Mrs. Mary Bell, all of Macon.

The White Coal & Mining Co., St. Louis, has filed with the Secretary of State articles of incorporation with a capital stock of $50,000. The incorporators are W. H. White, Mrs. A. White and W. H. White, Jr.

NEW YORK

H. D. Matlack has been named general manager of the **Matlack Coal & Iron Co., Inc.**, New York. F. Wilkin has been elected vice-president and G. Wilkin general counsel and treasurer.

Thomas T. Brewster, vice-president and general manager of the Mt. Clare & Staunton Coal Co., is a member of the executive committee and one of the vice-presidents of the **American Institute of Mining and Metallurgical Engineers.** As the official organ of the organization no nominations appear to be accepted by the members, Mr. Brewster's election may be regarded as assured.

OHIO

The Cremer Coal Co., Zanesville, has been incorporated, capital $100,000, incorporators: R. H. Carroll, C. W. Hazell, E. F. O'Dell, H. C. Page and Hazel A. Hinkle.

The Oberlin Coal Co. has been chartered with a capital of $25,000 to deal in coal at wholesale and retail at Canton. Incorporators are: C. E. Oberlin, William H. Quinn, Cora E. Oberlin, Ethel Oberlin and Claude W. Oberlin.

The Lackawanna Coal Co. has been incorporated with a capital of $10,000 to deal in coal at wholesale at Cleveland. Incorporators are: W. F. Maurer, R. Bolon, Thomas Brindle, John F. Wilson and E. C. Dauby.

A deal has been concluded whereby by purchase of the stock of the **Crystal Ice & Fuel Co.**, of Columbus, has been acquired by the **Ohio Ice & Fuel Co.**, of Cleveland. The new owners will make no immediate change in the policy of the management as to the manufacturing and distributing end. William Deer and associates as minority stockholders of the company.

The Supreme Court has handed down a decision in the case brought by the Ohio Fuel Supply Co. to restrain the **Public Utilities Commission** from fixing rates for natural gas. The decision holds that the Commission has no jurisdiction in the matter. The Ohio Fuel Supply Co. is a producing company and sells gas to distributing companies. The Commission has no power to regulate rates except in cases where the gas is sold to consumers direct. The decision will be of importance to the gas companies of the state.

The Peach Knob Coal Co. and the **Knox Coal Co.**, both producing about 50 tons per day, have completed operations. It is expected that other coal companies will follow suit and that many mines will be in operation by the end of the present month.

OKLAHOMA

The Crystal Ice & Fuel Co., of Columbus, has been succeeded by the **Ohio Ice & Fuel Co.**, of Cleveland. The new owners will make no immediate change in the policy of the management as to the manufacturing end. William Deer and associates as minority stockholders of the company.

In a previous decision given recently the Oklahoma Supreme Court held that the **district court** in the same district, by an existing injunction in the Hominy Valley affirmed [illegible] was a public utility and thus comes under the jurisdiction of the **Public Utilities Commission.** Previously the Utilities Commission decided that the following company was a gas seller and thus the Commission had no jurisdiction. The question then has reached the Supreme Court and will be settled by that body. The decision will be of importance to the coal companies of the state.

The capital of the **Tribbey Coal Co.**, Oklahoma, has been increased to the **Midland Coal Sales Co.** (Charles Tribbey, who formed the company about six years ago was drowned with [illegible] when [illegible] Lake Texoma. Mr. Tribbey was [illegible] and was [illegible] years old. He was [illegible] years and has been [illegible] Mrs. Tribbey, who has been appointed [illegible] Tribbey. The development of the mine [illegible] be continued [illegible].

H. C. Kennedy, secretary and manager of the Canadian Coal[illegible] president of the **Kansas-Oklahoma Association**, [illegible] a meeting with the executive committee of the association [illegible] Kansas City [illegible] of the association [illegible] with the [illegible].

PENNSYLVANIA

A strike of 1,400 men at the Lehigh Coal & Navigation Co.'s No. 4 colliery, near Tamaqua, **was called off Dec. 20** when the company agreed to furnish an additional number with the understanding that when the maximum output is reached no request for additional men will be made. A number of the miners walked out Dec. 18, claiming they had been overworked. The strike forced the colliery to close.

H. M. Kanarr, mining engineer, has opened a branch office in the Martin Building, Brookville, with James S. Brett, C. E., in charge as manager.

A charter has been granted to the **South Union Coal Co.**, Greensburg, with an authorized capital stock of $1,000,000. The incorporators are John M. Jamison, Jay C. Jamison and Robert W. Smith, all of Greensburg.

E. C. Brandt, works manager of the Westinghouse-Krantz Works, has been appointed works manager of the new plant now being erected by the Westinghouse Electric & Manufacturing Co. in Homewood, Pittsburgh.

Paul Smolink, fireboss in Franklin Mine 2 of the Cambria Steel Co., Johnstown, met instant death Dec. 20 when a motor which he was operating in the mine crashed into a train of empty coal cars. He was thrown from the motor and the empties buckled up over his body. Smolink was a member of the coal company's mine-rescue squad that rescued the first group of survivors from the Bailly Colliery at Spangler in the disastrous explosion which claimed seventy-seven lives on Nov. 6. He, with ten others of the crew, was awarded a gold watch by the local company in recognition of his service. Smolink's watch, which had been in the engraver's hands, arrived at his home a few hours after he met death in the mine. Smolink was born in Germany, served in the U. S. Army during the World War.

After being worked for 25 years the **Baggaley mine of the H. C. Frick Coke Co. has been abandoned.** Edward Casey hauled the first load of coal from the mine and he was awarded the privilege of bringing up the last trip. The Baggaley employed 100 miners who will be scattered at other Frick operations.

The Pocono Coal Co., Lackawanna County, has notified the State Department at Harrisburg that it has changed its corporate name to the **Clifford Coal Co.**

Two [illegible] agreements for **payment of compensation** growing out of the **mine fatalities at Spangler** have been approved by the State Workmen's Compensation Board. The agreements aggregate $145,650, an average of more than $4,500 in each case. Twenty-nine widows, two fathers, three mothers had eighty-one children under sixteen years of age and who left those upon whom they were dependent are benefited by the agreements.

The decision of the U. S. Supreme Court which held that the Kohler mine-cave act of 1921 is unconstitutional probably will result in a renewed effort on the part of legislators from the Lackawanna County district **to have the state constitution amended.** Delegations from Scranton and surrounding territory explained the need for an amendment before the State Constitutional Revision Commission which drafted a tentative copy of a new constitution for submission to a Constitutional Convention. The people last year voted against a constitutional change but it can be made only by having the succeeding Legislatures pass upon [illegible] before its submission as a question to the voters.

TENNESSEE

George J. Allen, formerly with the Louisville [illegible] office of the Ohio Fuel Co., has been promoted to the Cincinnati office as [illegible] and has transferred to the Cincinnati office as [illegible] sales manager.

UTAH

[illegible] years of the state [illegible] that the average [illegible] is paid [illegible] has [illegible] the only [illegible] in this state under the Public Utilities Commission [illegible] and other [illegible] of fatal [illegible] Twenty-five [illegible] gets result[illegible] difficulty in any case of interfering with the coal men unless the interference is on a national scale. If coal prices here are not satisfactory to the producer he can send his product elsewhere. Especially would this be the case in the event of a general strike in the coal fields of the eastern or the West.

Development of the coal fields of Utah, with an outlet at Los Angeles harbor, has been given impetus through action by the Board of Harbor Commissioners of Los Angeles in approving plans for the establishment of a half million dollar coal bunker on Pier 1 at the port by the Marine Transportation & Fuel Co. Officials of the company state that they will receive coal both by land and sea to supply coal-burning vessels touching at the port. It is reported that the Utah fields would be tapped by the Santa Fe R.R., which would transport the coal to the harbor via its proposed franchise right-of-way extending to the port from its existing tracks between Ingelwood and El Segundo. Los Angeles interests are declared to be back of the proposed development of the Utah coal deposits and it is said that the project will involve the expenditure of approximately $250,000.

VIRGINIA

The first shipments of navy coal contracted for with the **Pocahontas Fuel Co.** for delivery in Norfolk in January, February and March, will arrive at the Naval Operating Base soon after Jan. 1. The navy has bought 100,000 tons at $7.80 gross at the piers. Approximately 200,000 is held in reserve at the Norfolk naval base.

The offices of **Jewett, Bigelow & Brooks,** maintained at Norfolk for a number of years, will be closed Jan. 1. **W. H. Brown,** Norfolk manager for the company, has organized the **W. H. Brown Coal Co.,** and will begin business under that name on the same date and in the same offices. He has not completed arrangements for business connections as yet. Information here is to the effect that the Jewett, Bigelow & Brooks company has obtained a selling agency and that that firm will be dissolved.

WASHINGTON

Major William J. A. Muirhead, who resigned as traffic manager of the Port of Seattle, has accepted the position of vice-president and general manager of the **American-Canadian Coal & Coke Co., Inc.,** which was organized last May and has extensive interests in Alberta. The company will maintain offices in Seattle and Wenatchee.

WEST VIRGINIA

Governors of eleven states, accompanied by their wives, donned jumpers Dec. 15 at Glen White, near Beckley, and descended 250 ft. into the earth to **inspect a coal mine.** All wore the regulation miners' caps with lamps attached. The Governors came from White Sulphur Springs, where they had been attending the fourteenth annual conference of the Governors.

Two hundred and twenty workers at the Jamison No. 8 plant of the Jamison Coal & Coke Co., at Farmington, have gone on strike in violation of the union contract despite orders of union officials and without having any grievance against the company by whom they are all employed. The strike was precipitated by the refusal of the Mayor of Farmington, a member of the union, to pay a fine of $100 assessed against him by the local because he worked as a watchman during the strike, as was permitted under the joint agreement.

The Pinnacle Coal & Coke Co., a large Pennsylvania concern, operating on Campbell's Creek in the Kanawha district, mining coal from the Campbell's Creek seam, is letting contracts for the sinking of a ventilation shaft on the property. Work will be started at once. The Pinnacle mine will be one of the largest operations in this section, as it is planned to produce 1,500 tons of coal daily in the next three months. John T. Williams, is general manager; Robert T. Wilson, assistant general manager, and L. Everett White, superintendent.

The **$2,000,000 coal mine of the Brotherhood of Locomotive Engineers,** on Big Coal River at Seth, Boone County, is to begin operations Jan. 15. The company is known as the Coal River Collieries Co. and its board of directors contains the names of the following brotherhood officials: Warren S. Stone, chairman of the brotherhood; W. B. Prater, vice president; T. C. Songer, general chairman of engineers on the C. & O.; Charles E. Glass, of Hinton, and J. T. Keister, of Peru, Ind.

The Lambert Coal Co., Cadiz, has been chartered with a capital of $100,000 to mine and sell coal. Among the incorporators are Charles H. Stone and Jesse M. Hamilton.

The Clear Creek Coal Co., Cincinnati, has been chartered with a capital of $100,000 to mine and sell coal. Incorporators are: A. Herman, Oscar MacGregor, R. M. Brandt, H. E. Howard and L. N. Osborn, Jr.

By an agreement between attorneys for the state and defendants, the trial of **C. Frank Keeney**, president of District 17, United Mine Workers of America, will take place at **Berkeley Springs**, Morgan County, **Feb. 19**, it has been announced by Attorney A. M. Belcher, representing the prosecution. This date for the trial, it is understood will be formally fixed by Judge John Mitchell Woods, of the Morgan Circuit Court, when the regular term opens at Berkeley Springs, Jan. 2.

The 44 new coal companies organized in West Virginia during the months of October and November had an aggregate capitalization of $4,225,000. There continues to be expansion of the industry notwithstanding advice from Washington to refrain from investing capital in the development of coal lands and notwithstanding the fact that the price of coal has been on the decline. In the months mentioned the following companies were organized: **B. R. & P. Coal Co.**, Fairmont, $50,000; **Winifrede-Hatfield Coal Co.**, Williamson, $50,000; **Radio Fuel Co.**, Morgantown, $50,000; **Miami Co-operative Mining Co.**, Charleston, $125,000; **Best Coal Co.**, Charleston, $50,000; **Superior Block Coal Co.**, Morgantown, $50,000; **Baldwin Pocahontas Coal Co.**, Eria, $400,000; **Morrison Coal Co.**, Charleston, $500,000; **Acme-Eagle Coal Co.**, Huntington, $25,000; **Cora Mining Co.**, Huntington, $200,000; **Indian Hill Coal Co.**, Morgantown, $50,000; **Colgate Coal Co.**, Charleston, $25,000; **Eldee Coal Co.**, Huntington, $100,000; **Bell-Creek By-Product Coal Co.**, $50,000; **Baum Coal Co.**, Lexington, $300,000; **McCartney Coal Co.**, Wheeling, with operations in Ohio, $5,000; **McMechen Coal Co.**, McMechen, with operations in Ohio, $100,000; **Slufer Creek Coal Co.**, Charleston, $100,000; **Balwood Coal Co.**, Glen Jean, $10,000; **Beda Smokeless Coal Co.**, Huntington, $25,000; **Elwill Coal Co.**, Charleston, $2,500; **Petrelli Coal Co.**, Follansbee, $100,000; **Gordon Consolidated Coal Corporation**, Clarksburg, $100,000; **Lubeno Coal Co.**, Wheeling, $50,000; **Emmart Coal Co.**, Charleston, $10,000; **Max Coal & Coke Co.**, Charleston, $25,000; **Fairmont-Pittsburgh Coal & Coke Co.**, $100,000; **Two States Coal Co.**, Morgantown, $50,000; **Talisman Coal Co.**, Morgantown, $10,000; **Alpine Coal Co.**, Charleston, $250,000; **Waugh-Longley Coal Co.**, Williamson, $10,000; **Fenimore Collieries Co.**, Van, $125,000; **Clay County Coal Co.**, Clay, $100,000; **J. D. Boone Coal Co.**, Fayetteville, $300,000; **Brown Coal Co.**, Flemington, $125,000; **Tygart Valley Fuel Co.**, Clarksburg, $100,000; **Wise Pocahontas Coal Co.**, Welch, $50,000; **Jones-Island Creek Mining Co.**, Charleston, $25,000; **W. F. Toney Coal Co.**, Williamson, $25,000; **Midland Smokeless Coal Co.**, Ronceverte, $50,000; **Ralfay New River Collieries Corporation**, Beckley, $287,500; **Ohio County Fuel Co.**, Pittsburgh, Pa., $5,000; **W. A. Coal Company**, Welch, with operations in Kentucky, $10,000; **Helen Coal Mining Co.**, of Cumberland, Md., $50,000.

Robert E. Rightmire, engineer of tests of the Consolidation Coal Co., has recovered from a brief illness and is able to be at his desk again.

Joseph G. Kerns, former treasurer of the Wyatt local of the United Mine Workers of America, was sentenced to serve five years in the state penitentiary at Moundsville by Judge John C. Southern in criminal court today when he entered a plea of guilty to misappropriating funds of the union. Kerns, according to information furnished the authorities, stole about $2,400 from the union and then fled to Oklahoma, where he was arrested on a caplas and brought back to Harrison County for trial.

Spontaneous combustion has caused two serious blazes in storage coal piles in the Logan district, threatening the partial destruction of about 40,000 tons of coal. Fire was discovered in one of the storage piles of about 35,000 tons, stored by the Amherstdale Coal Co., not far from Logan, on Dec. 4. A day later a storage pile of 5,000 tons belonging to the Gay Coal & Coke Co., about one mile from Logan, caught fire. Three shifts of fighters were used in stopping the fire in the storage pile of the Amherstdale company, a large quantity of the coal being hauled away so as to prevent its entire destruction. Approximately 10,000 tons were lost because of the fire.

Seniors of the mining engineer school of the West Virginia university are being trained in mine-rescue and first aid work by **Robert Lilly**, a member of the inspection force of the State Department of Mines. It is stated by Inspector Lilly that there are 218 men enrolled in Mount Hope district in the night mining classes. More than 800 miners in West Virginia are enrolled in night mining classes.

The Best Coal Co. plans to erect a tipple, miners' houses, open a store all in preparation for the mining of coal at a point near the city of Charleston.

Organization of the **Eureka Coal Co.**, with headquarters at Charleston, will make it possible to develop coal land in the Kanawha District. The company has just been chartered with a capital stock of $[illegible]. Leading figures in the new concern are J. T. Lightner, Joseph Norton Simms Sayre and E. B. Dyer, of Charleston, Dell Kendrick of Madison.

It is reported that the **Nuttallburg mine** owned by the Ford interests, **has resumed operations** after a shutdown of a month or more. For a time the owners contemplated abandoning the mine, but it is now understood that an opening will be driven at some point on Keeney's Creek and a tipple built near the new opening. This will obviate the costly long haul to the coal tipple at Nuttallburg.

Increases in the capital stock of the following coal companies have been authorized by the Secretary of State of West Virginia: Shriver Coal Co., from $[illegible] to $600,000; **Ben's Run Coal Co.**, from $50,000 to $75,000; **Opperman Coal Co.**, from $50,000 to $300,000; **Margarette Coal Co.**, from $500,000 to $750,000; **Co-operative Fuel Co.**, from $25,000 to $[illegible]; **Wyatt Coal Sales Co.**, from $[illegible] to $200,000; **Long Branch Coal Co.**, from $150,000 to $500,000. The **Wood Peck Fuel Co.** has reduced its capital stock from $200,000 to $75,000.

The largest single order for electrical mining equipment ever placed by a West Virginia operating company it is believed is that recently made by the **Coal River Collieries Co.**, of which Harry Leaberry is president. Included in this order were eighteen mine locomotives and five substations in every way complete, the cost of the new equipment ordered being in the neighborhood of $150,000. This equipment is to be installed at the new plant of the company in the Coal River field. Part of it will be shipped by Jan. 1. The Coal River Collieries Co. is controlled in large part of the Brotherhood of Locomotive Engineers.

The Eleanor mine of the **Hite Barnes Coal Co.**, on Indian Creek in Monongalia County, has been completely electrified with a view to making electric haulage possible. Among other equipment installed was an eight-ton motor.

The Vanhall Coal Co. has changed its general headquarters from Huntington to Charleston.

Prentice Burlingham, of the **Burlingham Coal Co.** of Cincinnati, with large operations in the Hazard and Harland field, was operated upon Dec. 4 for gallstones. Mr. Burlingham is one of the energetic members of the Cincinnati trade whose activities will be missed.

CANADA

NOVEMBER OUTPUT OF COAL IN BRITISH COLUMBIA

Vancouver Island District

Mine	Tons
Western Fuel Corporation of Canada, Nanaimo	[illegible]
Canadian Collieries, Comox	[illegible]
Canadian Collieries, Extension	[illegible]
Canadian Collieries, South Wellington	[illegible]
Granby Consolidated M.S.&P. Co., Cassidy	[illegible]
Nanoose Wellington Collieries, Wellington	[illegible]
Old Wellington, Nanaimo	[illegible]
Total	[illegible]

Nicola-Princeton District

Middlesboro Collieries, Middlesboro	[illegible]
Fleming Coal Co., Merritt	[illegible]
Coalmont Collieries, Coalmont	[illegible]
Princeton Coal & Land Co., Princeton	[illegible]
Total	[illegible]

Crow's Nest Pass District

Crow's Nest Pass Coal Co., Coal Creek	[illegible]
Crow's Nest Pass Coal Co., Michel	[illegible]
Carbon Coal & Coke Co., Carbon	[illegible]
Total	[illegible]
Total November	[illegible]

A strike called in District No. 18, U. M. W. A., [illegible] affected only certain coal mines in the Province of Alberta. The Crow's Nest Pass coal fields [illegible] Fernie and other points of interest [illegible] have been drawing [illegible] from the Drumheller district. Headquarters of the U. M. W. A. at Calgary [illegible] explained at the time that the action was directed against recognition and an agreement to negotiate a wage scale in the local coal [illegible]

[illegible] on strike, but [illegible] work in order to [illegible] a meeting to [illegible] grievances and that the [illegible] was to be investigated by the [illegible] There is no [illegible] [illegible] the [illegible] [illegible] county officials [illegible]

The United Mine Workers have been [illegible] in picketing the mines in the Lethbridge district of Alberta and [illegible] a good deal of [illegible] of the vice-president of the [illegible] Around the [illegible] [illegible] [illegible]

Traffic News

It is reported that the St. Louis & San Francisco R.R. will extend its tracks from Cassville, Barry County, Mo., to Eureka Springs, Carroll County, Ark., a distance of 20 miles.

It is understood that the Louisville & Nashville R.R. has issued specifications for a new steel bridge across the Kentucky River at Lock No. 4, to replace the present structure, which will be removed to make room for the Kentucky River Dam. The new bridge will be constructed in two sections, which will afford a 300-foot channel for navigation.

By an order entered Dec. 11 in Interstate Commerce Commission Docket No. 1211 the Chesapeake & Ohio Ry. Co. and other carriers were directed to cease and desist from the practice of charging demurrage on coal loaded in cars of the Kanawha & Hocking Coal & Coke Co. at Hocking, Ohio, after the expiration of the free time allowed by the Kanawha & Hocking Coal & Coke Co. tariffs. The commission's order will not affect the demurrage charges which may be collected by the Kanawha & Hocking Coal & Coke Co. on coal loaded in cars of other companies.

Rates on coal from Lake Superior points to Iowa, Wisconsin, Minnesota and North and South Dakota have been advanced by the Interstate Commerce Commission in a decision filed with the Secretary of the Commission, Dec. 11. The increases are from Lake Michigan docks to points in Wisconsin and 5¢ on the subject of coke, made by the C. Reiss Coal Co.

The Chesapeake & Ohio Ry. is opening a passenger ticket office in Ashland, Ky., with the agent who has been connected with the baggageman's office at Huntington in charge. This new office will be of great convenience to all persons in the Big Sandy Basin and Ashland.

The Coal and Coke Committee, Transportation Division, Council of National Defense, is preparing a hearing of the Coal Commission of Kentucky on the application of railroads in Central Kentucky and Southern Kentucky for permission to put into effect increased rates on coal from Louisville & Nashville R.R. points on Lee Junction to New Orleans, La. The hearing will be held in Room 511, Liberty Bldg., N. Y., at 10 A.M., Thursday, Dec. 21.

A reduction in coal rates from Alabama points on the Central of Georgia R.R. to Memphis, Tenn., is proposed by the carrier, which has filed with the Interstate Commerce Commission a tariff providing that the rates shall be given to points in Alabama on the Frisco to Memphis. Coal from the mines affected by the reduction now takes 32 cents per net ton, while the rate to Memphis via the Frisco is $1.07 per net ton.

Obituary

Edward A. Uhrig, president of the Mc-Graw Fuel Co., died in Kansas City, Dec. 12, after a short illness. Mr. Uhrig became a national factor in the coal trade when he organized the operations of all the large mines on Milwaukee docks for the Milwaukee Western Fuel Co. When H. M. Byllesby took the management of the company over in 1917 Mr. Uhrig was retained in the organization and was always given to understand that the Byllesby interests would not interfere with his management. Mr. Uhrig was also president of the Kansas City Fuel Co., the H. M. Byllesby Coal Co., the C. F. Kennedy Co., the F. B. Dyer Coal Co. and Thomas E. Durham & Co. He was a director of the Commercial Trust Co. and the Kansas City Clearing House Association. Funeral services were held Dec. 14 at the Country Club Christian Church, Kansas City, Mo., with interment in Mount Washington Cemetery.

Thomas J. Richards, one of the foremost coking men of Pennsylvania in the days of the boom in Connellsville, Pa., died at his home in Connellsville, Dec. 4, in his 78th year. Born in Swansea, South Wales, June 24, 1845, he came to America in 1865. In 1871 he entered the employ of Dilworth Brothers & Minor on the construction of Rainey Station No. 1. When the Dilworths were succeeded in the Connellsville region by the Frick Coke Co. Mr. Richards became general manager of the company. Mr. Richards was elected president of the Connellsville Coke Operators' Association in 1894 and served in that office for 10 years. He retired from active business in 1904, but remained a director of the Frick Coke Co. until 1918. He was also a director of the Union National Bank, Connellsville, from 1894 to 1918, when he resigned on account of ill health. He served as general manager of the Connellsville Gas Co. from 1886 to 1904, when he retired from the company.

Jordan Sykes, who is said to have been the first Connellsville coal field chief to go over the mines of Greenbrier, W. Va., Dec. 13, in the 69th year of his age. Mr. Sykes was born in Connellsville and began his coking career with the Connellsville Coke Co. in 1870. He was a pioneer in the Pocahontas field, having been one of the first to go there. He was also one of the first to go to Alabama. He was a member of the Masonic order and a prominent Elk. He is survived by a widow, two sons and a daughter.

Rockwell Marbetta, 73 years old, prominent railway and coal and coke operator of Fayette and Westmoreland counties, Pennsylvania, and first mayor of Connellsville, died Dec. 12 at his home in Connellsville.

Fred A. Marsh, general purchasing agent of the Link-Belt Co., died in Chicago on Dec. 14 at the age of 51 years. Mr. Marsh was a member of the Link-Belt organization for over 18 years, was one of the organizers of the Purchasing Agents' Association of Chicago, serving as its first president, and had been for some years a director in the National Association of Purchasing Agents.

William Stephan, 68, who had been in the coal coal business in St. Louis since 1867, died of heart failure on a street car in St. Louis Dec. 8. Born in Germany he came to St. Louis at the age of 19 and 2 years thereafter engaged in the coal business and established one of the most conservative high class coal firms in the city. In past years he represented large tonnages in this market, principally that of the Tuscan Coal Co. in the days before coal was brought in carloads to St. Louis, hauling being done from East St. Louis. Until recently his company engaged extensively in the jobbing business. He recently returned from a six months' trip in Germany and was tendered a banquet by the coal trade. His business for the past few years has been in charge of William Stephan, Jr. and O. H. Stephan. In addition he leaves a widow.

The coal industry lost another of its oldest and most prominent executives in the death of **Jesse M. Overton**, president of the Alabama Fuel & Iron Co., and also executive head of several mining operations in Tennessee, who was instantly killed in a collision between a taxicab in which he was riding and a trolley car at Nashville, Tenn., late Dec. 16. Mr. Overton was prominently identified with financial and civic institutions in Nashville, where he had long resided, and was widely known among business men of the South. He was a brother-in-law of Judge J. M. Dickinson, Secretary of War in Taft's Cabinet. He was 59 years of age.

Federal Fuel Control Notes

C. A. Magrath, chairman of the Federal Advisory Fuel Committee at Ottawa, Can., was informed today by C. E. Spens, Federal Fuel Distributor, that because of the acute shortage of anthracite in this country "there is no immediate prospect, if any at all, of equalizing the deficit existing on Dec. 1 in Canada's allotment," amounting to 15 per cent of last season's imports. Mr. Spens' telegram said he was aware of the fact that since Sept. 11, the date the order ceased, up to the first of December you have received only approximately 10 per cent of the allotment of domestic sizes," but "there are sections in this country that are suffering grievously despite that production is practically at a maximum and demand is constantly increasing. Rationing and compulsory mixing of steam with domestic sizes have been inaugurated in the most populous districts, which have heretofore been accustomed to using only domestic anthracite. Other substitutes are also being employed. We have no information that similar drastic steps have been adopted in Canada."

In reply to a recent letter addressed by Federal Fuel Distributor C. E. Spens to the Pennsylvania Fuel Commission relative to the necessity for a closer preparation of anthracite, Mr. Spens has been informed by Chairman W. O. B. Allen, of the Commission, that inspectors attached to the office of the Pennsylvania Department of Mines have been instructed by Governor Sproul to make visual inspections at the mines with regard to the quality and preparation of anthracite now being produced. This procedure was suggested by the Federal Fuel Distributor as a speedy and effective measure, in view of the familiarity of these inspectors with anthracite and the standards of its quality as shipped. The Federal Fuel Distributor has been informed by the Anthracite Coal Operators' Association, of Philadelphia, that all members of that organization have been urged to conform immediately to the Fuel Distributor's requirements in the preparation of anthracite. This association controls about 85 of the so-called "independent" companies producing approximately 50 per cent of the "independent" tonnage.

Continuation of the present policy of requiring the mining of a minimum amount of coal at each operation on leased government lands in twelve Western states, taken into account with the production of mines now operating on private lands, promises to result in a total annual coal-mine capacity in that region of 80,000,000 tons within two years, declares H. Foster Bain, Director of the U. S. Bureau of Mines, in a memorandum submitted to the U. S. Coal Commission. As the maximum war-time market for coal from these states was 40,000,000 tons per year, the large production increase seems certain to bring about the same unhealthy condition, the same loss of capital, and the same distress among miners in the Western coal mining industry that was so marked a feature of 1921 in the coal industry of the East and Middle West. "The general leasing law of Feb. 25, 1920, is mandatory so far as requiring the Secretary of the Interior to divide the land into leasing blocks is concerned, but it apparently permits his discretion as to when and by what general method leases shall be granted," states Director Bain. The states affected by the coal-leasing program are California, Colorado, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington and Wyoming. Coal is produced in Alaska under the provisions of separate legislation.

Association Activities

Winding Gulf Operators' Association

E. E. White, of the E. E. White Coal Co., operating in the Raleigh County field of West Virginia, was re-elected president of the Winding Gulf Operators' Association at the annual meeting of the association held at White Sulphur Springs on Dec. 12. This is the fourteenth consecutive time that Mr. White has been chosen to lead the association. Other officers elected were C. H. Mead, Beckley, vice-president; A. W. Laing, MacAlpin, treasurer; George Wolfe, of Beckley, secretary.

Topics engaging the attention of the meeting were car allotment and distribution and car shortage. J. R. Cary, general superintendent of the Eastern division of the Chesapeake & Ohio; S. M. Adsit, traffic manager of the Virginian, and W. H. League, chief car distributor of the Virginian, were present and discussed the above questions. Other guests were George H. Bailey, of the American Mining Congress, of Washington; W. A. James, secretary of the Beckley Chamber of Commerce; Charles Hodel, editor of the Raleigh Register, and William MacTaggert, agent of the Beaver Land Co.

A luncheon was held at the Greenbrier Hotel at the close of the business meeting.

Trade Literature

Westinghouse Electric & Mfg. Co., of East Pittsburgh, Pa., has issued a 20-page booklet, folder 4506, entitled **"Salient Facts on Silent Gears,"** describing the advantages of the use of Micarta gears and pinions. The booklet is well illustrated and contains gear data which enables the gear user to judge whether they are applicable to his machinery.

Small Reinforced Concrete Coaling Plants. Roberts & Schaefer Co., Chicago, Ill. Bulletin 49. Four-page folder showing views of one-track coaling plant, Simplex skip bucket and loader.

Coming Meetings

American Engineering Council will hold its annual meeting Jan. 11 and 12 at the headquarters of the Federated American Engineering Societies, 24 Jackson Place, Washington, D. C.

Northeast Kentucky Coal Association will hold its annual meeting Jan. 23, 1923, at the Ventura Hotel, Ashland, Ky. Secretary, C. J. Neekamp, Ashland, Ky.

Northern West Virginia Coal Operators' Association will meet Feb. 13 at Fairmont, W. Va. Secretary, G. S. Brackett, Fairmont, W. Va.

American Institute of Mining and Metallurgical Engineers will hold its annual meeting Feb. 19-22, 1923, at the Engineering Societies Building, New York City. Secretary, F. F. Sharpless, New York City.



The Stonega Coal Pile—

your never-failing source of supply

Not only are our mines non-union and thus able to continue operations during strike disturbances, but we are equipped far better than the majority of coal companies to meet the demands of our customers.

One of the plans we put into effect to meet the excess demand during the war still continues to function. Our central storage yard, capacity approximately 125,000 tons, is an inexhaustible source of supply to our customers.

The low-sulphur contents of Stonega Coal is demonstrated in its adaptability to storage purposes. At different times this pile of coal, thirty feet high, remained untouched during the most extreme weather conditions. Surprising as it may seem, the change of temperature throughout the pile, during this time, was barely perceptible. This fact was definitely established by means of a system of piping extending into the pile at stated intervals and temperature readings taken frequently.

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It takes all kinds of people to make a world



Nineveh Shaft

YES, and many kinds of conditions to make up the mining industry — mines with a forest of props, behind and among which miners play hide and seek as they shovel coal into a car, and mines with the roof like a bell that stands up without propping, seams thick and thin, workings gasless and gassy and so forth. For each condition there is an appropriate solution. The one the working to suit which is made the subject of Mr. Cornet's paper in next week's *Coal Age* is not one of either extreme. His plan is suited to roof such as is likely to be found in many American mines and is based on the practice he has found established in Belgium.

ANOTHER article describes the Nineveh Mine, at Seward, Pa., where solid cars are hoisted in self-dumping cages. As a result of the stiffness that the use of steel and the absence of a gate confers it has been possible to provide a capacity of 1½ tons in a car that affords 12 in. of headroom in a seam 3 ft. 8 in. thick. More and more is emphasis being placed on a big car as a tonnage producer. Electric gathering locomotives, better bearings and wheels, car bodies that hold their shape and straight steel room tracks are making the big car popular with the miner and operator. It is no longer a questionable expedient.

SOME PEOPLE have wanted to know if we could not use German brown-coal methods for the manufacture of briquets. O. P. Hood, chief mechanical engineer of the U. S. Bureau of Mines, will tell in next week's issue, why it cannot be done. German brown coal has its own binder and, by the way, for most of it little else commendatory can be said, for it is a badly watered stock. Only one-third of it is consumable. Mr. Hood's article is quite readable and summarizes facts, some of which, at least, were known back in the first decade of the century to the Technological Branch of the Geological Survey.

IT USED TO BE thought well to ventilate stacked coal and keep it cool. Now we tend to do the reverse, pack it tight, knowing that where air is excluded coal will not burn. In the tight seam under tons of rock the coal has kept from ooo to ooo and generation to generation free from spontaneous combustion, even though the internal fires of the earth, intrusions of molten matter and the heat of mountain-forming movement warmed it. It could not burn so long as it had no air. A Philadelphia electric company has found a way to compress the coal in a stockpile so that it is nearly air-free and therefore largely fire-free. Read what it has to say next week.

Coal Age—Next Week

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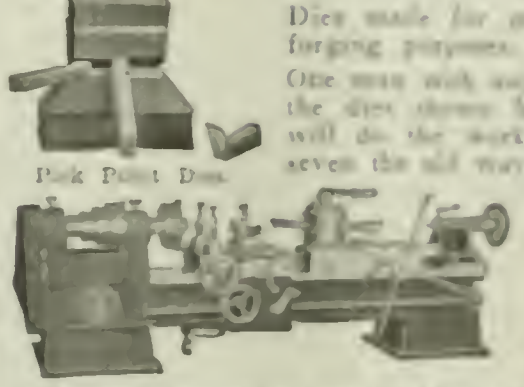
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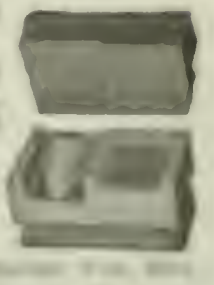
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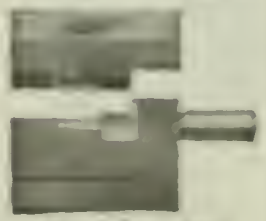
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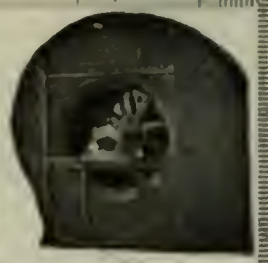
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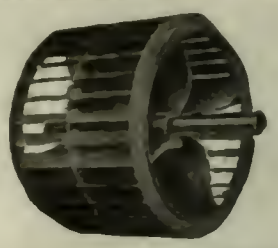


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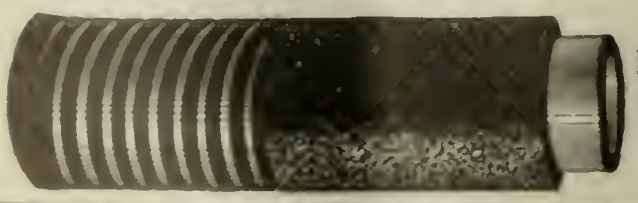
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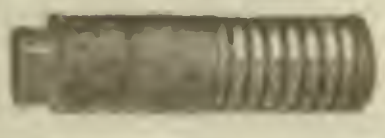
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Nº 4

OF A SERIES OF ARTICLES PICTURING THE INFLUENCE OF THE ENGINEER IN THE AFFAIRS OF THE WORLD. PRESENTED BY THE McGRAW-HILL COMPANY, INC., WHOSE PUBLICATIONS HAVE SERVED THE ENGINEER THROUGH HALF A CENTURY OF INDUSTRIAL PROGRESS

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Electrical World

Electrical Merchandising

American Machinist

Industrial Engineer
(Published in Chicago)

Engineering and Mining Journal-Press

American Machinist
European Edition
(London)

THE BREADTH OF ECONOMICS

AN old word with a new meaning has been introduced into the affairs of men. The power of words is very great and an understanding of them is one of the essentials to progress.

¶ The advancement of humanity hinges, to an almost menacing extent, upon a complete conception of the word *economics*. Once popularly confined to finance, it has grown to involve the whole realm of human activity.

¶ Now man is the economic factor in the work of the world. Whatever he does, the result—time, effort, ability and resources engaged—must prove up under the standards of economics, or be judged unworthy.

¶ But who has brought about this change, this revision in the conception of man's advancement, of man's inevitable responsibility? And who has given this word so vast a power over human destinies and has caused so gigantic a revolution for the benefit of all humanity?

¶ The engineer. His is the responsibility. He it is who has introduced economics into all the affairs of men. He it is who has provided the world with a new basis for judgment and appreciation.

¶ The engineer, who has made life assume a scientific instead of a chaotic aspect; who has developed an exactness of procedure; who has worked out cause and effect on a calculable basis; who is even now reducing the fever of misapplication of life's priceless energies and putting them to the service of constructive happiness.

¶ It will be many generations before the mass of humanity knows and acknowledges its debt to the engineer, who so quietly brings about such stupendous revolutions and revelations, and who takes the past and links it to the present for the benefit of the future.

¶ Yet while the acknowledgment may be long in coming, the engineer has his reward in the knowledge of work well done, in the joy of accomplishment, in the feeling of power which gives him the opportunity to direct the courses of men even before they are aware of the source of authority.

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Engineering News-Record

Electric Railway Journal

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Before Gilbert died in 1603, he had done much to explain magnetism and electricity through experiment. He found that by hammering iron held in a magnetic meridian it can be magnetized. He discovered that the compass needle is controlled by the earth's magnetism and that one magnet can remagnetize another that has lost its power. He noted the common electrical attraction of rubbed bodies, among them diamonds, as well as glass, crystals, and stones, and was the first to study electricity as a distinct force.

"Not in books, but in things themselves, look for knowledge," he shouted. This man helped to revolutionize methods of thinking—helped to make electricity what it has become. His fellow men were little concerned with him and his experiments. "Will Queen Elizabeth marry—and whom?" they were asking.

Elizabeth's flirtations mean little to us. Gilbert's method means much. It is the method that has made modern electricity what it has become, the method which enabled the Research Laboratories of the General Electric Company to discover new electrical principles now applied in transmitting power for hundreds of miles, in lighting homes electrically, in aiding physicians with the X-rays, in freeing civilization from drudgery.

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Bituminous Coal Mine Accounting

By T. S. Reed, formerly secretary of the National Coal Association, consulting accountant, formerly auditor for the Rock Island Railroad, the Illinois Coal Operators' Association, and the Bituminous Coal Committee.

221 pages, 6 x 9, 67 forms, $3.00 postpaid

A uniform cost-finding system for bituminous coal mines

THIS book has grown out of the universally recognized need for a system of accounting and cost-keeping which could be applied throughout the bituminous coal mining industry. It is the work of the former secretary of the National Coal Association, who was selected for that post to direct the construction of the uniform cost-keeping system which this book describes. The system recommended by the Cost Accounting Committee of the Association is set forth in detail and with numerous helpful forms.

A Summary of Contents

The book opens with a very comprehensive discussion of the accounting forms required by governmental authorities, as well as those which are recommended by the various coal mining bodies of the United States Government.

Succeeding chapters deal with the accounting record, the pay roll record, and the records of product and distribution. The many forms are explained, followed by chapters on accounting for expense, for power, supplies and purchases, and for depreciation of property.

A lengthy chapter is given to the subject of accounts to which the various items of the profit and loss statement are charged. The closing chapters contain several valuable miscellaneous forms.

The subject of depreciation is handled with great thoroughness and the various methods for proper appropriation to the profit and loss account are explained. Other important subjects, including the treatment of royalties, are discussed, and each paragraph set forth in such a manner that it is readily understood by a reader not familiar with the subject. The book can be used as a text book on the subject.

The number system is flexible in detail and the complete chapter is arranged so as to facilitate the handling of the books with a minimum of clerical work.

CONTENTS

Uniform Cost Accounting
The Mine Tonnage Record
The Day Labor Record
Yardage and Dead Work Record
Daily Cost Sheets
Accounting for Supplies
Power House Fuel
Royalties
Depletion of Mineral
Amortization of Leasehold Value
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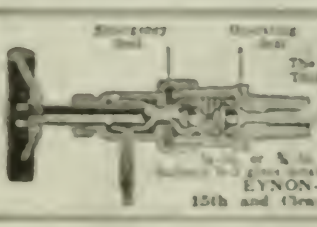
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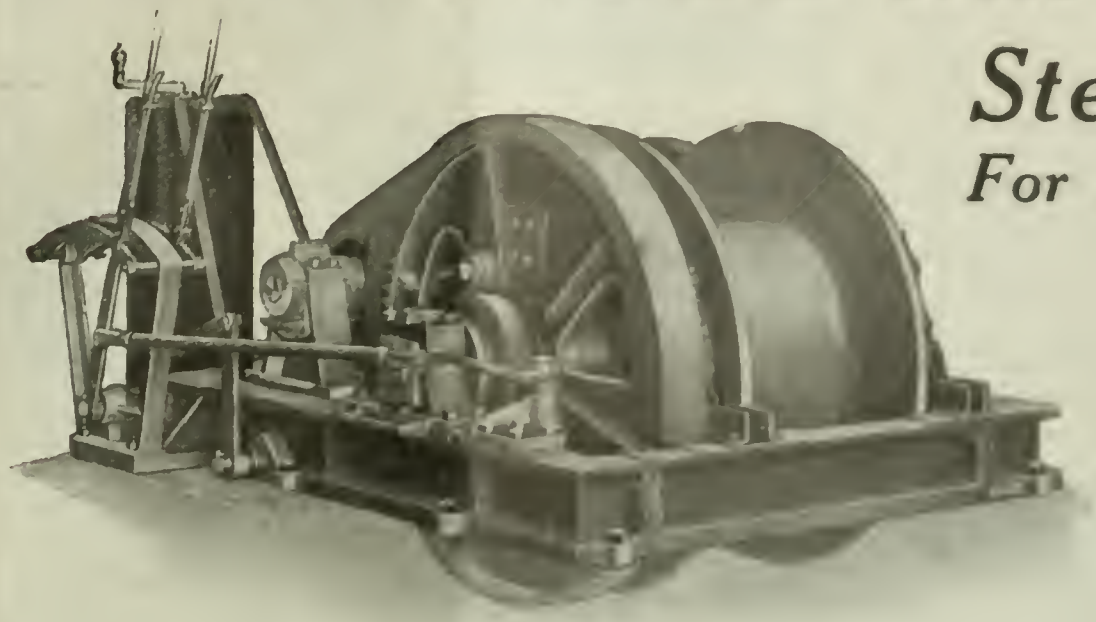


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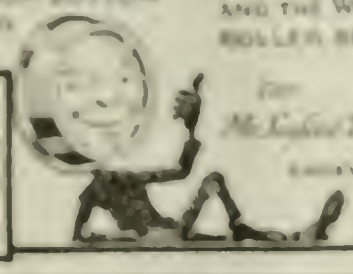
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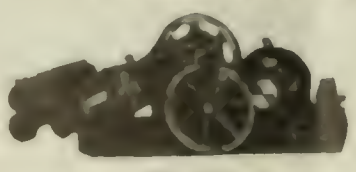


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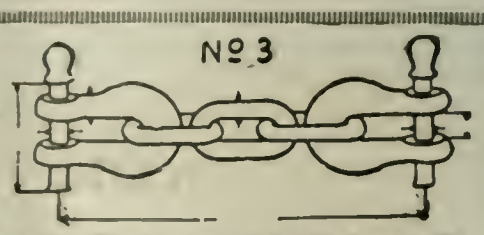
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If so, we are ready to show you.

Here's a ninety-day trial plan which is framed to interest the most discriminating.

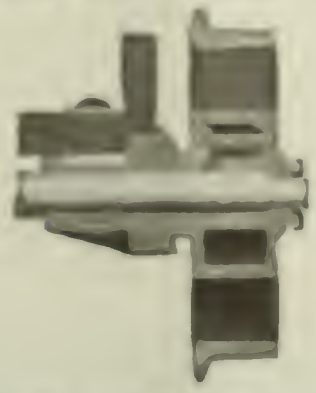
We will ship to your mine as many barrels of Hulburt's Mine Car Grease as you may consider necessary to make an extended test. We will make shipments on a 90-day trial basis. If at the end of the test you are not entirely convinced that our Grease produces better results than any other grease you ever tried, and at a lower cost, we will accept settlement for the quantity used on such basis as YOU may consider equitable considering the service YOU obtain from them.

We'll be glad to tell you more about this plan

HULBURT OIL & GREASE CO.
General Offices & Works
Philadelphia, Pa.
Manufacturers of Hulburt's Thoroughbred Coal Tools

Holds Lubricant
for long periods—

Is seldom stopped on account of truck trouble.
Is easily applied with a few large bolts.
Is guaranteed for a year against body wear.
Has ball-bearing yoke with roller bush pins.



PHILLIPS
Patent Open Cap Wheel Truck

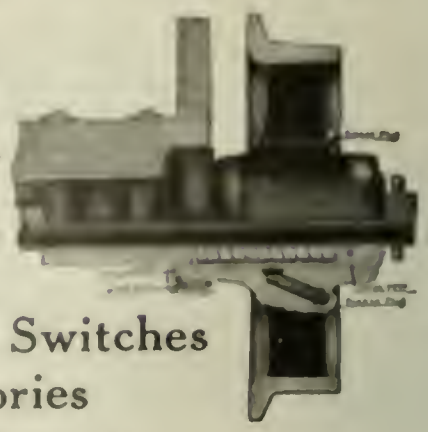
This Truck is the ideal running gear for large or small mines, light or heavy cars, animal or mechanical haulage. It will solve that problem of hard-running cars—on level track it runs 25 per cent easier than other improved trucks selling at the same price.

Write us today

Phillips Mine and Mill Supply Co.
So. 23rd and Jane Sts., Pittsburgh, Pa.

HELMICK

Mine Cars

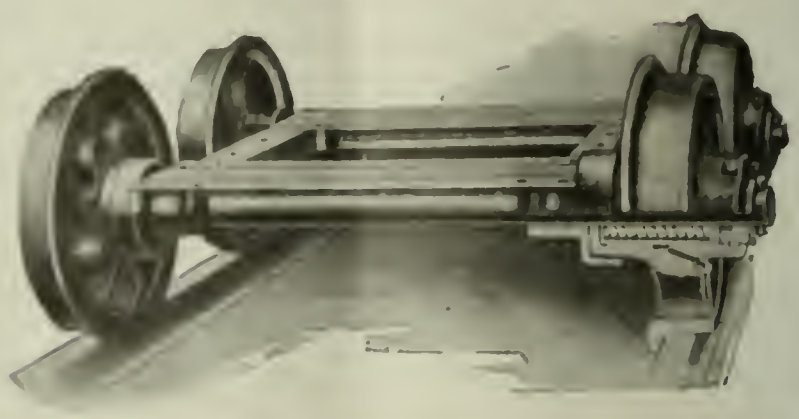


Designed especially for your needs.

Service and workmanship unsurpassed.

Steel Rail Frog Switches and Accessories
Roll Back Dumps

Helmick Foundry & Machine Co.
Fairmont, W. Va.





Recognition

The Hockensmith Wheel and Mine Car Company takes pride in announcing that it has accepted an invitation from the *Vice Leaders of the World Association* to represent the manufacturers of Mine Cars, Wheels and Trucks in this world-recognized institution.

It is a source of satisfaction to us to know that it is to be our privilege to promote in company with America's foremost business organizations those principles of highest quality in product and highest standards in service to which we as an individual corporation attribute our success.

Hockensmith Wheel & Mine Car Company
Penn, Pennsylvania
(Pittsburgh District)

OHIO
MINE CAR GREASE

OHIO
Mine Car Grease

is the ideal lubricant for car wheels inasmuch as its composition renders it immune from the destructive action of mineralized water.

The wheels of a mine car, perhaps more than any other, are subjected to repeated stresses and strains and, therefore, require the greatest degree of lubrication.

OHIO MINE CAR GREASE is particularly adapted to these trying conditions. It has been checked by our own engineers who have observed lubricants at work on all types of wheels, plain, ball or roller bearing, in all kinds of mines, from the smallest to the largest, all over the country; when they recommend a particular grade—you can rest assured it is the best suited to your individual requirement.

This service is FREE—
Avail yourself of it

THE OHIO GREASE COMPANY
LOUDONVILLE, OHIO

LOBDELL

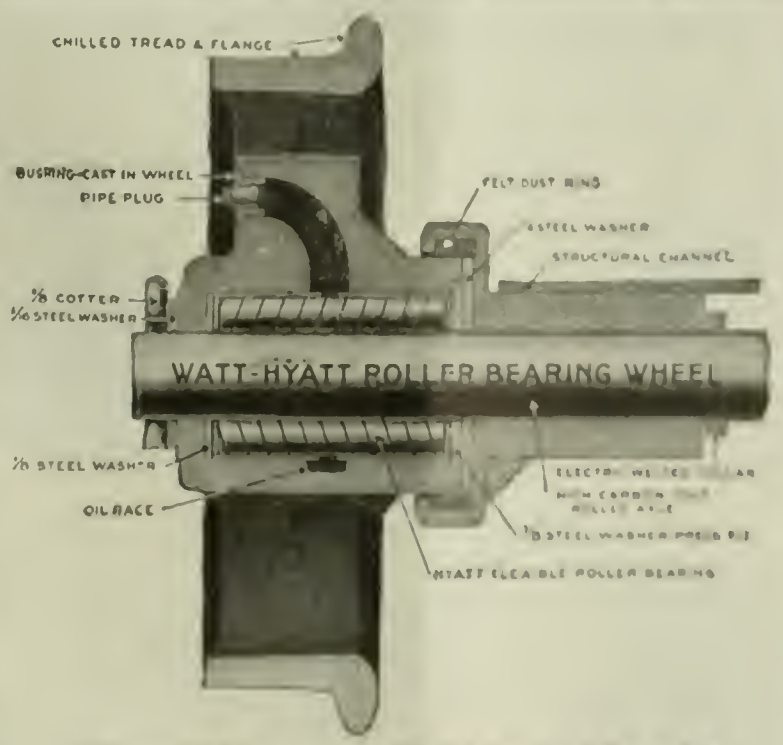
Mine Car & Locomotive Wheels

Their extraordinary length of good service is the outstanding feature of LOBDELL wheels.

It is the result of over eighty-five years of wheel making experience and is demonstrated by the experiences of hundreds of satisfied users.

Send us your specifications for prices.

LOBDELL CAR WHEEL COMPANY
Established 1836
WILMINGTON, DELAWARE.



The "Famous" Watt-Hyatt Roller Bearing Wheel

"Thousands in use and not a single word of complaint." —TODAYS PRODUCTION—demands a wheel of such a reputation.

—Write for information and description.

Builders of MINE CARS since 1863

The Watt Mining Car Wheel Co.
Barnesville, Ohio

Denver: Lindrooth, Shubert & Co. Boston Bldg.
San Francisco: N. D. Phelps Monadnock Bldg.



Expert Service Without Cost

REALIZING that your production costs can be reduced by overcoming friction losses, we maintain what is probably the most proficient consulting staff of lubricating engineers in this country to help you solve your lubricating problems.

These men are first of all good mechanical engineers but some of them are mining engineers of distinction as well. Understanding completely, the function and operation of every piece of machinery in your plant, from the huge, humming power-generating dynamos, to the smallest, chattering air drills, they are well qualified, both by experience and training, to advise you regarding correct lubrication.

Being absolutely free, the services of these men should be used frequently by you. You may consult them regarding only one motor or machine, or they will investigate your entire plant and recommend the correct lubricant for each item.

While these men are experts themselves, to confirm their decisions they have behind them the experience of this company, extending over a third of a century, in manufacturing oils and greases for the efficient and therefore economical lubrication of possibly every conceivable type of machine.

These lubricants are guaranteed by us. Our experience has guided the selection of the materials used in manufacturing them and our laboratories have taken the finished products and by actual working tests proved them to be perfect for the work to be performed.

If you have lubrication problems, avail yourself of this expert service offered to you without cost. You will find it a pleasure to do business with such men as these, not as many other operators are found with them throughout. A card addressed as this ad is, to the nearest station to you will bring immediate action.

STANDARD OIL COMPANY

(INDIANA)

944 S. Michigan Ave., Chicago, Ill.



Reid Safety Frog

Style "B" Bolted to Rail

It is as easy to lay the Reid Safety Frog as it is to lay a rail. Just level up the bed, spike and bolt in place—nothing to change—no special tools.

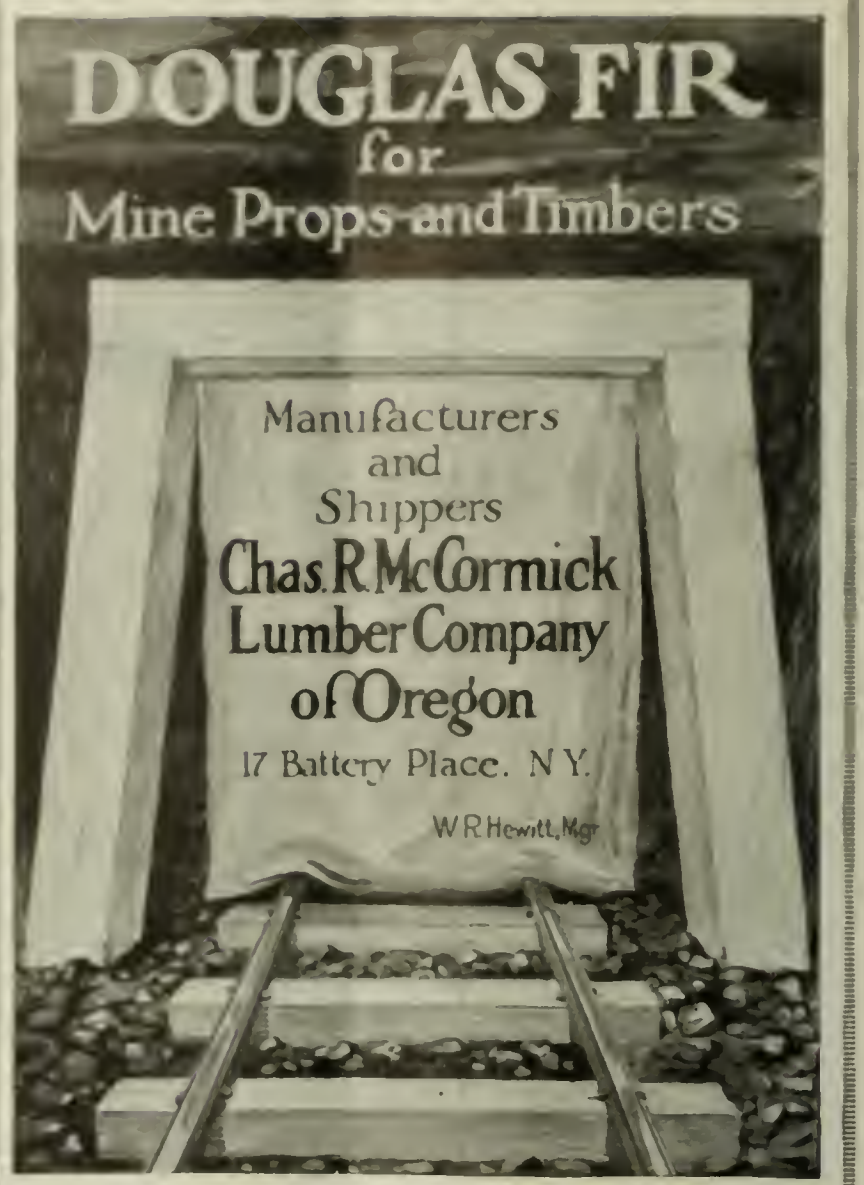
The only replaceable working parts are the two manganese steel wearing members.

Illustrated price list and data for installing Reid Safety Frogs.

Egyptian Iron Works

"Dept. C. A."

Murphysboro, Ill.





WHY



Let Jack Horner Get All The Plums?

If ground haulage is eating yours, an

Automatic Aerial Tramway

Will save them for you

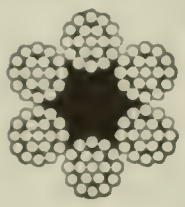
Write for Details

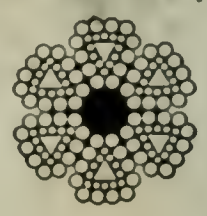
Interstate Equipment Corporation

25 Church Street, New York City

Leschen Mine Hoisting Ropes

Leschen Wire Ropes for mine hoisting are furnished in both Round and Patent Flattened Strand constructions and in different grades of material. For heavy work we recommend Hercules (Red-Strand) Rope. Every Leschen rope is rigidly tested to insure constant uniformity.





64 Years in Business

A. Leschen & Sons Rope Co.

St. Louis, Mo.

New York Chicago Denver San Francisco



The

West Virginia Rail Co.

Manufacturers

Light Steel Rails

and Accessories

Huntington, W.Va.





ANACONDA

Trolley Wire



Anaconda Copper Mining Co. 111 W. Washington St., Chicago



Send for catalog in Keystone Mining Catalog



8, 12, 16, 20, 25, 30, 35, 40 lb. per yard

Splices, Spikes, Frogs and Switches

UNITED STATES RAIL CO.

CUMBERLAND, MARYLAND

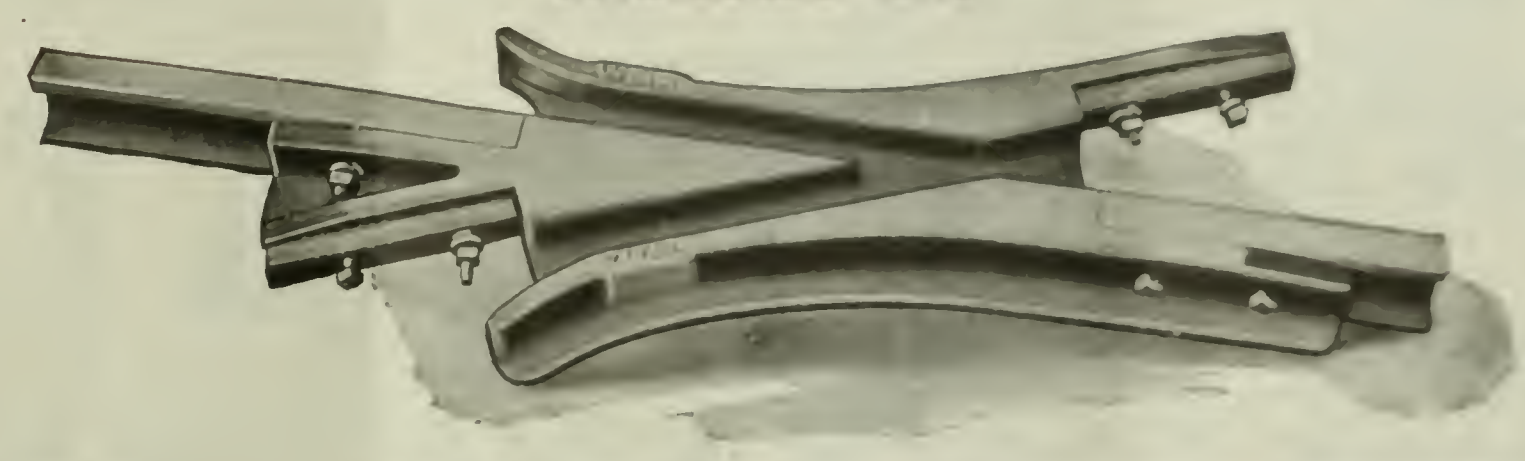
Weir TITAN Frogs Are Trouble-Proof

When you install Weir TITAN Frogs in your mine tracks you relieve yourself of all trouble previously due to loose, rattling, unstable frogs. Why? Because Titan Frogs are cast in one solid piece as illustrated below, from titanium steel. They fit standard rails of all weights and when securely bolted into place are proof against breakage from any ordinary cause. In point of service TITAN Frogs are by far the most economical.

Our Catalogue fully describes the entire line of Weir track equipment

Weir Frog Company
Cincinnati, Ohio
Established 1882

Our guarantee is your protection



FROGS - CROSSINGS - SWITCH STANDS - SWITCHES - ROOM TURNOUTS - ETC.

TRADE MARK

Sensible Buying

The well-known principle behind all purchasing is that of securing best possible value. With this in mind we call your attention to "Cincinnati" Track Equipment as being thoroughly adapted to your needs and affording maximum service per dollar spent. Full particulars will be sent on request.



Ground Throw with Spring Connecting Rod.
In two sizes. Type ASD2 for 12 to 35 lb. rails and DLSD2 for 40 to 50 lb. rails.
Made of malleable iron, die formed and forged steel.
Switch points prevented from breakage.

The "Cincinnati" Frog & Switch Company
Cincinnati, O.

"CINCINNATI"

Get Preferred Attention—Mention Coal Age in Writing Advertisers

Speed is important



Now, if ever in the history of coal mining speed is important. A huge handicap must be overcome if every one passes the winter in comfort and industry does not feel the pinch of fuel stringency.

And not the least among the factors by which speedy production may be obtained is your tracks and the switches, frogs, crossings, switch stands and turnouts that contribute to their safety.

See that all extensions and renewals includes Central Mine Track Equipment. This is not a time when anything short of the best can be relied upon.

Call "Central" and ask for "Information"

The Central Frog & Switch Co.
Cincinnati, Ohio

CENTRAL
MINE TRACK EQUIPMENT

Ever had to RE-timber?

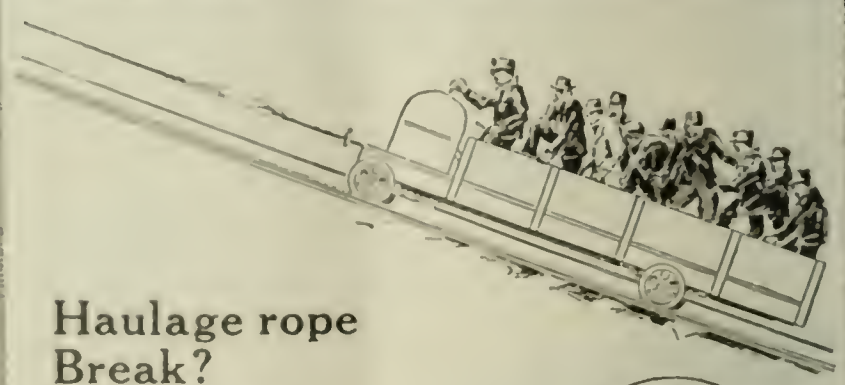
Not when you've used

CARNEGIE
Steel Mine Timbers

When given proper attention Steel Mine Timbers will outlive the mine—hence are especially recommended for use in entry, drifts and permanent workings. Their low cost—considered in the attention they are giving in the many ways in which they have been installed

[illegible]

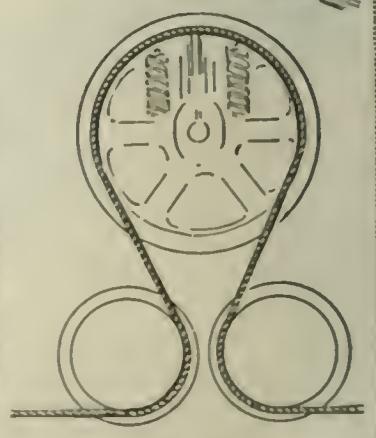
Carnegie Steel Company
[illegible]



Haulage rope Break? No matter!

Absolutely no danger in this new Prockter Safety Car. The heavier the load and the steeper the grade, the tighter the brake will hold

It works by means of friction. Two extra ropes are laid throughout the entire length of the incline. At the top these are attached to a concrete foundation; at the bottom they are weighted. Within the mechanism of the car these ropes are guided around a V-grooved pulley. The brake is applied to this main pulley either automatically by means of a governor or by a hand wheel.



Send for your copy of the new Prockter Bulletin.

Safety Appliance Co.
Huntington, W. Va.

PROCKTER SAFETY CAR

WHAT AND WHERE TO BUY

A Classified Index of Advertisers in this Issue

For Alphabetical Index See Last Page

Aerial Tramways
Broderick & Bascom Rope Co.
Interstate Equipment Corp.
Leschen & Sons Rope Co., A.

Air Aftercoolers
Chicago Pneumatic Tool Co.

Air Receivers
Chicago Pneumatic Tool Co.

Angles, Beams, Channels, etc.
Carnegie Steel Co.

Armature Repair Machinery
Electric Service Supplies Co.

Armatures and Field Coils
Chattanooga Armature Wks.

Ash Handling Machinery
Combustion Engr'ing Corp.
Link-Belt Co.

Bags
Bemis Bros. Bag Co.

Bars
Carnegie Steel Co.

Battery Boxes
Paragon Electric Co.

Bearings, Ball & Rubber
Hyatt Roller Bearing Co.

Belt Dressing
Keystone Lubricating Co.

Belts, Conveyor
Link-Belt Co.

Belts, Transmission
Link-Belt Co.

Bit Sharpeners
Little Giant Co.
Sullivan Machinery Co.

Bit Steel & Mining Mch. Bits
Pgh. Knife & Forge Co.

Blasting Supplies
Du Pont de Nemours & Co., Inc., E. I.

Blowers
Buckeye Blower Co.
Eynon-Evans Corp.

Boilers, Water Tube
Babcock & Wilcox Co.

Bonding Machines
Electric Railway Impt. Co.

Books, Coupon
Allison Coupon Co.

Books, Technical
McGraw-Hill Book Co., Inc.

Box Car Loaders
Link-Belt Co.

Breaker Machinery
Bartlett & Snow Co., C. O.
Vulcan Iron Works
Wilmot Engineering Co.

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Orton & Steinbrenner Co.

Buckets, Coal Handling
Link-Belt Co.

Buckets, Elevator
Bartlett & Snow Co., C. O.
Hendrick Mfg. Co.
Link-Belt Co.

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Interstate Equipment Corp
Ledgerwood Mfg. Co.

Cagers, Automatic
Car-Dumper & Equip. Co.
Holmes & Bros., Inc., Robt

Cages
Morrow Mfg. Co.
Vulcan Iron Wrks

Cages, Self-Dumping
Car-Dumper & Equip. Co.

Car Hauls
Jeffrey Mfg. Co.
Link-Belt Co.

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Car-Dumper & Equip Co.
Mining Safety Device Co
Phillips M. & M. Supply Co

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Helmick Foundry-Mch Co
Hockensmith W. & M Car Co.
Irwin Fdry & Mine Car Co
Lobdell Car Wheel Co
Phillips M. & M. Supply Co.
Sanford-Day Iron Works
Watt Mining Car Wheel Co

Cars, Mine Air Compressor
Chicago Pneumatic Tool Co

Cars, Roller Bearings for
Hyatt Roller Bearing Co.

Cars, Steel Mining
Hendrick Mfg. Co.

Castings
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Falk Corp.
Hockensmith W. & M. Car Co.
Lobdell Car Wheel Co.
Nuttall Co., R. D.
Sanford-Day Iron Works
Vulcan Iron Works

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Cement-Gun Co., Inc.

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Chemicals
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Chutes
Sanford-Day Iron Works

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Bartlett & Snow Co., C. O.
General Electric Co.

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Ohio Brass Co.

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Link-Belt Co.

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Jeffrey Mfg. Co
Link-Belt Co
Roberts & Schaefer Co.

Coal Storage & Rehandling Mchry.
Jeffrey Mfg. Co.
Link-Belt Co.

Coke Oven Drawing and Leveling Machines
Atlas Car & Mfg. Co

Commissary Equipment
Automatic Refrigerating Co.

Commutators
Chattanooga Armature Wks.

Compressors, Air
Allis-Chalmers Mfg. Co
Cement Gun Co., Inc.
Chicago Pneumatic Tool Co
Denver Rock Drl. Mfg. Co
General Electric Co
Sullivan Machinery Co

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Deister Concentrator Co.
Deister Machine Co

Concrete Construction
Cement-Gun Co., Inc.

Concrete Finishing Tools
Cement-Gun Co., Inc.

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Goodman Mfg. Co.

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Cross Engineering Co.
Jeffrey Mfg. Co
Link-Belt Co.

Conveyors, Coal
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Hendrick Mfg. Co
Jeffrey Mfg. Co.
Link-Belt Co.
Marion Mch. F. & S. Co
Robins Conveying Belt Co

Couplings Mine Car
Hockensmith W. & M. Car Co.

Cranes
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Link-Belt Co.

Cranes, Locomotive
Orton & Steinbrenner Co

Cranes, Traveling
Niles-Bement-Pond Co

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Bartlett & Snow Co., C. O.
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Marion Mch. F. & S. Co
Orton & Steinbrenner Co
Penn Crusher Co
Vulcan Iron Works

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Carlin Mach. Co., John H.
Cohen & Son, L.
Crawford Machinery Co.
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Ellis, A. Lee
Foster Co., H. M.
Foster, L. B.
Frank, M. K.
Green, L. A.
Gregory Electric Co.
Harris Bros. Co.
Hollander Equip. Co.
Kane, Thos. A.
Miller-Owen Electric Co.
Moorhead Elec. Mchry. Co
Morrison-Rissman Co.
Nashville Industrial Corp
National Steel Rail Co.
Power Mchy. Exchange, Inc.
Sachsenmaier Co., Geo.
Scranton Engineering Co.
Sheinert Co., R.
Sherwood, E. C.
Standard Rail & Steel Co.

Diamond Core Drill, Contracting
Diamond Drilling & Exp. Co.
Hoffman Bros.
Longyear Co., E. J.
Punxsutawney D. & C. Co.
Sullivan Machinery Co.
West Virginia Drilling Co.

Dies, Plain & Form Forging
Little Giant & Co.

Drafting Materials (See Eng. Instruments and Supplies)

Driers, Sand
Electric Service Supplies Co.

Drills, Air
Chicago Pneumatic Tool Co.
Sullivan Machinery Co.
Whitcomb Co., Geo. D.

Drills, Air (Portable)
Denver Rock Drill Mfg. Co.

Drills, Core
Chicago Pneumatic Tool Co.
Longyear Co., E. J.
Sullivan Machinery Co.

Drills, Electric
Chicago Pneumatic Tool Co.
Cincinnati Elec. Tool Co.
Jeffrey Mfg. Co.
Sullivan Machinery Co.
Western Electric Co.

Drills, Electric (Portable)
Cincinnati Elec. Tool Co.
General Electric Co.
Western Electric Co.

Drills, Power
Chicago Pneumatic Tool Co.
Denver Rock Drill Mfg. Co.

Drills, Rock
Chicago Pneumatic Tool Co.
Denver Rock Drill Mfg. Co.

Drives, Silent Chain
Link-Belt Co

Dumps, Cross-Over
Hendrick Foundry Mch. Co.
Phillips M. & M. Supply Co.
Sanford-Day Iron Works

Dumps, Rotary
Car-Dumper & Equip. Co.

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Dynamos (See Generators)

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Electric Service Supplies Co.

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Gregory Elec. Co.
Miller-Owen Elec. Co.
Power Mchy. Exch. Co.
Schuchert & Co., R.

Electric Apparatus & Supplies
General Electric Co.
Western Electric Co.

Elevators and Conveyors
Jeffrey Mfg. Co
Link-Belt Co

Engineering Instruments and Supplies
Buff & Buff Mfg. Co.

Engineering & Technical Books
McGraw-Hill Book Co., Inc.

Engines, Corliss
Vulcan Iron Works

Engines, Hoist and Haulage
Holmes & Bros. Inc., Robt.
Vulcan Iron Works

Engines, Oil
Chicago Pneumatic Tool Co.

Engines, Steam
Chicago Pneumatic Tool Co.
Stumpf Una Flow Engine Co.

Engines, Steam Una-Flow
Stumpf Una-Flow Engine Co.

Explosives
Du Pont de Nemours & Co., Inc., E. I.

Explosives, Permissible
Du Pont de Nemours & Co., Inc., E. I.

Fans, Ventilating
Buckeye Blower Co
Jeffrey Mfg. Co.
Robinson Ventilating Co.
Vulcan Iron Works
Western Electric Co.

Floodlights, Portable
General Electric Co.
Western Electric Co.

Fittings, Wire Rope (See Rope, Wire)

Fuses, Electric
Western Electric Co.

Gage Cocks
Eynon-Evans Corp.
Lunkenheimer Co.
Ohio Brass Co.

Gages, Water, Boiler and Locomotive
Ohio Co.
Jenkins Bros.
Lunkenheimer Co.
Ohio Brass Co.

Gear Cases
Electric Service Supplies Co.

Gears
Falk Corp.
Farrel-Birmingham Co., Inc.
Farrel Foundry & Mch. Co.
Hendrick Mfg. Co.
Morse Chain Co.
Nuttall Co., R. D.
Sanford-Day Iron Works
Vulcan Iron Works

Greases
Buckeye Oil & Grease Co.
Keystone Lubricating Co.
Ohio Grease Co.
Sanford-Day Iron Works
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Little Giant Co.
Sullivan Machinery Co.

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Ohio Brass Co.

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General Electric Co.

Hoisting, Mine Car
Pgh. Knife & Forge Co.

Hoists
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Hoists, Cableways
Flory Mfg. Co., S.

Hoists, Chain
Wright Mfg. Co.

Hoists, Rock
Ledgerwood Mfg. Co.

Hoists, Electric
Allis-Chalmers Mfg. Co.
Buffalo Tool & Supply Co.
Hendrick Mfg. Co.
Ledgerwood Mfg. Co.
Link-Belt Co.
Morse Chain Co.
Sullivan Machinery Co.
Thomas Elevator Co.
Vulcan Iron Works

Hoists, Mine
Flood City Mfg. Co.

Hoists, Portable
Chicago Pneumatic Tool Co.
Denver Rock Drill Mfg. Co.
Sullivan Machinery Co.

Hoists, Slide
Bartlett & Snow Co., C. O.

Hoists, Steam
Allis-Chalmers Mfg. Co.
Buffalo Tool & Supply Co.
Ledgerwood Mfg. Co.
Sullivan Machinery Co.
Thomas Elevator Co.
Vulcan Iron Works

Hole Punching Machine
Dodge Sons Mfg. Co.

Hose, Air
Chicago Pneumatic Tool Co.

Hydraulic Machinery
Allis-Chalmers Mfg. Co.

Incline Plane Machinery
Fairbanks, Morse & Co.
Sanford-Day Iron Works

Injectors and Ejectors
Ohio Co.
Eynon-Evans Corp.
Jenkins Bros.
Lunkenheimer Co.

Insulating Bushing
Electric Service Supplies Co.
Western Electric Co.

Insurance, Acc. & Casualty
Casualty Reporter Co.
Travelers Insurance Co.

Lamps, Electric
Electric Service Supplies Co.
General Electric Co.
Western Electric Co.

Lamps, Safety Cap
Koehler Manufacturing Co.

Lathes, Wood & Metal
Ohio Tool Co.

Lightning Arresters
Electric Service Supplies Co.
General Electric Co.
Western Electric Co.

Loaders, Box Car (See Box Car Loaders)

Loaders, Coal
Link-Belt Co.
Robins Conveying Belt Co.

Loaders, Wagon & Track
Jeffrey Mfg. Co.
Link-Belt Co.

Loading Booms
Jeffrey Mfg. Co.
Link-Belt Co.
Roberts & Schaefer Co.

Locomotives, Compressed Air

Locomotives, Electric

Locomotive Gasoline

Locomotives, Mine

Locomotives, Storage Battery

Lubricants

Lumber

Lumber, Mine Villages

Machine Tools

Machinery, Special

Machines, Shoveling

Mechanical Draft Apparatus

Mine Timbers, Wood

Mining Machines

Mining Machines, Chain and Punchers

Motors

Motor & Storage Battery

Patented Metals

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Pipe Cutting and Threading Machinery

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Pipe, Wood

Powder, Blasting

Power Transmission Rope

Preservatives, Wood (see Wood Preservatives)

Pulleys, Shafting & Hangers

Pulverizers, Coal and Coke

Pump Plungers

Pumps, Boiler Feed

Pumps, Centrifugal

Pumps, Pneumatic Air Lift

Pumps, Power

Pumps, Vacuum

Rail Benders

Rail Bonds

Rails and Rail Joints

Refrigeration, Automatic for Coal Mine Stores

Roofing and Siding—Asbestos—Protected Metal—Corrugated

Rope, Manila and Jute

Rope Transmission

Rope, Wire

Railway Car Dumpers

Rotary Kilns

Safety Appliances

Scales

School & Colleges (See Engineering Engrs. Directory)

Scraper Loaders

Screens & Perforated Sheeting

Second Hand Equipment (See Searchlight Section)

Shaft Sinking

Sheaves and Rollers

Sheets, Corrugated
Robertson Co., H. H.

Shoveling Machines
Lake Superior Loader Co.

Shovels
Pittsburgh Shovel Co.

Siding, Corrugated and Plain
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